EPA

US Army Corps
of Engineers

Draft Environmental Impact Statement
on the
Special Area Management Plan
for the
Hackensack Meadowlands District, NJ

June 1995

Appendices J - P

In partnership with:

National Oceanic and Atmospheric Administration
New Jersey Department of Environmental Protection
Hackensack Meadowlands Development Commission

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List of Appendices

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Appendix J

APPENDIX J

EVALUATION OF OUT-OF-DISTRICT ALTERNATIVES

HACKENSACK MEADOWLANDS DISTRICT SAMP/EIS

Appendix Prepared by:

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NOVEMBER 1993

<u>Note</u>: *The information presented in this Appendix was used in the development of the Environmental Impact Statement (EIS). However, after work on the Appendix was completed, modifications and improvements in the discussion of this subject were applied during the preparation of the EIS. As a result, the presentation of policy, planning, and regulatory issues contained herein may not be as current as the information in the EIS. Please note, however, that the presentation of quantitative information regarding environmental impacts (e.g., wetlands, water quality, air quality, transportation) contained within the Appendix is current. If any differences exist between this Appendix and the EIS, the discussion in the EIS supersedes the discussion in the Appendix.*

Draft: 30 November 1993
FOR REVIEW PURPOSES ONLY

EVALUATION OF OUT-OF-DISTRICT ALTERNATIVES

HACKENSACK MEADOWLANDS SAMP/EIS

1.0 INTRODUCTION

The Environmental Impact Statement (EIS) being prepared for the Hackensack Meadowlands District--Special Area Management Plan (SAMP) must consider reasonable alternatives, as required by the National Environmental Policy Act (NEPA). Five alternative models for growth in the District are considered in the Alternatives Analysis, from which a sixth "hybrid" plan was prepared for more detailed evaluation in the EIS. The work plan for the SAMP/EIS also requires an evaluation of the potential for growth outside the District, in lieu of in-District growth.

Theoretically, a large number of alternative locations (and combinations of sites) are potentially available. However, it is not useful or effective to analyze the impacts of growth at each of the many alternate locations dispersed throughout the region. The availability of alternative sites is better measured, given the programmatic nature of the EIS, by assessing representative locations that exhibit high potential to function as alternative locations for growth.

The SAMP Memorandum of Understanding (MOU) requires that a programmatic EIS be prepared. Under a programmatic format, methodologies for analysis are used that are appropriate at the regional scale, and that are appropriate for supporting "program-level" decisions, in this case involving selection of land management plans, environmental management plans, and regulatory enhancements for the District that best meet the goals of the SAMP and MOU. Toward that end, the following criteria have been applied in selecting locations for review:

- the out-of-District locations selected for review should be representative of opportunities that conform with good planning and natural resource protection principles, and,

- the out-of-District locations preferred and selected for review are sites that can achieve planning objectives outlined in the New Jersey Development and Redevelopment Plan.

In accordance with the scope of work for the SAMP/EIS, out-of-District sites will be selected for review that are most respresentative of the forms of growth and the scale of growth anticipated to occur in the

District, and that address project needs. Also, the practicability of growth in alternative out-of-District locations will be reviewed.

This report describes the federal policies and regulations that guide the analysis of (out-of-District) alternatives in the EIS; identifies the sites and locations outside the District that have been reviewed and evaluated; and then presents the conclusions of the analysis.

This out-of-District alternatives analysis is arranged in order of the following topics:

- Section 1. Introduction
- Section 2. Regulations governing the alternatives analysis
- Section 3. Overview of project purpose and goals
- Section 4. Method for out-of-District alternatives analysis
- Section 5. Overview of urbanization patterns in the study area
- Section 6. Alternatives screening criteria
- Section 7. Preliminary site identification and screening
- Section 8. Selection of representative sites
- Section 9. Environmental review of selected representative sites
- Section 10. Conclusions

2.0 RELEVANT REGULATIONS

The consideration of out-of-District alternatives as part of the EIS for the SAMP derives from the need to examine reasonable alternatives to the proposed action (including the no action alternative and alternatives not within the jurisdiction of the lead agency), as described in CEQ Regulations on Implementing NEPA[1]. The proposed action is the preparation and implementation of a Special Area Management Plan for the Hackensack Meadowlands District.

In addition, the SAMP MOU specifically provides for the consideration of out-of-District alternatives in the EIS. A principal purpose of the SAMP is to assure that the Hackensack Meadowlands Development Commission's (HMDC) revised Master Plan for the District reflects the requirements of Section 404(b)(1) guidelines, which state that development requiring filling of wetlands undergo an analysis of practicable alternatives.

However, a complex mosaic of federal and state regulations and related guidance documents and memorandums expand and alter the way in which alternatives analysis (under NEPA) is to be conducted for the SAMP/EIS. These regulations and guidance documents include:

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[1] CEQ Regulations on Implementing NEPA (40 CFR 1500-1508)

- 404(b)(1) Guidelines (40 CFR 230 et seq.)
- Interagency Memorandum of Understanding for the Hackensack Meadowlands District SAMP (August 26, 1988)
- Army/EPA Memorandum of Agreement Concerning the Determination of Mitigation (February 7, 1990)
- ACE Public Interest Review (33 CFR 320.4, pursuant to NEPA)
- Corps Regulatory Guidance Letter No. 86-10 (October 2, 1986)
- Hackensack Meadowlands Reclamation and Development Act (N. J. Stat. 13:17-1)

The overall project purpose is the development of a Meadowlands District SAMP--a comprehensive plan providing for natural resource protection and reasonable economic growth. The SAMP contains a comprehensive statement of policies and criteria to guide uses of lands and water in the District, and sets forth the mechanisms that will effectuate the policies in specific geographic areas.[2] One of the products of the SAMP will be the adoption of a revised Master Plan by HMDC that is consistent with the SAMP.

Thus, the alternatives analysis incorporates a regional planning perspective, and at the same time addresses the requirements for alternatives analyses contained in relevant regulations, specifically: the Section 404(b)(1) Guidelines, the Army Engineers' Public Interest Review (PIR), and NEPA. (The approaches to alternatives analysis in these regulations typically, but not necessarily, focus on the details of a specific project at the time a project applicant is applying for a permit. In this project, the approach to alternatives analysis provides for comparison of alternative regional land use and environmental management plans, at a programmatic analytical level.)

To meet the requirements of federal regulations and the MOU, the EIS is assessing practicable alternatives as outlined at 40 CFR 230.10(a) [Section 404(b)(1) Guidelines]. An alternative is practicable under Section 404(b)(1) if it is available to the project proponent and capable of being done after taking into consideration cost, existing technology, and logistics in light of the overall project purpose. Practicable alternatives with less adverse impacts are presumed to exist if: (1) the discharge occurs to a special aquatic site--such as wetlands; or (2) the project is not water-dependent. This presumption is explicitly acknowledged to be rebuttable in the regulations.

The 404(b)(1) practicable alternatives analysis drives federal decision-making toward an alternative that is preferable from the standpoint of

[2] SAMP Memorandum of Understanding (August 26, 1988)

protection of the aquatic ecosystem. The central principle of the Section 404(b)(1) guideline is that:

> No discharge of dredged or fill material shall be permitted if there is a practicable alternative to the proposed discharge that would have less adverse impact on the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences.

Note, however, that non-aquatic environmental impacts are also taken into account. If an alternative that is less damaging to the aquatic ecosystem would have other significant adverse environmental consequences, then the Section 404 discharge may be allowed despite the existence of a practicable alternative.

Other significant adverse environmental consequences are of particular importance in the Meadowlands, because of the extensive damage to the natural environment that has occurred in the District as a result of historic land use and waste disposal practices. Substantial environmental improvements are necessary to offset the significant environmental degradation and alteration that has resulted from past land use practices, according to HMDC analyses.

The SAMP seeks to reconcile a broad range of land use conflicts and remediate the effects of inappropriate land uses, for example:

- Environmental problems are severe, highly clustered, and take almost every form encountered in a metropolitan area. The District experiences the impact of metropolitan solid waste disposal, toxic waste disposal, wastewater disposal, and the congestive effects of high travel demand through and into the District.

- Changes to the hydrology of the Hackensack River (via upstream impoundment for public water supply purposes, ditching for mosquito control, and diking for flood control) have permanently altered the original ecosystem of the District by changing the tidal influence, water quality, and nutrient inputs of the lower Hackensack River.

- Because the District is located within five miles of New York City, there is high market demand for land. Land values reflect this demand. Inconsistent authorities of the federal, state, and local agencies have increased the difficulty, unpredictability, and cost of growth in the District.

The analysis of practicable alternatives is extended by the Army Corps of Engineers/EPA Memorandum of Agreement Concerning the Determination of Mitigation (MOA). Section II.C. of the MOA states

> In evaluating standard Section 404 permit applications, as a practical matter, information on all facets of a project, including potential mitigation, is typically gathered and reviewed at the same time. The Corps, except as indicated below, first makes a determination that potential impacts have been avoided to the maximum extent practicable; remaining unavoidable impacts will then be mitigated to the extent appropriate and practicable by requiring steps to minimize impacts and, finally compensate for aquatic resource values. This sequence is considered satisfied where the proposed mitigation is in accordance with specific provisions of a Corps and EPA approved comprehensive plan that ensures compliance with the compensation requirements of the Section 404(b)(1) Guidelines (examples of such comprehensive plans may include Special Area Management Plans, Advance Identification areas (Section 230.80), and State Coastal Zone Management Plans)...

3.0 PROJECT PURPOSE AND PROJECT GOALS

A broad range of project goals, to be achieved through implementation of the SAMP, have been expressed by the many agency participants and public commenters. The project goals and objectives describe the project purposes (to be accomplished through the SAMP). Thus, the goals and objectives establish the context for alternatives analysis. Two fundamental goals are formalized in the SAMP MOU:

- Natural resource protection
- Economic growth

These goals embody a range of specific environmental, economic, and social goals and objectives. In a number of cases, the visions of the future District as expressed by different parties to the SAMP (and the public) are discordant, that is, they result in different future uses for the same lands. For example, a tract of land containing both uplands and wetlands might be viewed as an area for environmental preservation by one interest group, as an area for commercial growth by the landowner, and as a location to meet housing and other social/cultural needs by the regional planning agency. One function of the SAMP is to achieve a balance among the various project goals that is in the public interest.

HMDC's goals and objectives for the SAMP are described in the report on Project Purpose and Need (4/21/93). The goals and objectives of HMDC, designed to address a broad range of issues such as economic growth and environmental management, describe the long-term approaches to land use management in the Hackensack Meadowlands District. The legislated goals of HMDC (as outlined from the purposes of Chapter 404, Laws of 1968, N.J.S.A. 13:17-1 et seq.) involve promoting orderly, comprehensive economic development; providing facilities for disposal of solid waste; "preserving the delicate balance of nature"; and to "reclaim, plan, develop and redevelop the Hackensack Meadowlands".

Specific goals, objectives, and issues have been expressed by the SAMP partners and by the public during the scoping and public meeting process. The goals include achievement of environmental, developmental, social, and planning objectives. For example, environmental goals include protection of the existing environmental resources within the District, and implementation of environmental improvements to enhance resources where degradation has occurred. An example goal relating to economic growth and development involves creation of new jobs through properly planned growth in office, commercial, and warehouse uses in the HMD. Examples of social and planning goals include the development of major multi-use planned activity centers within the Meadowlands District (at locations where highway and mass transit systems will support such development)[3], and meeting low and moderate income housing goals in accordance with the N.J. Council on Affordable Housing (COAH) guidelines.

4.0 METHOD FOR OUT-OF-DISTRICT ALTERNATIVES ANALYSIS

The out-of-District alternatives analysis seeks to satisfy the overlapping federal regulations and guidance that outline the scope of inquiry, in the context of a programmatic EIS. The method must also take into account the SAMP's environmental, social, and economic components. The method of out-of-District alternatives analysis--developed in response to relevant requirements--is described below.

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[3] The "multi-use center" form of growth proposed by HMDC is more efficient, on an environmental basis, than the sprawl single-use development patterns existing (and permitted under zoning) in the surrounding suburban region. A study by Middlesex-Somerset-Mercer Regional Council finds that individual mixed-use developments in concert with transportation demand management, generate upwards of 20 percent fewer trips on public roadways than traditional single-purpose developments (the usual development allowed under suburban zoning.

The SAMP MOU mandates an analysis of out-of-District alternatives as part of the examination of reasonable alternatives under NEPA, and as part the evaluation of practicable alternatives under the Clean Water Act Section 404(b)(1) Guidelines. In November 1990, the EIS federal lead agencies approved a scope of work for the SAMP/EIS that described the approach to be applied in evaluating project alternatives, including out-of-District alternatives. This approach is being followed in the evaluation of out-of-District alternatives, and consists of the following major steps:

> Identify potential out-of-District locations in the project alternatives study area--defined as a six-county metropolitan area in northern New Jersey, to include Union, Essex, Hudson, Bergen, Passaic, and northern Middlesex County. The out-of-District locations to be considered should have sites that can accommodate projects of scale, function, and density similar to HMDC's Planning Areas, to evaluate achievement of comparable project purposes[4] at alternative locations. The identification of potentially available and representative out-of-District locations was made using data from three sources:
>
> 1. Data was assembled from municipal tax records to indicate vacant tracts of land in the study region,
> 2. County and selected municipal planning staffs were contacted and interviewed to identify available locations,
> 3. Listings of available lands (obtained from the PSE&G Area Development Program's site locator system) were reviewed to identify potential locations.

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[4] Relevant federal regulations emphasize the importance of project purpose:

> An alternative is practicable if it is available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes. (40 CFR 230.10(a)(2))
>
> We consider it implicit that, to be practicable, an alternative must be capable of achieving the basic purpose of the proposed activity. (45 FR 85339, Dec. 24, 1980)
>
> In order for an "external" alternative to be practicable, it must be reasonably available or obtainable. (45 FR 85339, Dec. 24, 1980)

- The analysis of out-of-District alternatives focuses on sites outside the District that are comparable to those in the HMDC-identified Planning Areas, because (1) many small parcels of land are theoretically available in the six-county out-of-District study region and preparing individual reviews of each small parcel is inefficient and a waste of project resources, and because (2) the EIS is programmatic (regional) in nature. Representative out-of-District locations were selected for additional consideration based on a site's potential to accommodate growth, its ability to accommodate projects of comparable scale, and the general availability of infrastructure and transportation/transit systems.

- Based on the review of potential out-of-District sites, four representative out-of-District locations were selected for additional analysis, involving sites in Jersey City, Newark, Wayne, and Mahwah. The current environmental conditions and potential environmental impacts of site development at each location were generally assessed.

- The feasibility of meeting SAMP goals and regulatory requirements using locations outside the District is then assessed, and an out-of-District alternative is proposed to test the rate at which some in-District growth[5] might be redirected to an out-of-District location.

5.0 URBANIZATION PATTERNS IN THE PROJECT ALTERNATIVES STUDY AREA

Satellite photography (1990, 1 inch = 2.3 miles) of the out-of-District six-county study area was obtained to study the urbanization patterns of the SAMP region, distinguishing the patterns by county. The satellite photo shows a pattern of intense land uses throughout the inner portions of the region, including the area surrounding the Hackensack Meadowlands District.

Hudson County is developed at urban densities typical of the period between the Civil War and World War II. The only area of undeveloped land noticeable in the photograph is the former industrial and railroad land along the Hudson River in Jersey City, the largest component of which is now Liberty State Park.

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[5] The growth projections for the District are presented in the EIS document entitled "Need for Growth and Environmental Improvement in the Hackensack Meadowlands District".

In Bergen County, the photograph reveals a continuous grid of suburban residential land use, with intermittent concentrations of commercial and other non-residential uses. Much of Bergen County appears "saturated," that is, developed everywhere as allowed by the zoning in effect. The development patterns in southern Bergen County, much of which was developed prior to World War II, resemble those of Hudson County. Northern and western Bergen County are less densely developed, but the even fabric of suburban streets and houses clearly indicates development saturation (although at lower zoned densities) over much of this area. Some new development can occur in saturated areas, but it usually involves redevelopment of underutilized land where the zoning allows higher densities. Such redevelopment is extremely rare in suburban areas.

The development patterns in Bergen County, as illustrated by the satellite photograph, provide a classic illustration of urban sprawl: it shows how real estate market forces working within typically suburban zoning densities can, given sufficient demand over time, eventually leave an entire county with little open space other than that deliberately set aside as public parks, institutional campuses, country clubs, and the like. (The alternative model of urbanization, common outside the metropolitan areas of North America, allows areas of woodland and farmland to survive between spatially confined towns and cities. Typically, the residents of those towns and cities live and work in densities higher than those prevailing in Bergen County or most other North American urban areas.)

Passaic County is divided into two sections of sharply contrasting density. The southern section, dominated by cities like Paterson and Passaic, is developed at pre-World War II densities like those of Hudson County. West of Paterson, Passaic County exhibits near saturation at typically suburban densities, with areas of apparent commercial and industrial use scattered widely among areas of apparent residential use. The northern section of the county exhibits some development but remains largely vacant and forested, because of the constraints to development posed by the steeply sloped lands, and because of the presence of extensive lands in watershed use.

The land use patterns of Essex County indicate saturation, although the density declines as the distance west of Newark increases. Union County, like Essex, has a dense urban core in Elizabeth and Linden, and saturated suburban development west of the core area. In both counties, the density of development is lower west of the First Watchung Mountain, with some larger tracts of undeveloped parkland and other public open space evident in Essex County.

In western Union County, the fabric of urbanization visible in the satellite photograph is woven at a small, consistent scale, reflecting predominantly residential land uses. In contrast, the uneven patterns of urbanization evident in northern Middlesex County indicates irregular land use patterns, in which areas of monolithic commercial and industrial use are interspersed widely among residential uses. The residential areas in Middlesex County show more diversity in density and scale than the single-family residential patterns of Union County. Like Union County, however, Middlesex County north of the Raritan River appears to be at or close to saturation.

The satellite imagery strikingly illustrates the development saturation in the SAMP out-of-District study region. In most of the region, the undeveloped areas that compare in size to the open lands within the District are principally parks or other open space uses. Other than at the outer fringes of the region, the satellite photograph indicates very limited undeveloped land that would be comparable to the Planning Areas conceptualized by HMDC inside the District.

6.0 ALTERNATIVES SCREENING CRITERIA

The criteria used in the preliminary screening analysis reflect the concepts advanced in the State Plan, which are intended to steer New Jersey toward less sprawling forms of development. The State Plan advocates that growth be directed to "centers" that have high levels of accessibility, provide a diversity of land uses and varying intensities of land use, enhance the efficient delivery of public services, and contribute to a perceived sense of place. In this analysis, preference is given to sites that share with in-District locations the ability to accommodate both housing and employment, providing adequate and affordable housing sufficiently adjacent to places of employment to minimize travel needs.

Specifically, the screening criteria favor:

- Sites where mixed land use--combining residential, commercial, and office development--is permitted.
- Sites that are commensurate with in-District development sites in their development potential. Generally, a suitable site would require about 25 to 100 acres, and allow for relatively high land use densities. Smaller sites may also be suitable, particularly in urban locations;
- Proximity to public transportation and to major highways;

- Locations that can realistically attract high-quality commercial and market residential uses;

- Sites that offer the potential for achieving synergistic effects in meeting different needs. Mixed-use development can provide for economic activity, delivery of public services, living space, and environmental protection, all in a coordinated way that encourages interaction and mutual support among all these facets of the community. Such synergism is necessary for the built environment to achieve what the state plan calls "communities of place"--that is, communities that are dynamic, diverse, compact, and efficient;

- Sites that serve a market comparable to or substantially the same as the market for in-District sites;

- Sites that do not exhibit the potential for significant impacts to the environment or natural resources resulting from development activity (e.g., wetlands, water quality, terrestrial and aquatic habitats) and future use of the site (e.g., traffic/air quality, stormwater runoff).

- Sites that are not known to have significant ECRA compliance obstacles.

7.0 PRELIMINARY SITE IDENTIFICATION AND SCREENING

Conceptually, an out-of-District alternative site should offer the opportunity for mixed-use development, accommodating: about 1,000 units of housing or more, ranging from affordable to luxury, at densities of 20 to 40 dwelling units per acre; and about one million square feet of office/commercial space, consisting of various classes of office space with retail support services. Given the saturated patterns of development outside the District, this analysis does consider sites that are smaller, and more limited than the in-District alternatives, in their potential to accommodate the conceptual project outlined above. However, the analysis does not consider the numerous out-of-District sites that are too small and scattered to offer any comparable opportunities for mixing densities and land uses because they are limited in scale.

CDM has completed a preliminary screening of potential locations and sites. The sources of information used to identify out-of-District alternatives included: county land use planners in Bergen, Passaic, and Union Counties; the Office of State Planning; a number of municipal planning and economic development officials throughout the six-county study region; an inventory of available commercial/industrial sites maintained by Public Service Electric & Gas Company (PSE&G), and color-enhanced satellite photography.

The parts of the six-county SAMP region that are nearest to the District are the most built-up parts of the region. They include the older, larger cities of Jersey City, Newark, and Paterson, and many smaller cities and older suburbs. These areas are defined by the State Plan as the "Metropolitan Planning Area." The plan urges that growth within the Metropolitan Planning Area be directed to the larger, older cities. The older cities have suffered from the continuing shift of economic activity and population away from urban centers that began after the Second World War. These cities now have urban land that is underutilized and service infrastructure that usually will accommodate growth. The older suburbs in the Metropolitan Planning Area, described as standing shoulder-to-shoulder in tightly woven settlement patterns, are less likely to be able to accommodate major new growth concentrations.

The 1992 State Development and Redevelopment Plan required counties to submit draft planning area and centers delineations (using the "cross-acceptance" process) by March 1992. The urban centers are designated by the state; within the SAMP region they include Newark, Jersey City, Paterson, and Elizabeth. Counties can designate regional centers, including existing regional centers and new regional centers; towns; villages; and hamlets.

The out-of-District alternatives analysis relates directly to the state master planning process: any out-of-District site identified as a potential location for growth should logically be within the region's designated urban or regional centers. To find out what centers--particularly regional centers--had been mapped so far by the counties in the SAMP region, CDM spoke with the northeastern New Jersey contact at the Office of State Planning, Dave Maski, and his colleague, David Hosack.

Mr. Maski, from his personal knowledge of the region, said that none of the centers identified in northeastern New Jersey offer as much space for growth as potential sites within the Meadowlands. He felt that while the region could probably accommodate much of the projected demand for growth without using the Meadowlands sites, it could only do so in fragments scattered over thousands of unrelated sites. Such growth would increase the undesirable patterns of segregated land uses and sprawling development that erode the strength of established cities and place unnecessary burdens on public services. Mr. Maski indicated that Jersey City and Newark nevertheless had space for growth through redevelopment. Of all the suburban areas within the SAMP region, he cited only Mahwah in

Bergen County as having the room to accommodate growth in an amount comparable to the potential of the Meadowlands sites.

David Hosack identified many of the centers tentatively designated in the state process so far in Bergen, Passaic, Essex, Hudson, and Union Counties. He explained that many of these designations do not signify the desire for growth, only that development should be directed to areas where the infrastructure already exists.

CDM's preliminary screening of potential out-of-District alternative sites reaches a similar conclusion: within the closer-in areas of the SAMP region, the cities of Jersey City and Newark appear to offer the most substantial space for growth and also have the potential to promote the urban redevelopment goals of the N. J. Development and Redevelopment Plan. After their losses of population and business, these cities have land available for redevelopment. They actively seek creative forms of development, which the suburbs generally do not. This is because urban centers, such as Jersey City and Newark, have more flexible land use regulations that permit development with the desired diversity of use and density. Because the major rail lines were built to serve the cities, growth in these locations offers the greatest potential for shifting the balance in northern New Jersey toward more public transportation and less private automobile use. Both cities are also focal points of the regional highway network, although connector routes may be congested.

The suburban areas, in contrast, are likely to continue to apply restrictive land use controls that segregate land uses and discourage the SAMP objective of combining residential and commercial growth at any one location. The older suburban towns seek to maintain their suburban character, and are skeptical of further urbanization. The suburban areas generally have not suffered great economic decline, and so do not have the land available for redevelopment that the larger cities have. Nor do large tracts of virgin land remain, as exist in exurban areas. The service infrastructure of many suburban areas does not have sufficient surplus capacity to accommodate major new development.

7.1 URBAN DEVELOPMENT SITES

During the preliminary site screening a number of potential locations in Jersey City, Newark, and Paterson were reviewed, as discussed below.

JERSEY CITY

The Hudson River waterfront in Jersey City features large tracts of land once mainly used for rail freight yards. With the disappearance of rail operations, the Hudson waterfront has become attractive to high quality commercial and residential development. The 200-acre Newport development, located at the northern end of Jersey City's Hudson River waterfront, may be the largest project built to date. Newport includes a one-million square-foot shopping mall, and, at full buildout, 9,100 dwelling units and 4.2 million square feet of office space.

The northern waterfront is the most attractive waterfront area for further major development because it is closest to the Holland Tunnel and the New Jersey Turnpike, is served by PATH trains, and has the effect of development momentum accruing from Newport, Harborside, and the new buildings at Exchange Place. Sites in this area offer the opportunity to achieve state planning goals of

> coordinating public and private actions to guide future growth into compact forms of development and redevelopment, located to make the most efficient use of infrastructure systems and to support the maintenance of capacities of infrastructure, environmental, natural resource, fiscal, economic, and other systems. (N. J. State Plan, State Planning Goal No. 9)

Of the two large, available development sites in this neighborhood, Hudson Exchange (formerly known as Harsimus Cove) appears preferable for the out-of-District alternatives analysis, as confirmed by Jersey City's Planning Director, Robert Cotter. Hudson Exchange is not known to have ECRA complications, as is suspected for Liberty Harbor North, which is believed to have chromium and other heavy metal contamination. Hudson Exchange is more accessible by PATH than Liberty Harbor North. The City believes the owners of the Hudson Exchange site have already spent $40 million on plans and site preparation. This expenditure includes the placement of dredged sand on the site to surcharge the underlying fill. Conrail still maintains track on the site, using it once every few months to assemble freight trains. Once work on Conrail's Marion Junction project, on the west side of Jersey City, is completed in 1994, there will be no more rail operations at Hudson Exchange to constrain development.

NEWARK

Newark contains several privately-owned sites in the downtown/riverfront area that are underutilized and could be developed. There are also underutilized, predominantly residential areas outside downtown where high concentrations of city-owned land make redevelopment possible. The City of Newark's Department of Development assisted CDM in defining these outlying potential redevelopment areas; the City's Engineering Department provided CDM with the information on the downtown-riverfront sites.

The NJR-50 Urban Renewal District, between Penn Station and Bridge Street, and from Broad Street to Raymond Boulevard, is the site of the proposed New Jersey Performing Arts Center. Three city blocks are designated by the renewal plan for commercial development to help fund the operation of the performing arts facilities. An adjacent, six-acre urban renewal district, between Raymond Boulevard and the Passaic River, has been committed to a developer, named Capital Hill, which plans residential development.

The City recommended for consideration five sites in the Passaic Riverfront area, near the Performing Arts Center, comprising, in all, 36 acres of land. The City reports that most of the structures on these sites have already been cleared, or are in the process of being cleared. They are the following:

- The area immediately north of the Capital Hill site, between McCarter Highway (Route 21) and the Passaic River, is an underutilized region of parking lots and scattered, small commercial buildings. It features proximity to downtown office buildings, Penn Station, and highways. It affords the opportunity to build on the momentum of the performing arts complex and adjacent Capital Hill development. The site is in multiple private ownership.

- South of the Capital Hill site, next to the Passaic River and Penn Station, is a former power plant site owned by Public Service Electric & Gas. The site has been cleared and fenced; it appears to be five to six acres.

- The Mutual Benefit Life parking area along Orange and Bridge Streets, between Broad Street and McCarter Highway, just south of I-280, includes several city blocks of employee parking at least partly owned by Mutual Benefit Life. This site is close to major office buildings, the Newark Museum and Public Library, and Broad Street Station. The "City Visions" renewal study of Newark recommends housing at this location.

- North of I-280, between Broad Street and M. L. King Boulevard, next to the high-rise Colonnades apartments, is a privately-owned site of about five acres of wooded land.

- A cleared site bordering the Passaic River southeast of Penn Station.

The City pointed out areas beyond downtown with high concentrations of city-owned land where redevelopment is being considered. These areas consist typically of numerous vacant lots interspersed with two and three-family wooden houses. In particular, Newark representatives identified the Central Ward Redevelopment Area. This is an area to the west of the K. Hovnanian/Society Hill at University Heights development, between Springfield and South Orange Avenues, that contains many underutilized blocks with high concentrations of city ownership. Hovnanian prepared a block-by-block redevelopment proposal for a 55-acre area here, which envisioned as many as 1,400 new dwelling units. The average costs of acquisition, relocation, and clearance were estimated at approximately $500,000 per acre. The City would favor mixed commercial and residential uses in this area, with the residential component taking the form of town house or duplex construction, like that of Society Hill at University Heights.

Hovnanian's Society Hill project includes 1,200 dwelling units, 400 of which have been completed already, and 100,000 square feet of retail space. The housing is being sold at market rates with a 15 percent low and moderate income component. It is located next to the University of Medicine and Dentistry and the Essex County Courts, off Springfield Avenue in central Newark. The City assumed the costs of site assemblage and relocation, and delivered the 40-acre Society Hill site to Hovnanian.

CDM observed a path of private and institutional redevelopment that points westward, roughly along the Market Street axis, toward the Central Ward redevelopment area. Hence, the next area on this redevelopment path may be the Central Ward redevelopment area (being considered by Hovnanian). Its perceived linkage to other clusters of redevelopment (listed below) makes this area more attractive than other outlying parts of the city. This path begins with a big constellation of new, private development around the restored Penn Station, including the Gateway office and hotel complex and the planned New Jersey Performing Arts Center. West of Broad Street is a cluster of expanding institutional uses comprised of the University of Medicine and Dentistry, the Newark campus of Rutgers University, and the Essex County courts. Next to this cluster is Hovnanian's Society Hill at University Heights.

The preliminary screening concludes that all the downtown/riverfront sites, as well as the Central Ward Redevelopment Area, are suitable for further consideration in the out-of-District alternative.

ELIZABETH

A demonstration project is being implemented in the City of Elizabeth (and other parts of Union County) to recycle and revitalize abandoned urban and suburban sites. Regional Plan Association is conducting the project, which is co-sponsored by the Union County Economic Development

Corporation. The project will develop models for site reuse and explore ways to redevelop undervalued land assets.

Phase I of the project, the inventory of vacant, contaminated, and underutilized lands in the county, was completed in the fall of 1992. Several large sites in the City of Elizabeth were identified. Phase II of the project has two objectives: first, to develop policy prescriptions for encouraging urban redevelopment, particularly in environmentally degraded areas; and second, to provide concrete examples of how such sites can be reclaimed. The plan will build on projects already initiated, such as the Seaport Industrial Center and the Elizabethport Waterfront Project. Linda Morgan, Director of Regional Plan Association, indicated that current project activities focus on redevelopment initiatives for a 166 acre site in Elizabeth, in an area that is principally industrial.

The site and surrounding land uses are principally industrial, with a focus on activities related to the shipping in adjacent Port Newark. A mixed use project with a residential component, similar to projects considered in the Meadowlands District, would be difficult to implement at this location. While this location may be able to support mixed industrial and commercial activity, the specialty uses related to intermodal shipping, transport of goods, and support services for shipping are likely to be the focus of commercial activity.

PATERSON

Michael Romanic, Acting Director of the City of Paterson Planning Department, said there is very little land available in Paterson for major development. He mentioned a 10-acre industrial property owned by Public Service Electric & Gas that has potentially substantial ECRA compliance issues. The only other site is the Ward Street superblock, a two-block area in downtown Paterson which the City has been seeking to develop for 15 years.

7.2 SUBURBAN ALTERNATIVES

During the preliminary site screening a number of potential locations in Passaic, Bergen, Union, and Middlesex Counties were reviewed, as discussed below.

PASSAIC COUNTY

Passaic County's existing regional centers include Clifton and Passaic. The Willowbrook Mall area of Wayne is proposed as a new regional center. However, large-site development in the sparsely settled northern part of the county is considered undesirable because of steep slopes, lack of infrastructure, and the presence of lands reserved for watershed use. The Passaic County Planning Department indicated that most development in the county involves reuse of previously developed areas. There isn't the space in the regional centers of the county to accommodate large-site development on virgin land. Redevelopment usually requires assembling a site out of contiguous parcels under multiple ownership, often in combination with the eminent domain power of local government. The sites identified for consideration in Passaic County are as follows:

- Passaic. The City of Passaic seeks to redevelop a 22-acre industrial area devastated by a fire about five years ago. The area is bordered by a hook in the Passaic River and is centered on Eighth Street. Seeking mixed-use redevelopment after the fire, the City of Passaic designated Hartz Mountain as redeveloper. Althea McDivitt of the Passaic Department of Community Development said Hartz has produced various alternative plans for mixes of housing and commercial space at this location, but has encountered some problems--likely related to site contamination. She said the area is now under environmental study, and is still in multiple private ownership.

- Wayne. The Willowbrook Mall area of Wayne is a low-lying area near the Passaic and Pompton Rivers, east of Great Piece Meadows. The area contains a highway node that includes I-80, N. J. Route 23, also a limited access highway; N. J. Route 3, a direct connection to the Lincoln Tunnel; and U. S. Route 46. High intensity commercial uses have developed here in recent decades, overlying an older settlement pattern of rural residential use. The area has grown without the spatial linkages in land use and circulation advocated by the state plan, but it has the potential to acquire the characteristics of a community of place. Passaic County proposes designating this a regional center.

  PSE&G's site inventory includes a 97.5-acre site at the heart of this center, which is being marketed for commercial development. The developer, Toombs Development Company, received preliminary site plan approval from Wayne Township for one-million square feet of office space, but wetlands issues have prevented development to date. Extensive wetlands would make the site difficult to develop.

  Wayne's Planning Director, Don Ferguson, described a proposal for mixed commercial and residential uses for a nearby site that also foundered on wetlands issues. The Township's site plan approval was later voided by a court ruling on a challenge to the project based on wetlands. The Township hopes to appeal the decision.

In sum, although sensitive environments in the area may limit large-scale projects, the Toombs site will be considered as an out-of-District alternative because it is representative of the limited number of large area sites available for development in suburban areas.

BERGEN COUNTY

The Bergen County Planning Department staff have identified many potential regional centers and towns in a preliminary mapping of planning areas for the State Development and Redevelopment Plan. Barbara Walsh of the Bergen County Planning Department stressed that the designations are conceptual. Most of the regional center designations in Bergen County are intended to guide state capital spending on infrastructure, rather than to generate greater density.

Among the conceptually-designated regional centers where development at relatively high densities is possible are Mahwah (in western Bergen County) and Edgewater (on the Hudson waterfront).

Mahwah. The old Ford Motor site of 175 acres, off Route 17 in Mahwah, has been subdivided and partially redeveloped with hotel and office space. International Crossroads, a high-rise hotel and office project, took 107 acres. Another 65 acres was taken by Sharp International for offices, and a distribution and service center. Neither part of the site has been fully redeveloped. Jim Hulsizer of the Bergen County Planning Department said that this site could accommodate more office or retail use, but that Mahwah Township would not favor mixed residential-commercial uses.

The nearby Ramapo Ridge corporate park project being developed by McBride has approximately 77 acres remaining of developable land among three separate tracts of land. Ramapo Ridge is located next to the alignment of I-287, south of its junction with Route 17 and the New York Thruway. Several sites in this corporate park have been developed with office uses. Major mixed-use development could theoretically be accommodated within its remaining sites, linking the existing office space in the corporate park to the residential uses next to it. Residential use is not favored here, however, partly because so much relatively dense housing has been built already in the area. Next to the corporate park are two higher-density residential developments: Ramapo Ridge Condominiums, with approximately 4 dwelling units per acre on 64 acres; and Kilmer Woods, with approximately 13 units per acre on 96 acres. Mr. Hulsizer of the County Planning Department said that Mahwah already has twice as much Mt. Laurel housing as required, and believes that the

Township would not entertain a mixed-use project containing housing on the corporate park sites.

This part of Mahwah is part of an area that is proposed for designation as a regional center, and it has several ingredients of a center in having a regional highway crossroads, a passenger rail station, and a concentration of residential and commercial uses. However, both Mr. Hulsizer of the Bergen County Planning department and David Maski of the New Jersey Office of State Planning indicate that Mahwah Township has been reluctant to allow mixed use projects, either at International Crossroads or elsewhere.

Edgewater. Mr. Hulsizer identified the Independence Harbor site in Edgewater, along the Hudson River, which has approximately 80 developable acres. Another 33 acres has been developed with condominiums built on a pier at a density of approximately 22 units per acre. Hartz Mountain Industries, the developer, has proposed both housing, office, and commercial uses at this site. Although land availability and its close proximity to New York makes the Hudson River waterfront attractive to development, most of the waterfront between Hoboken and Fort Lee has inadequate transportation infrastructure to accommodate major growth. The State Department of Transportation is studying highway improvements, but at present, the waterfront is served only by a two-lane county highway.

Mr. Hulsizer agreed that the Edgewater site serves a significantly different market than Bergen County areas west of the Palisades. He also identified the two-block Helmsley site in Fort Lee, where high-rise office and residential space has been proposed; and the 120-acre IBM office site in Franklin Lakes, on the Mahwah border. To a lesser extent, Fort Lee would serve a more specialized market than the Meadowlands. IBM recently announced that it would close its Franklin Lakes facility and put it up for sale. Mr. Hulsizer believes that it is not likely Franklin Lakes would allow a zoning change to allow housing at this site.

The City of Hackensack indicated that it should be considered for the out-of-District alternative. In a conversation with Eugene Duffy, the City Planning Director, CDM learned that Hackensack has numerous parcels of 15,000 to 30,000 square feet for which the city seeks residential infill redevelopment, and a high-rise residential project on Prospect Avenue that is stalled in mid-construction. Although these projects may have merit and will probably be completed when the economy recovers, these are not the site scales being considered for the out-of-District alternatives analysis. They are mostly too small, and in the case of the half-built larger project, too specialized a case to make for reasonable comparison.

UNION COUNTY

Gary Weltchek, a Principal Planner in the Union County Department of Engineering and Planning, Division of Planning & Development, identified the Elizabeth waterfront and downtown Elizabeth urban renewal area as potential locations for major mixed-use development in Union County. Mr. Weltchek agreed that the Elizabeth waterfront is too industrial to be an appropriate out-of-District site for high-grade commercial and residential uses. Elizabeth has a downtown urban renewal area, around the train station, where it seeks redevelopment. The City recently declared the area blighted, over the objections of some existing businesses, and has designated K. Hovnanian as redeveloper.

Grace Hodgeson, of the township engineering department in Berkeley Heights, indicated that Connell, Rice, of Westfield, N. J., plans to build a 10-story office building with a parking garage on the 52-acre former Reynolds Hospital site, located at Plainfield Avenue and Valley Road. The project has been approved by the Township. She said the Township would not favor housing at this site.

MIDDLESEX COUNTY

Bill Kruse, of the Middlesex County Planning Department, cited two possible locations in the northern part of the county, north of the Raritan River--Raritan Center and a location next to Woodbridge Center Mall. Its owners had planned office and retail development in the lower, undeveloped section of Raritan Center, which has not proceeded partly because of wetlands issues. The owners are looking for a determination from the Corps of Engineers and NJDEPE. A site consisting of two or three parcels containing 15 to 20 acres altogether has been proposed for development by Woodbridge Township.

Although Middlesex County is economically part of the SAMP region, the area is not close enough to the Meadowlands District to be considered a reasonable alternative location for out-of-District development alternatives. The Woodbridge-Edison-Piscataway area is several local markets removed from the Meadowlands, and the area is too distant from the District for HMDC to feasibly participate in development of an out-of-District alternative here.

8.0 SELECTION OF REPRESENTATIVE SITES FOR ENVIRONMENTAL REVIEW

From the sites/locations reviewed in the preliminary screening, four sites were selected for additional analysis. They are (1) Hudson Exchange in Jersey City, (2) a constellation of sites in Newark, (3) the Toombs site in Wayne, and (4) the Ramapo Ridge and International

Crossroads sites in Mahwah. These sites/locations best meet the previously established screening criteria: mixed uses are permitted; each could accommodate growth of a general scale that is comparable to in-District sites; each is located in a potential regional center, and each offers potential for synergistic effects in meeting divergent social and economic needs. The four sites/locations were then subjected to a preliminary evaluation of potential environmental impact, conducted at a programmatic level-of-analysis. The preliminary environmental reviews are presented in Section 9.0.

9.0 PRELIMINARY EVALUATION OF POTENTIAL ENVIRONMENTAL IMPACT

This section of the alternatives screening chapter considers the environmental impact issues potentially associated with the four sites identified from the preliminary screening for further consideration as out-of-District alternatives. The four alternative locations are qualitatively compared with respect to the environmental effects of growth in each location, using five environmental parameters--wetlands, water quality, aquatic resources, terrestrial ecology, and transportation (in itself, and as an indicator of air quality effects).

9.1 Jersey City

Wetlands. The Hudson Exchange site in Jersey City consists of formerly developed urban land lying adjacent to the Hudson River. The approximately 40-acre riparian part of this 117-acre site would be regulated as a tidal wetland. Development at this site would have direct impacts on the tidal wetland ecology if it involved dredging and filling to construct bulkheads or piers. The upland portion of the site does not contain wetlands.

Major filling or decking over the water is unlikely, however. The site was proposed for residential development that would have included a low-rise section on the then-existing piers stepping back to a high-rise section in the upland area. The Army Corps of Engineers did not approve permit applications to allow the developers to replace the concrete deck on the piers, in preparation for new construction. The developers had removed the old deck because of deterioration. This experience indicates that development in or over the water is unlikely to be permitted. However, development largely confined to the upland acreage would still be likely to include construction of public access areas at the shoreline, with attendant bulkhead construction and removal of remaining pier structures. Bulkhead work at the shoreline would have minor, short-term impacts on the adjacent littoral zone wetlands in the Hudson River.

Water Quality. The City of Jersey City plans to handle most stormwater from Hudson Exchange, when it is developed, by a new city stormwater outfall at Second Street which is currently in the design stage. The Second Street outfall is part of a comprehensive upgrading of the city's storm sewerage in the waterfront development areas, planned in cooperation with NJDEPE, to prevent sewage treatment plant overflows during storm events. The city will extend the divided, four-lane Washington Boulevard from Newport south through the eastern part of the Hudson Exchange site, with storm and sanitary sewerage and a 30-inch water main. The majority of the buildable area of Hudson Exchange lies west of the Washington Boulevard alignment; stormwater from that area would be discharged to the Washington Boulevard storm sewer which would connect to the Second Street outfall. Stormwater falling on the eastern portion of the site would be discharged directly to the Hudson River.

Aquatic Resources. As reported above, development of the Hudson Exchange site will be unlikely to involve filling along the Hudson River shoreline, other than to construct bulkheads. No land reclamation or decking is expected. Therefore, the effect on aquatic ecology would be limited to minor, short-term construction impacts. There would be no significant long-term effects on the aquatic ecology of the Hudson River in the area of Hudson Exchange.

Terrestrial Ecology. The Hudson Exchange site consists of land reclaimed from the Hudson River and estuarine marshes. Formerly a railroad yard, the site is largely covered with sand and has very little vegetation. There is unlikely to be any important ecological habitat on this site.

Transportation. Hudson Exchange is accessible by PATH and by Hudson County buses, and many work trips at this location would be made by way of these mass transit modes. The site is about 1,200 feet from the PATH Pavonia/Newport station and about 1,500 feet from the Grove Street station. Access by car to downtown Jersey City is complicated by existing commuter traffic congestion around the Holland Tunnel approaches. The state and the city both support development on the downtown Jersey City waterfront, and have interim and long-range transportation plans for the area. The city is currently in the design stage of an extension of Washington Boulevard south from Newport through the Hudson Exchange site to serve development there. NJDOT is studying a light rail line to connect the existing PATH service at Hoboken Terminal to Port Imperial, Lincoln Harbor, and other Hudson County waterfront development areas, terminating at the Vince Lombardi service area on the N. J. Turnpike. The light rail line is expected to be in service early in the 21st century. Although traffic would be an important issue in developing Hudson Exchange, the existing transportation improvement efforts are planned to provide for the traffic generated by development.

9.2 Newark

Wetlands. Newark is the location of a number of sites offered by city agencies for consideration, including five downtown/riverfront sites and the Central Ward Redevelopment Area. Three of the downtown/riverfront sites border the Passaic River. The riverbank in downtown Newark consists of bulkheads along some stretches of shoreline and rock embankments elsewhere. The embankments contain partly filled, developed or formerly developed upland areas. The U. S. Army Corps of Engineers is participating in a bulkhead reconstruction and public walkway project for the Passaic riverfront in downtown Newark. The Corps has $5 million in place and will seek an additional $15 million to complete the project, which is intended to enhance the redevelopment potential of the riverfront and to provide public access to the water as a feature of the redeveloped riverfront. The pedestrian walkway and rebuilt bulkheads will be part of the baseline environmental conditions under which redevelopment of the three sites would be considered. Any question of environmental impact of bulkhead work on the littoral zone wetlands in the river will have already been resolved in the Corps' project. The other two downtown sites and the Central Ward Urban Renewal Area consist of formerly developed urban land that is not adjacent to any wetlands.

Water Quality. Sanitary sewage from development at any of the Newark sites would be discharged to sewage treatment facilities. Newark requires onsite retention of stormwater to prevent the sudden surges of stormwater that contribute to combined sewer overflow. New building projects in the city use various methods to retain or detain stormwater, including French drains, which allow much of the stormwater to infiltrate into the groundwater; and rooftop retention, which also helps to cool buildings. The city indicated that untreated stormwater discharges into the Passaic River would not be permitted (Sudol 1992).

All the land under consideration was once or is still developed. The water quality of stormwater from new development is unlikely to be any lower than that of present or historic stormwater discharges. In fact, it may be superior to that of much contemporary large-scale development: Stormwater runoff from the extensive open air parking and loading areas typical of suburban development collects motor oil and other leaked or spilled substances that contribute to water pollution. The much higher densities of development in Newark would preclude most open-air parking, so that cleaner pedestrian areas and rooftops would comprise most of the impervious surfaces on site. Stormwater quality would therefore be relatively high.

Aquatic Resources. The Passaic River comprises the noteworthy aquatic resources in proximity to the Newark sites. As noted above, all the bulkhead construction work that might otherwise be required to develop on the riverfront is being performed by the U. S. Army Corps of Engineers. Development at any one of the three riverfront sites would therefore not involve additional bulkhead work or any associated short-term impacts on aquatic resources. The city does not permit direct stormwater discharges to the river, as noted above, so there would not be indirect long-term effects on aquatic ecology from stormwater discharges.

Terrestrial Ecology. All the Newark sites under consideration are formerly developed areas of urban land. The Central Ward Side Redevelopment Area includes some pavement and much weed-covered vacant land among the remaining buildings. The five downtown/riverfront sites are predominantly paved, either with asphalt or gravel. None of the sites would appear to contain any important terrestrial habitat.

Transportation. Development at any one of the downtown/riverfront sites in Newark would have certain impacts on rush hour traffic in the downtown area, particularly on McCarter Highway (N. J. Route 21) and Broad Street. McCarter Highway is now the subject of a phased improvement project planned to enable the downtown area to accommodate the traffic associated with the ongoing and anticipated redevelopment there. The first phase, expected to be completed in five years, involves widening, resurfacing, and ancillary improvements. For the second phase, NJDOT is studying a long-term option of moving the highway into a depressed alignment to improve through traffic and open up the surface area for local traffic circulation and other uses.

All the downtown/riverfront sites offer considerable potential for diverting work trips from personal automobiles to mass transit modes. Two of the sites are within walking distance of Penn Station; the other three are within walking distance of Broad Street Station. All are served by local buses. With the planned highway improvements and the availability of useful mass transit, the impacts of development at one or more of the downtown/riverfront sites are likely to be adequately mitigated by minor, localized improvements such as additional turning lanes and traffic signals.

The Central Ward Redevelopment Area is not as convenient to the railroad stations, but is served by local buses. Although the area is outside downtown Newark, the Essex County courts, University of Medicine and Dentistry, and other uses in the area already generate substantial traffic. Major development here has the potential to cause significant traffic impacts.

9.3 Wayne

Wetlands. The wetlands on the 97.5-acre out-of-District alternative site in Wayne Township would severely constrain development, because development here would have to be largely confined to upland island areas. Wetlands issues have prevented the current developer, Toombs, from proceeding with construction on its town-approved site plan. Although large-scale development can be integrated with wetlands in a way that enhances the development and protects wetlands values, there appears to be insufficient upland area on this site to make intensive development feasible.

Water Quality. The site is in a low-lying, and highly flood-prone area near the Pompton and Passaic rivers, and Great Piece Meadows, which is an extensive wetland area. Water quality is likely to be an important issue here, because of the abundant surface water resources and the already substantial development in the area. The Passaic River is a water supply source for the Passaic Valley Water Commission, which takes water from the river at Little Falls and treats it for potable use. Sanitary severage is available at the Wayne site. The onsite wetlands could possibly be used to filter and even out stormwater flows from development areas of the site.

Aquatic Resources. Although construction here would not have direct impacts on surface waters through dredging and filling, the aquatic ecology of the rivers and wetlands in the vicinity of the site (and wetlands on the site) could be affected by development at this location. The area is sensitive for aquatic ecology, as it is for wetlands and water quality, because the land is low and the area is historically prone to flooding. The onsite wetlands would aid in flood storage, but flooding may be a further constraint to development. Large-scale development at this hitherto undeveloped site would have more potential impact than at the urban sites in Newark and Jersey City.

Terrestrial Ecology. Although this previously undeveloped site is not known to contain any important habitats, its naturally vegetated upland areas function to protect the ecology of its wetland areas, and the interlinked terrestrial ecology of upland and wetland would be more vulnerable to the effects of development than the barren sites in Newark and Jersey City.

Transportation. Located at a regional highway node, the Wayne site is accessible by car from Interstate 80, N. J. Route 23, and other roads. Nearly all work trips attributable to new development here would be by car. This area of Wayne has been identified as a regional center, which will make the area a focus of future investment in highway infrastructure. The road system appears to be adequate to accommodate new development in the area at present, as evidenced by the township's final site plan approval of the Toombs office park.

9.4 Mahwah

Two project areas in Mahwah (as described in section 7.2) were assessed for environmental effects associated with potential development. The Ramapo Ridge corporate park currently contains three undeveloped tracts of land; one site is 45 acres, one site is 22 acres, and one site is developed but has approximately 9 acres available. While additional development of the 9 acre parcel appears to be feasible, space available on this property is limited and a major development project could not be accommodated within the remaining site.

The Ramapo Ridge corporate park mixes primary office and warehouse/secondary office parcels, and currently hosts a United Parcel Service Data Center, the U.S. corporate headquarters for Jaguar, as well as office and/or warehouse space for Meldisco, DialAmerica Marketing, Seiko Pulsar, and Paulist Press. The corporate park is bordered to the west by Route 287 and Ramapo College, and the corporate park is bordered to the east by the Kilmer Woods Residential Condominiums.

The old Ford Motor site (172 acres) is located between Route 17 and the Ramapo River. The site has been redeveloped in the form of a high-rise hotel and office uses (International Crossroads) on a 107 acre tract, and warehousing (Sharp International) on a 65 acre tract. Neither site is fully developed, however, future development would be constrained by the existing uses and site layouts. It is also appropriate to note that Mahwah officials have recommended that policies continuing single use site development practices remain in place.

Wetlands. According to NJ Dept. of Environmental Protection and Energy's freshwater wetland map for the Ramsey quadrangle NE, only a few small wetlands (Palustrine forested and scrub/shrub) are present at the three sites in Ramapo Ridge Corporate Park and at the old Ford Motor site. Large scale development of the sites could occur without significant wetland impact, because the majority of the sites are identified as upland areas. The existing wetland areas could likely be protected within a site development plan.

Water Quality. Based on area topography, development of the Ramapo Ridge Corporate Park sites would result in discharge of urban runoff to Darlington Brook and/or the Ramapo River. Development of the Crossroads International site would also contribute urban runoff to the Ramapo River. The Ramapo River, from the NJ/NY border to the Pompton River, has a surface water quality classification of FW2-NT (non-trout). The water quality effects of development at these sites would consist of short-term construction-related impacts such as soil erosion and sedimentation effects, and long-term effects associated with runoff from parking areas, roads, and buildings. The stormwater discharge impacts are slightly more significant here than at other sites because of the reliance on the downstream Ramapo River as a public water supply source, and because of the existing downstream flooding problems along the Ramapo River.

Aquatic Resources. Aquatic biology of Darlington Brook and/or the Ramapo River would likely experience the minor effects of additional non-point source pollutants contributed by site runoff from both project areas. The relatively high quality waters present in these waterways suggests a greater potential relative impact to receiving water and biology than would occur in a river already stressed, such as the Passaic River in Newark.

Terrestrial Ecology. The three available sites in the Ramapo Ridge Corporate Park are previously undeveloped and covered with dense vegetation/forest. The sites provide habitat for terrestrial wildlife and refuge from the surrounding development and loss of habitat. If these parcels are developed the remaining existing terrestrial ecosystems in this area would be lost. The ecosystem interactions among the Ramapo Ridge corporate part sites and the County Park (surrounding the Darlington Lake) and other preserved open spaces in Mahwah would be likely adversely affected by loss of habitat from development of the 22-acre site in the Ramapo Ridge Corporate Center.

The International Crossroads and Sharp International sites were previously industrially developed (Ford Motor Co.) and have been partially redeveloped with hotel and office space. Although the site was previously industrial, the reuse of this site resulted in notable environmental improvement. Further redevelopment of the remaining vacant land result in minor loss of existing terrestrial habitat.

Transportation. All of the sites identified in Mahwah are currently accessible via Route 202, Route 17, and Route 287. New development at these sites would significantly increase the number of vehicles in the area, would add to congestion on the local roads serving Ramapo Ridge corporate park, and would increase the generation of mobile source air pollutants. Mass transit to these sites in theoretically feasible, using the train station in downtown Mahwah, and in the form of bus service. However, the low land use densities and semi-rural residential character preclude efficient bus service from dispersed residential locations in the region to potential office and commercial activities at the Mahwah sites. The development sites are in excess of one mile from the train station, and would likely require additional bus transport of those commuting to and from work, which is generally considered a disincentive for transit use.

10.0 CONCLUSIONS

CDM has examined the availability and practicability of out-of-District sites as alternative growth locations within the metropolitan region. Two representative suburban locations, and two representative urban locations have been reviewed. The problems and constraints related to use of out-of-District sites, as practicable alternatives to in-District growth, are reviewed below.

10.1 Ability of Out-of-District Alternatives to Achieve Project Purpose

As noted earlier, the project purpose is the implementation of a SAMP in the Meadowlands District to address the District's environmental quality problems, and to resolve the land use and regulatory difficulties affecting the District's anticipated growth.

The approach to SAMP implementation recommended by HMDC involves "interdependency" between future land uses and environmental restoration, and linkage between future land uses and mechanisms to achieve environmental management goals and social needs (i.e., housing and employment opportunity). The future ability to manage the complex environment of the District is founded on:

- future interdependency among land uses in District;
- convergence of Federal, State, and local public policy objectives with regard to environmental degradation, transportation, housing, economic development;
- creation of a Federal/State partnership that can efficiently address the "package" of problems and needs in the District;
- imposition of development exactions and mitigation to finance environmental rehabilitation, infrastructure, and environmental management and monitoring systems.

Several mechanisms and tools are anticipated to be available to implement the SAMP, for example:

- Master Plan and Zoning revisions;

- Establishment of an Environmental Improvement Program (EIP) to "ensure positive environmental gains for the District"[6], which relies on meaningful developer exactions; and creation of an environmental monitoring program to index growth against environmental improvement goals, assuring that SAMP implementation results in net environmental benefit;

- Implementation of a variant of Transfer of Development Rights (TDR) to alleviate 'takings' issues associated with conservation actions;

It is intended that HMDC land use regulations and zoning powers, among other potential future responsibilities, will be relied on to assure that the level of development permitted at any point in time would be commensurate with environmental improvement and the capacity of the infrastructure systems. The environmental benefits and remediation/mitigation improvements foreseen would be monitored to assure specific targets and goals are realized in tandem with future growth.

Leveraging environmental preservation and improvement from real estate development is regarded by HMDC as necessary to achieve the preservation of the most valuable ecological features of the District, and to correct historic environmental degradation of the District.

The following characteristics and potential implementation mechanisms have been identified by HMDC as critical to realize SAMP goals, to effect a management plan for the District, and to adopt a revised Master Plan:

- High market demands for the land and resulting high land values for usable land will fund appropriate environmental restoration and preservation activities. Mechanisms that seek to share the financial benefits of growth with landowners holding property recommended for conservation, such as variants of TDR, are necessary to address "takings" issues.

- The pressures of metropolitan solid and hazardous waste disposal requirements, vehicular traffic, water use, wastewater and stormwater discharge, etc. requires a high level of protection and management of environmental resources, via implementation of SAMP goals in the District.

- The District has in place a statutorily mandated organization (HMDC) capable and experienced in environmental protection, with the authority to regulate and control land use in a unified

[6] SAMP Memorandum of Understanding

manner across numerous local jurisdictions. The HMDC organization is also vertically integrated into state regulatory functions.

- The District and its immediate environs have a high density of employment providing the opportunity to locate new housing resources close to existing jobs and to address the regional housing needs of 14 constituent municipalities in two counties.

- The unique confluence of numerous existing and potential rapid transit facilities increases the potential to demonstrate the advantages of mass transportation over vehicular, especially where such transit facilities can be located near zones allowing high density housing and employment opportunity.

- Major development proposals emerging in the District involve large-scale mixed use developments that reduce the environmental impacts of more traditional urban/suburban metropolitan development patterns.

Effectively realizing the goals of the SAMP, in particular the EIP, is fundamentally dependent upon implementing SAMP mechanisms as identified above--mechanisms that are integrally linked to achieve a District-wide management plan. The cost and regulatory complexity of land and environmental management objectives are significant for the District. Directing growth out of the District, to urban or suburban locations elsewhere in Metropolitan New Jersey, would make the essential implementation tools for environmental improvement (such as exactions, TDR, and mitigation/restoration projects) unavailable to HMDC. The integrity and effectiveness of the SAMP would be undermined by shifting a majority of the anticipated growth out of the District.

HMDC has clearly stated its support for revitalizing New Jersey's urban centers. HMDC proposes to establish a program (described in section 10.3) to test the potential for redirection of growth to an urban center(s), but such assistance is not practicable if it results in HMDC forfeiting achievement of District and SAMP environmental management goals.

HMDC has no authority or control over land use or environmental improvement projects out of the District, nor could such projects facilitate implementation of an EIP, the cornerstone of SAMP environmental restoration actions. Because HMDC is "applying" for the establishment of a federal regulatory presumption regarding the availability of alternatives (analogous to a typical permit situation), HMDC's goals, planning purposes, and authorities must be considered in assessing the practicability of alternative sites for development, preservation, and restoration. Out-of-District growth, to the degree that it detracts from in-District growth needs and improvement goals, is inconsistent with HMDC's planning purposes and environmental goals.

The criteria of practicability under Section 404(b)(1) must include elements such as the alternative's ability to satisfy HMDC's statutory purposes, including overall environmental improvement, solid waste management, and development of jobs and housing; and the existence of mechanisms to enable remediation of environmental conditions. Alternatives beyond the jurisdiction of HMDC cannot contribute to the project purpose of implementing a SAMP with an effective EIP, for the reasons set forth above.

10.2 Ability of Out-of-District Alternatives to Fulfill Growth Needs

Suburban Locations

While locations have been identified out of the District that would accommodate single use needs, such as development of homes or office buildings, growth dispersed throughout suburban locations (such as Mahwah and Wayne) would contribute to the patterns of sprawl that the adopted N.J. State Development and Redevelopment Plan discourages. Development of the Ramapo Ridge sites in Mahwah will result in loss of forested upland, with the attendant loss of wildlife habitat, open space, and increased segregation of land uses (requiring additional dependence on automobile travel), in an area that serves as an important source of water supply to downstream users. Furthermore, large mixed-use sites (with higher density and low- and moderate-income housing components) are not desired by Mahwah, because of the presence of high density housing in the area and the fulfillment of housing goals (discussed in section 7.2). The Wayne site has greater potential for mixed use development, however, as is the case for many large tracts that have remained undeveloped through the years, the site has significant wetland acreage that precludes implementation of a large mixed use project.

Urban Locations

Growth in urban locations is consistent with the State Master Plan. However, the nature of the housing and office market is substantially different than the market existing in the Meadowlands District, and urban centers were not found to be functional substitutes for the forms of investment and growth that are exhibited in the Meadowlands District. (See the Purpose and Needs chapter for a review of growth, land use, and development trends in the Meadowlands District.) CDM spoke with professionals in real estate development and brokerage to determine the localized differences in the commercial and residential market.

A representative urban center--Newark--was selected, to assess the degree to which an urban location is an interchangeable substitute for the commercial and residential market in the Meadowlands. Although Newark was used as a point of comparison, all urban centers were found to have similar redevelopment characteristics during the interviews and analyses. The urban centers all exhibited similar mixes of land use densities, allowed similar flexibility in land use, required similar incentives to stimulate interest from the development community (such as land assembly, subsidization, and tax abatement), and were most successful in attracting specific business sectors, such as utilities, education, government agencies, and related government service businesses (such as law and public accounting).

Urban Business Location Alternatives. The professionals contacted agreed that Newark has certain strengths as a location that are unmatched in the Meadowlands, that the Meadowlands has its own unique advantages, and that the markets for each were distinctly different.

Generally, the Newark market comprises public sector and utility companies and law firms. Among the major tenants in Newark are state government offices, quasi-judicial boards, such as the Workers' Compensation Board; law firms (Newark is the seat of Essex County and federal New Jersey District courts); Prudential and Mutual Benefit Life Insurance Companies, which have a long-established presence in Newark; Public Service Electric & Gas, American Telephone & Telegraph, New Jersey Bell, and Blue Cross and Blue Shield. The Jersey City-Hudson Waterfront market is focused on finance and insurance firms considering relocation from Manhattan. Such business activities are not incompatible with the forms of primary office and business growth expressing interest in Meadowlands locations (see Needs chapter), however, each location draws principally from different sectors of the business community.

Jerry Birmingham, a broker at Cushman & Wakefield, agreed that the Meadowlands and Newark markets for commercial space were different, but stressed that Newark nonetheless has strong growth potential. He cited the effective public-private sector coalitions working to improve business conditions, and an aggressively pro-business mayoral administration. Mr. Birmingham said that the Meadowlands have been part of the suburban market, and that companies unable to find space in the Meadowlands would move north into Bergen County or other suburban locations, rather than to Newark or another urban location. Newark, on the other hand, has been able to hold onto its employers partly because of its excellent public transportation connections to New York City and points throughout northern New Jersey.

Diana Fainberg, of Bellemead Development Corporation, said that in real estate, each location offers its own advantages that cannot be duplicated elsewhere. She said that the prosperity of a region depends in part on having a diversity of growth locations that can serve different needs. Ms. Fainberg felt that the tendency to believe that development at one location will take away from another--that development in the Meadowlands will take from Newark--can be an artificial dichotomy: in fact, the prosperity generated by the growth of strong locations contributes to the economic vitality of all locations. Newark, she said, is a governmental, legal, and education center, whereas the Meadowlands are a center of business and commerce. Prosperity among businesses in the Meadowlands and elsewhere in the region increases demand for the legal, governmental, public utility, banking, and insurance services in Newark.

George Weinkam, of PSE&G's Area Development program, attributed part of Newark's success in retaining its employers to the availability of new office space built in recent years that has attracted companies from secondary office space in older, indifferently managed buildings. Mr. Weinkam said that although most growth in Newark is internal, it is nonetheless significant. Mr. Weinkam said that Newark's transit linkages to New York make the city attractive to law firms with ties to the financial center in New York. Major bond counsel firms are located in Newark. Newark's county and federal courts also, of course, make it a strong location for law firms. Mr. Wienkam disputed the idea that crime is an issue for potential employers, at least in downtown Newark, but suggested that memories of the 1967 urban riots remain a real obstacle to the city's ability to attract companies from outside.

Chris Ballerini, of David T. Houston Company, a broker of commercial and industrial real estate, said it's very hard to attract office users to Newark, largely because of security concerns such as the safety of personnel and of goods in transit. He pointed out that much of the Class B office space in older buildings cannot be filled once tenants have relocated to Gateway or other new buildings. Indeed, casual observation shows much of the upper-story, Class C space in the 19th century commercial buildings that line Market and Broad Streets to be vacant, with little indication, in the form of "for lease" signs or rehabilitation activity, of efforts to rent this vacant space.

Jim Servidea, project manager for Bellemead's One Newark Center, said that the large governmental and institutional sectors in Newark create a continuing demand for new office space in the city, both directly and, through the growth of law firms, indirectly. He said the federal government had been "aggressive" in seeking space in Newark. The anchor tenant at One Newark Center is the Seton Hall Law School, with 200,000 square feet of space. PSE&G has taken 130,000 square feet, and law firms and insurance agencies occupy the remainder of the leased space. The Meadowlands, on the other hand, serve more of a general business market. Karen Deffina of Bellemead, project manager for an office and distribution center within the District in Lyndhurst, said that much of the office space in her center was occupied by computer operations. She said that many of the office and warehouse/distribution tenants have ties to New York City. Two of her tenants are computer operations of the Memorial Sloan Kettering Hospital in New York and the Montefiore Hospital in the Bronx. Another tenant is an office operation of Saloman Brothers, which has headquarters in downtown Manhattan. The warehouse/distribution tenants tend to be smaller firms that have their office and operations space all within one premises. These tend to be companies that need vehicular access to New York City, such as garment manufacturers. Ms. Deffina did not see any overlap between the commercial office market for the Meadowlands and that for Newark or Jersey City. She said that businesses unable to find space in the Meadowlands would much more likely go to Morris County.

<u>Urban Housing Location Alternatives</u>. Newark, as a representative urban center, shows limited potential as an alternative location for residential growth. There appears to be demand for market-residential space downtown: the proposed Capital Hill development near the proposed New Jersey Center for the Performing Arts would include a residential component, and Mr. Weinkam of PSE&G cited the successful conversion of the former Newark Evening News building to residences. While downtown locations are attractive to part of the residential market nationally, younger, childless professionals and empty-nesters dominate that part of the market. The heart of the housing market, comprised of middle-class parent-child households, heavily favors suburban and small-town locations.

A number of grass-roots organizations have built new and rehabilitated housing in Newark neighborhoods for Newark residents in recent years. However, only one mainstream housing developer could be identified that built new, conventional market-rate housing in Newark to appeal to the broad middle of the housing market--K. Hovnanian's Society Hill at University Heights. Wayne Soojian of the K. Hovnanian Company said that 570 housing units have been started at University Heights, out of a planned total of 1,200 units, over a four-year period. Most of the 570 are completed; all are sold. Hovnanian has averaged 125 closings per year, and expects to complete the project in four years. All sales are made prior to construction, and no units are built speculatively.

Mr. Soojian described the Newark project as a steady performer: it seemed modest at first compared to yearly closings in the five hundreds at some of Hovnanian's suburban developments in the late 1980's, but has kept a steady pace through the recession as sales at suburban projects have sunk. In contrast to suburban projects, however, Society Hill at University Heights has required major public sector investments: Mr. Soojian said they had used every incentive available. The City of Newark assumed the substantial costs and responsibilities of condemning the land, consolidating the site, and relocating previous occupants. The city wrote down the land costs, and gives tax abatements to homebuyers. The city also declared the area an enterprise zone. Such subsidies essentially compete for the same funds that would be needed to achieve environmental goals for the District, and so could reduce the potential of fulfilling SAMP goals.

Before the Hovnanian development, there was little to choose from within the city limits for the many people who work in Newark, can afford good housing, and are drawn to new construction. It would appear that a potential market is there, as long as the city's and Hovnanian's joint success in creating new housing in a safe, attractive, even exciting physical context, can be continued.

However, interviews with real estate professionals indicate that the demand for housing in the region, given the historic trends in demand for suburban residential settings, can only be partially satisfied by building higher density housing in an urban setting. The urban centers of northeastern New Jersey--Newark, Jersey City, Elizabeth, Paterson--cannot reasonably be considered interchangeable with the Meadowlands in the housing market.

In conclusion, neither vacant suburban or urban locations appear to serve as practicable alternatives to growth in the Meadowlands District. Unfortunately, little validated research is available to measure the potential for redirection of growth from locations such as the Meadowlands District to urban centers. Real estate analysts widely assert the importance of specific location in determining market demand, and the demand for business and housing growth in urban centers, as a proportion of the growth in the six-county region, has traditionally been small without specific incentives and subsidization, or the attraction of market sector concentrations. As a result, the population and employment growth of the region is not likely to be accommodated in out-of-District locations, and lack of marketable growth locations is projected to result in loss of population and jobs to the region.

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FOR REVIEW PURPOSES ONLY

Locations for Secondary Office/Warehouse Land Uses

Continuing market demand for secondary office/warehouse (distribution) land uses is projected for the District. Growth in this industry segment will be caused by increased demand for services to support primary industry, immediate access to an extensive intermodal transportation network, an excellent labor pool, and ready access to New York City business activities.

The wholesale distribution market will continue to play a vital role in the demand for warehouse and distribution space. The proximity to New York City and to the major highway systems, including new Turnpike interchanges and Route 3 corridor improvements will stimulate the market. The continued development of the freight rail facilities at Kearny and Croxton Yards and as proposed by Susquehanna Railroad in North Bergen will result in greater demand for "close in" storage and distribution space.

The transportation industry, for both terminal facilities and trucking, are projected to be an essential growth component given the expansion of the in-District rail facilities. The recent trend in the shipping industry to ship trailers by rail over long distances, and truck the trailers in the short and medium range distances, will continue to create a demand for trucking and storage facilities which can accommodate the District's rail carriers. This, combined with the industry trend to finish products and repackage at the point of distribution, will also increase the demand for warehouse/distribution facilities.

In addition to the ready access to the transportation network that draws secondary office and warehouse land uses, and the proximity to commercial activities in the area (including New York City), the demand for in-District secondary office will also be a function of proximity to primary office growth projected for the District. The demand for warehouse growth in the District is also locational; it is directly related to the transportation network and proximity to New York City. While alternative locations for secondary office/warehouse land uses are theoretically present along the metropolitan area's highway system, the market demand has been expressed almost exclusively in the Meadowlands District. Hence, market forces are a significant indicator of the need for such growth to be located in-District. This analysis recognizes that warehouse and secondary office development is being encouraged in Elizabeth (under several special studies and programs) and in Newark (as well as other urban centers), however, the market forces have predominantly preferred locations such as the Meadowlands, and these trends are projected to continue. Relocating such uses away from the

District's economic, transportation, and labor pool resources is likely to result in loss of such uses in the region.

Another important factor that indicates secondary office and warehousing uses are important in in-District locations is the proposed reliance on TDR and developer exactions to fund part of the EIP.

10.3 Proposal to Test Redirecting Some Growth Out-of-District

This analysis has concluded that no suburban location was practicable as an alternative site location, given the goals of the state and local planning processes that discourage suburban and exurban sprawl, and given the absence of appropriately sized parcels within the developed portion of the region. In addition, this analysis has concluded that out-of-District urban locations do not offer practicable alternative locations for many of the forms of development for which there is market interest and economic demand.

However, based on the review of out-of-District urban alternatives, this analysis concludes that the potential for redirection of some of the growth pressure focused on the Meadowlands District to out-of-District urban locations should be tested within the context of the SAMP, insofar as there is no effective measure of the potential for such redirection currently available.

Several locations appear to be suitable for such a program, such as Jersey City, Newark, and Elizabeth (described in section 7.1). A location which appears to offer considerable potential is Jersey City, because the City is a member municipality of HMDC, and because several alternative sites appear to be available. Supporting out-of-District growth in Jersey City has fewer jurisdictional and policy constraints than would arise for locations that are not member municipalities of HMDC. However, this analysis also recognizes that substantial redevelopment programs are being implemented in Newark and Elizabeth. While stimulus packages for these locations may be more limited than those that might be made available to Jersey City by HMDC (because Jersey City is an HMDC member municipality), stimulus mechanisms would be included in the implementation tools developed to support out-of-District growth in any urban area.

The Alternatives Screening Analysis reviewed a number of sites to assess the effects of potential land use configurations in the District. As part of that analysis HMDC identified the greater efficiency and reduction in environmental impact that is associated with clustered mixed-use development. A site size and mixed use approach similar to the cluster (or node) project design preferred in the District was selected to assess the potential of supporting such a project out-of-District. A site density of about 40 residential dwellings per acre was assumed for the alternatives screening analysis, as was a floor area ratio of 0.75 to 1.0.

Using several Jersey City locations that might potentially represent programmatic out-of-District alternatives, it was estimated that a site in Jersey City of about 80 acres could host approximately 1.0 to 1.5 million square feet of office space and approximately 1,000 housing units.[7] (This is roughly comparable to the size of a smaller mixed use node preferred by HMDC. The 43 primary office in-District parcels assessed in the Alternatives Screening Analysis had a median project size of 2,178,000 square feet, and the 37 residential office parcels assessed had a median project size of 2,940 units. A project size of 1,000 residential units and 1.0 million square feet of primary office space is equivalent to the project scale contemplated for the District by HMDC, because it provides the desired land use efficiencies associated with mixed use, higher density projects, such as clustered project layout and reduced requirements for highway usage. A site of 80 acres is about the size of the non-wetland acreage available at the Hudson Exchange tract.)

This quantity of residential and non-residential growth will serve as an initial investment/stimulus out-of-District element, to test its rate of utilization by the development community and to refine the stimulus components.[8] This growth, to the degree allowable by law, would be supported through SAMP mechanisms that would create incentives for out-of-District development, using subsidization and regulatory streamlining approaches to facilitate growth in an urban center(s).

Because several locations exhibit potential in Jersey City, and because future utilization of specific sites by developers is not possible to predict, the out-of-District growth program would be created such that up to 1.5 million square feet of office space and up to 1,000 housing units could be transferred to an out-of-District location(s) in Jersey City (or in other urban areas) that met the transfer criteria (i.e., appropriate scale and combination of available urban land uses).

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[7] An undetermined amount of commercial development could also be accommodated in Jersey City out-of-District locations.

[8] This alternatives analysis does not detail the mechanisms for out-of-District stimulus; such detail will be part of the agreements related to SAMP implementation.

During the first 5 years, the out-of-District program would be monitored to determine whether in-District developers and/or land owners were successfully encouraged to shift development to Jersey City. The program would be assessed to determine the level of success in encouraging redevelopment in this urban center. Periodic review would also determine whether adjustments needed to be made in the program to improve incentives, and to reduce administrative and regulatory review for projects in Jersey City supported by the program. The program would also review whether proposed out-of-District development should be reassigned to other out-of-District locations, or whether it should be redistributed within the District planning areas. A program assessment would be conducted every 5 years.

Mechanisms to Stimulate out-of-District Non-residential Growth

HMDC would establish an out-of-District economic stimulus program for office, commercial, and warehouse projects. This stimulus package would be the principal mechanism to encourage out-of-District development:

- development interests and site owners within the District would be encouraged to use the out-of-District package as an alternative to development that would have been proposed in the District; one potential mechanism would be to create (together with Jersey City officials) a streamlined development review process in Jersey City.

- development interests outside of the District could take advantage of the economic stimulus package to reduce the cost of development in Jersey City (or other urban) locations that fit the out-of-District criteria.

The funding for the economic package would be derived from the utilization of HMDC powers (e.g., bonding, assessment and redevelopment, and where permissible, through the collection of fees and contributions from development inside the District). Funding incentives for development would be combined with other public funding or economic programs available from State and Federal sources, with a goal of leveraging funds from private market or institutional sources. Other incentives might include project financing assistance, project loans, parcel assembly and consolidation, and infrastructure development to the extent permissible under HMDC enabling legislation and to the extent funding is available.

Mechanisms to Stimulate out-of-District Residential Growth

One goal of out-of-District residential development is to meet the current Council on Affordable Housing goals, guidelines, and regulations.

HMDC will work closely with Jersey City (and/or other urban centers) to provide housing mixes appropriate for Jersey City's needs, and to provide funding support (as possible) for clearing and assembling tracts into acceptable residentially-based mixed use sites. HMDC would also work to develop streamlined administrative/regulatory review procedures for selected sites.

10.4 EIS Analyses

For the purposes of the draft EIS for the SAMP, the impacts of the out-of-District development will be evaluated both:

- within the District (proceeding under the assumption that no out-of-District alternatives materialize, and also providing analysis for a reasonable maximum SAMP buildout scenario), and,

- within a representative Jersey City location (assuming the out-of-District component of growth is fully realized).

A Jersey City location would be evaluated as a representative site hosting out-of-District development, to assess effects on urban locations.

(bc/6138)

Appendix K

APPENDIX K

ALTERNATIVES SCREENING ANALYSIS

HACKENSACK MEADOWLANDS DISTRICT SAMP/EIS

Appendix Prepared by:

CAMP DRESSER & McKEE

JUNE 1992

<u>Note</u>: *The information presented in this Appendix was used in the development of the Environmental Impact Statement (EIS). However, after work on the Appendix was completed, modifications and improvements in the discussion of this subject were applied during the preparation of the EIS. As a result, the presentation of policy, planning, and regulatory issues contained herein may not be as current as the information in the EIS. Please note, however, that the presentation of quantitative information regarding environmental impacts (e.g., wetlands, water quality, air quality, transportation) contained within the Appendix is current. If any differences exist between this Appendix and the EIS, the discussion in the EIS supersedes the discussion in the Appendix.*

Hackensack Meadowlands District

Alternatives Screening Analysis

Special Area Management Plan
Environmental Impact Statement

June 1992

Camp Dresser & McKee Inc.
Gannett Fleming
Grossman & Assoc., Inc.

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1.0 ALTERNATIVES SCREENING FOR THE HACKENSACK MEADOWLANDS SAMP/EIS

1.1 Introduction

The alternatives screening conducted as part of the SAMP/EIS can be described as a planning and environmental analysis designed to identify the relative efficiency of land use and resource protection regarding a set of alternative spatial arrangements and planning approaches for future growth in the District. (Criteria for evaluating efficiency are discussed below.) In accordance with NEPA and the Clean Water Act, the alternatives to be considered in the SAMP and programmatic EIS need to be reasonable, available, and feasible.

The alternatives screening constitutes the first phase of alternatives evaluation. The screening will be followed by a second phase of alternatives analysis that will evaluate the environmental impacts of the specific locations and configurations of the alternative(s) that ranks the highest following the screening. The alternative(s) that is identified for more detailed analysis may consist of a hybrid, formed from planning areas (associated with different alternatives) that meet needs and exhibit relatively lower impacts.

The alternatives to be screened are those identified in the Scope of Work for the Hackensack Meadowlands SAMP/EIS (dated 11/1/90 and approved by the SAMP partners). These alternatives consist of five in-District and three out-of-District alternatives, as well as the No Action alternative. The alternatives have been developed to represent spatial arrangements that describe typical growth patterns in the NY Metropolitan region. The alternatives have been identified as follows:

No Action Alternative

In-District Alternatives

- Upland Growth
- Redevelopment
- Highway Corridors
- Dispersed Development Areas
- Growth Centers

Out-of-District Alternatives

- Three locations representing urban and suburban locations in the six-county study area, that could host large mixed-use projects that achieve synergistic community-of-place qualities as described under the NJ State Master Planning process.

A two-phase approach has been adopted for the alternatives screening because the SAMP/EIS can be conducted most effectively by first identifying whether there are spatial arrangements for growth in the District that have higher land use efficiencies, identifying which speatial arrangements these are, and then evaluating detailed environmental effects only for those forms of growth that best meet the objectives of the SAMP -- a comprehensive plan providing for natural resource protection and reasonable economic growth (SAMP MOU, 8/26/88). With this in mind, the first phase consists of an alternatives screening process to evaluate, on a relative basis, the general environmental effects of each alternative. A more detailed evaluation of specific environmental effects, associated with the alternative (or hybrid of alternatives) that fulfills needs with the lowest impacts during screening, will be conducted during a second phase of alternatives analysis. The spatial arrangements of the alternatives are illustrated in figures 1-1 through 1-6, which are presented at the end of section 1.

1.2 Alternatives Screening - Approaches and Planning Assumptions

The alternatives are being tested to reveal the comparative land use efficiency and the environmental effects of their spatial arrangements and planning approaches. Thus, all the alternatives have been developed so that, to the maximum extent feasible, they fulfill HMDC-identified social, economic, and environmental needs, thus facilitating a comparative measure of their environmental effects and planning components based on a common set of assumptions. The assumptions regarding HMDC-identified needs are being used to establish equivalency among the alternatives during the screening analysis. The assumptions regarding needs, which have been held constant across all alternatives, can be characterized as follows:

A. Achievement of social and economic needs in the District consisting of the addition of 20,000 housing units, 18 million square feet of primary office space, 2 million square feet of commercial space, and 16 million square feet of secondary office/light industrial/warehousing over a twenty-year period.

B. Implementation of a broad set of environmental improvement objectives in the Meadowlands District, including natural resource and habitat enhancement, solid waste facility improvements, hazardous waste remediation, open space preservation, and water quality improvement, among others. Environmental objectives are described in HMDC's Environmental Improvement Program for the District.

The alternatives are composed using land use density and intensity factors of 20-110 units per acre, and floor area ratios of 0.4 to 0.7 for commercial space and 0.5 to 5.0 for office space. The planning areas included in each alternative, and their general land use composition are identified in tables 1-1 through 1-7.

The spatial arrangements, and their related efficiencies will be evaluated in terms of: the general magnitude of the environmental impacts; the planning and management characteristics associated with the alternative; the degree to which the alternative fulfills the objectives of the SAMP and HMDC-identified needs; and the relative level of resources required from the public and private sectors to achieve environmental improvement objectives for the District. The alternatives, both in-District and out-of-District, will be evaluated relying primarily on existing information.

Approaches and implementability of environmental improvement goals for the District (as identified in HMDC's Environmental Improvement Program) are reviewed during the alternatives screening. Possible approaches include: utilization of public and private funding sources to realize environmentally beneficial projects; environmental management and regulatory enhancements (in addition to minimum compensation requirements as related to project impacts); coordination of environmental projects that are now administered by a range of governmental agencies; and use of a variant of transferable development rights within the District to achieve conservation objectives.

Each of the alternatives connect to highway and mass transportation systems in different ways (e.g., the highway corridor alternative is highly road dependent). The transportation characteristics will be analyzed as part of the transportation analysis during alternatives screening. The alternatives also exhibit varying planning and management characteristics. Finally, with the exception of the upland alternative, the alternatives incorporate varying mixes of upland and wetland locations because: (1) there is limited vacant upland in the District available to meet HMDC-identified needs; and (2) they have been developed using generally accepted planning principles standards. The impacts of specific land uses that are common to all alternatives (such as assumed future transportation improvements) has not been quantified in the screening analysis because identification of such effects does not help discriminate <u>between</u> alternatives during the screening process.

The upland and redevelopment alternatives will be evaluated using a range of densities because of the limited land available in the District that is either upland or that may be eligible for blight designation pursuant to applicable New Jersey statutes. Because of the importance of evaluating use of non-wetlands in developing a future comprehensive plan for the District, these alternatives will be screened using land use densities that meet HMDC-identified needs. Following the first screening, evaluation of those locations in the upland or redevelopment alternatives that may be selected for inclusion in plan development may occur using (lower) densities and intensities of use more suitable to the District. Density adjustments may facilitate their incorporation into a hybrid alternative.

In conclusion, the alternatives screening is designed to reveal the more efficient ways to spatially arrange growth in the District, applying a common and relatively equal set of assumptions. The screening process will result in the development of a hierarchy of alternatives with respect to their environmental impacts and their relative abilities to efficiently meet environmental and social goals for the District. At the conclusion of the alternatives screening the alternatives will be ranked according to their abilities to achieve SAMP goals and according to their relative environmental efficiency regarding land use. A specific spatial arrangement will be developed pursuant to the ranking, based on one alternative, or on a hybrid formed from the alternatives.

The alternative (or hybrid of alternatives) that exhibits greater efficiency will then be evaluated with respect to: (1) the environmental effects resulting from the alternative; (2) whether there are lower impact locations and land use configurations that are possible for said spatial arrangement; and (3) ability to fulfill identified needs and Memorandum of Understanding (MOU) goals.

1.3 Description of Alternatives

The general sets of assumptions underlying each of the alternatives are presented below. These descriptions are designed to illuminate the principles by which the alternatives were composed. The spatial arrangements selected are based on three criteria: reasonableness of the projected land use; representativeness of forms (or spatial arrangements of growth that typically occur in the region; and the feasibility and appropriateness of identified land uses and locations.

1.3.1 No Action Alternative

The No Action Alternative, by definition, does not result in the creation and implementation of a Special Area Management Plan (SAMP) for the District, as defined in the Memorandum of Understanding. The characteristics of this alternative can be grouped into two principal categories. The first set of characteristics include the assumptions regarding future growth and land use in the District. The central assumption is that the existing HMDC Master Plan and Zoning ordinance would continue to be implemented. (The absence of a SAMP presumably would represent a continuation of current, apparently conflicting, authorities that increase the difficulty of achieving HMDC Master Plan and the federal Clean Water Act objectives. This apparently conflicting authorities also increase the difficulty of realizing the goal of integrating advance comprehensive planning into the federal and state environmental regulatory processes affecting wetlands).

The second set of characteristics describe the potential environmental and development management mechanisms that, by definition, are not likely to be created and implemented in the absence of a Special Area Management Plan. This alternative assumes increasing fragmentation and dispersal of planning authority in the District, because HMDC would not be able to adequately fulfill several of their statutory planning and environmental management mandates.

It is not possible to predict the specific locations and sizes of projects that would be implemented in the absence of a SAMP because it is not possible to predict the outcome of future permitting processes. Although HMDC has evaluated the generalized levels of growth that would occur under full build-out of the existing Master Plan, it is only reasonable to assume, on a District-wide basis, that some "unknown" percentage of the build-out of the existing HMDC Master Plan would occur over a 20 year planning period.

For purposes of evaluating the No Action alternative, which primarily describes the effect of no SAMP being implemented in the District, it is assumed that land owners will continue to pursue site development plans, in the context of current and future environmental laws and regulations. Just as it is not possible to describe the location and size of future site development proposals, it is not possible to describe the administration of future environmental laws and regulations given the absence of management controls that would be achieved through the SAMP. For these reasons the No Action Alternative will be described and evaluated qualitatively based on reasonable assumptions regarding future social, natural, and economic conditions without implementation of a SAMP.

The No Action alternative, because it does not result in the development and implementation of a SAMP for the District, does not include a number of regulatory, programmatic, and management benefits that would derive from the SAMP. The management and planning improvements that will not be available under the No Action alternative, and prospective difficulties arising from No Action, are listed below.

- In the absence of a SAMP there will be no agreement on or resolution of future alternatives analysis, as required under Section 404. This lack of agreement of alternatives will increase the permitting complexity and permitting requirements for projects proposed in the District, reducing the predictability and consistency of the permitting process.

- The will be no new comprehensive planning, management, and monitoring mechanism to assure compatibility between the HMDC Master Plan and the Clean Water Act (to address "no net loss of wetland values" in the District), the Clean Air Act, and the Superfund/SARA laws, thereby increasing administrative and management obligations for federal and state agencies.

- There will be no mechanism and limited resources and authority to implement the goals and objectives set forth in HMDC's Environmental Improvement Program, because the EIP goals are best achieved by bringing together public and private resources under a coordinated management system.

1.3.2 Upland Growth Alternative

This alternative assumes that growth occurs only on vacant land that is not wetland. Development of these sites assumes the use of several properties suspected of being landfilled and/or contaminated, as well as some properties with constrained road access. This alternative also involves the use of infill upland parcels throughout the District to accommodate secondary office, light industrial, and warehousing land uses (as described in HMDC's Needs statement).

1.3.3 Redevelopment Alternative

Redevelopment locations included in this alternative are generally consistent with standard blight criteria of under-utilization and deteriorating conditions. The redevelopment sites shown under this alternative involve redevelopment and conversion of lots on which existing or remnant structures are present into residential, office, commercial or warehousing uses. Redevelopment projects considered in this alternative require government involvement in blight declaration and in such activities as site planning, acquisition, financing, relocation, and site disposition. Additionally, development of these sites assumes use of several properties suspected of being landfilled and/or contaminated, as well as some properties with constrained or restricted road access. This alternative also involves the use of infill and other parcels throughout the District to accommodate secondary office, light industrial, and warehousing land uses (as described in HMDC's Needs statement), which would occur in both upland and infill wetland locations.

1.3.4 Highway Corridor Alternative

This alternative has been developed based on the assumption that private market real estate pressures will result in growth along existing highway corridors, specifically the high-visibility Route 3 corridor. This form of growth is typical in the NY/NJ Metropolitan region, as development interests are attracted to highway corridors that exhibit high levels of use by automobiles for commercial activities and that provide access for office and residential land uses. This alternative involves growth in both upland and wetland locations. This alternative also involves the use of a number of infill and other parcels throughout the District to accommodate secondary office, light industrial, and warehousing land uses (as described in HMDC's Needs statement), which would occur in both upland and infill wetland locations.

1.3.5 Dispersed Development Areas

The Dispersed Development Areas alternative assumes that a pattern of functionally unrelated and decentralized growth is likely to result from market pressures and demand; growth being located in small areas of development scattered throughout the District. This alternative involves growth in both upland and wetland locations, and includes locations of mixed-use development. This alternative also involves the use of infill and other parcels throughout the District to accommodate secondary office, light industrial, and warehousing land uses (as described in HMDC's Needs statement), which would occur in both upland and infill wetland locations.

1.3.6 Growth Centers Alternative

The Growth Centers Alternative involves growth focused in major nodes within the Meadowlands District. It involves growth in both upland and wetland locations. This alternative involves a high level of linkage between nodes and areawide transit systems. It emphasizes large scale mixed-use community designs that seek to integrate housing, employment, and retail activity in common locations.

This alternative also involves the use of infill and other parcels throughout the District to accommodate secondary office, light industrial, and warehousing land uses (as described in HMDC's Needs statement), which would occur in both upland and infill wetland locations.

1.4 Out-of-District Alternatives

Studies regarding the availability and feasibility of out-of-District sites for alternatives analysis has indicated that several locations in urban centers may be appropriate for analysis, and also that identifying suburban sites that will accept mixed-use developments may be somewhat more difficult to accomplish, given the difficulty in finding areas that will accept mixed-use projects given adopted zoning ordinances. In accordance with the input received during the scoping process CDM has discussed developable locations with representatives of the urban centers of Newark, Jersey City, and Paterson. The preliminary results of these discussions are presented below.

Paterson. Information provided by the Paterson Planning Department indicates that the City is almost entirely developed, although one site -- a two-block site at Ward Street in downtown Paterson -- has been available for about 15 years. There is a 10-acre site believed to require ECRA compliance located on private property in an industrial area. Other than these locations, sites are not generally available within Paterson.

Newark. Representatives of the Department of Development identified some of the more likely areas that might host mixed-use residential and commercial growth. Most development opportunities in Newark come in the form of high concentrations of in-rem lots, that is, property acquired by the city through tax foreclosures. In such areas, the city might assist a developer in assembling a site by consolidating the city-owned parcels and condemning and relocating occupants of the remaining privately-held parcels. Through this process the city recently delivered a 40-acre site to a developer for a project involving 1,200 dwelling units (400 of which have been completed), and 100,000 square feet of retail space. The housing was sold at market rates with a 15 percent low and moderate income component.

The area near West Side Park, between Springfield and Fourteenth Avenues, has high concentrations of city-owned lots. This would seem the most likely area to consider for large scale development because it is in the area of existing redevelopment. The redevelopment area begins at the restored Penn Station downtown, continues through the Gateway Center office and hotel development, skips across Broad Street to the growing institutional complex that includes a branch of Rutgers University and the College of Medicine and Dentistry campus, and concludes with the recent University Heights development.

Another area with a high concentration of city ownership lies to either side of Irvine Turner Boulevard between Peddie and Avon Streets. One six-block, 20-acre section of this area has been designated the South Ward Industrial Park, and is under contract for the development of 500,000 square feet of industrial space. The project is considerably behind original schedule. The city has not yet acquired the remaining private parcels nor has it relocated occupants. North and west of the designated industrial park as far north as Clinton Avenue are several more blocks that also have high concentrations of city-owned land.

The cost and administrative difficulty of assembling development sites in these areas must be considered. In 1989, the city estimated it expended $5.5 million to cover acquisition and relocation costs for a two-block area near the prospective South Ward Industrial Park. The costs involved in preparing a 25- to 50-acre site could be about $30 million.

There are several completely cleared blocks under control of the Newark Housing Authority located along Irvine Turner Blvd., between Clinton and Springfield Avenues. These blocks were cleared for the I-95 Connector, an Interstate Highway project that was later abandoned. Although a development project in this location would not incur significant acquisition and relocation costs, the cleared blocks are flanked by some of Newark's largest public housing projects, which has been considered a disincentive to development of market rate housing.

Based on information currently available there appear to be no large sites in Newark that are already cleared and available for development that would be suitable for mixed-use residential and higher quality commercial uses. The large sites that exist include the 84-acre Waverly Yards, an inactive freight yard between the Amtrak mainline and Newark Airport, and some industrial urban renewal area sites with suspected site contamination problems.

Jersey City. Information provided by Jersey City Department of Housing and Economic Development indicates that the most appropriate locations in Jersey City are near the Hudson River waterfront. This location features large tracts of land once mainly used for rail freight yards. With the disappearance of rail operations, the Hudson waterfront has become attractive to commercial and residential development. The 200-acre Newport development, located at the northern end of the Jersey City's Hudson River waterfront, is one of the largest projects built to date. Newport includes a one-million square foot shopping mall, and, at full buildout, 9,100 dwelling units and 4.2 million square feet of office space.

There are two large development tracts at the northern end of the waterfront that would appear to be appropriate for the out-of-District alternatives screening analysis. Both sites have been studied or proposed for development but are not under any current development plans.

Harsimus Cove is a 117-acre (including 40 acres under water) waterfront site located between the Harborside and Newport projects. One developer proposed 4,000 high-rise dwelling units for the site in the early 1980's. The site is in private ownership.

Another major site is known as Liberty Harbor North, an approximately 100-acre area between Grand Street and the Tide Water Basin. The

City's 1983 redevelopment plan proposed about 2,500 dwelling units and 500,000 square feet of commercial space on 75 acres here. Part of the site is in city ownership; the rest is privately owned.

A third site being considered for alternatives screening is Caven Point, located between Liberty State Park and the Claremont Channel. About 100 acres of this site may be available for residential and commercial use. Caven Point is not as accessible as the north waterfront area, and given previous difficulties with the success of projects at this location, developers may prefer less isolated locations.

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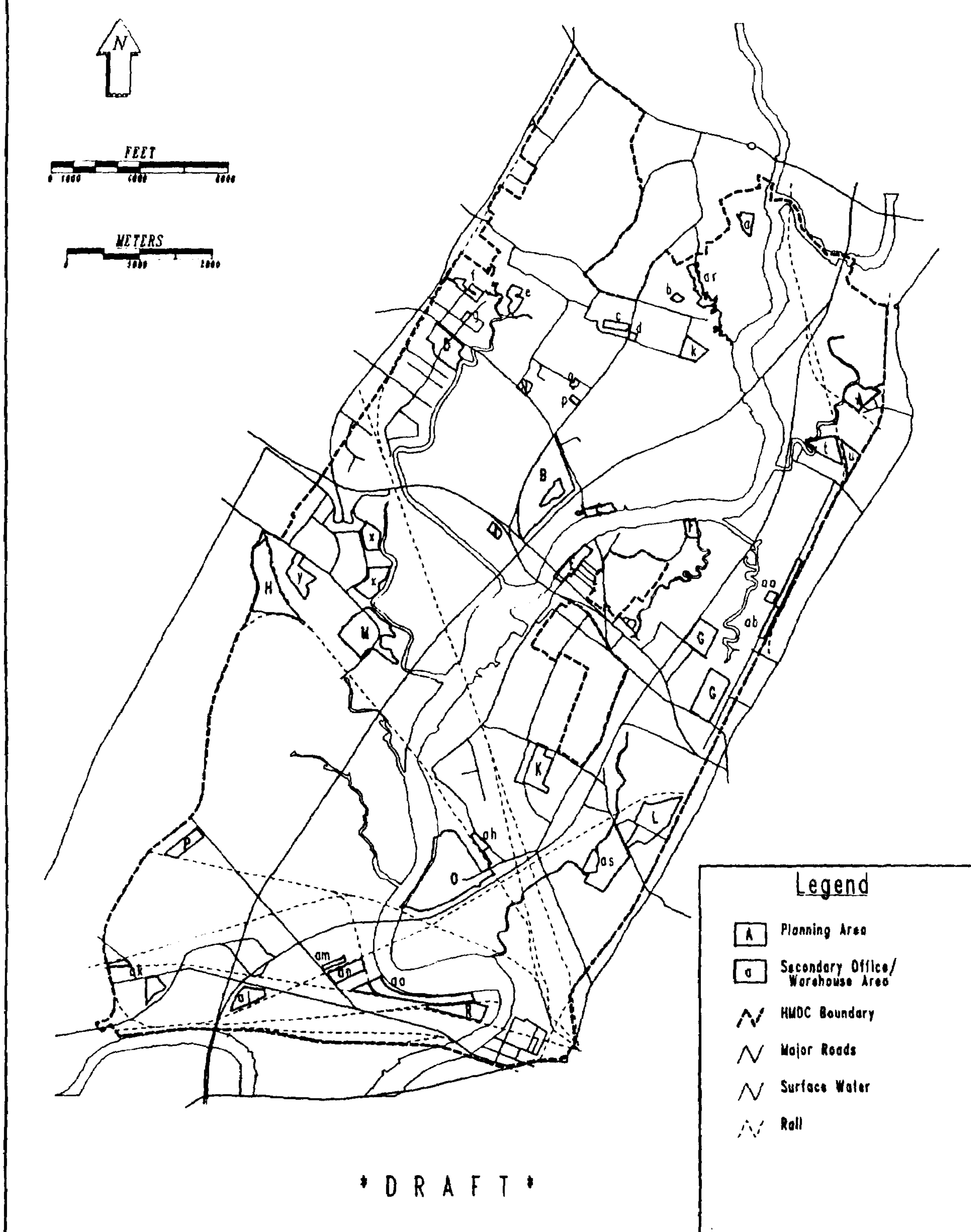

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Date: 01-24-1992

Figure 1-1

Upland Alternative

Hackensack Meadowlands SAMP/EIS

CDM
environmental engineers, scientists, planners & management consultants

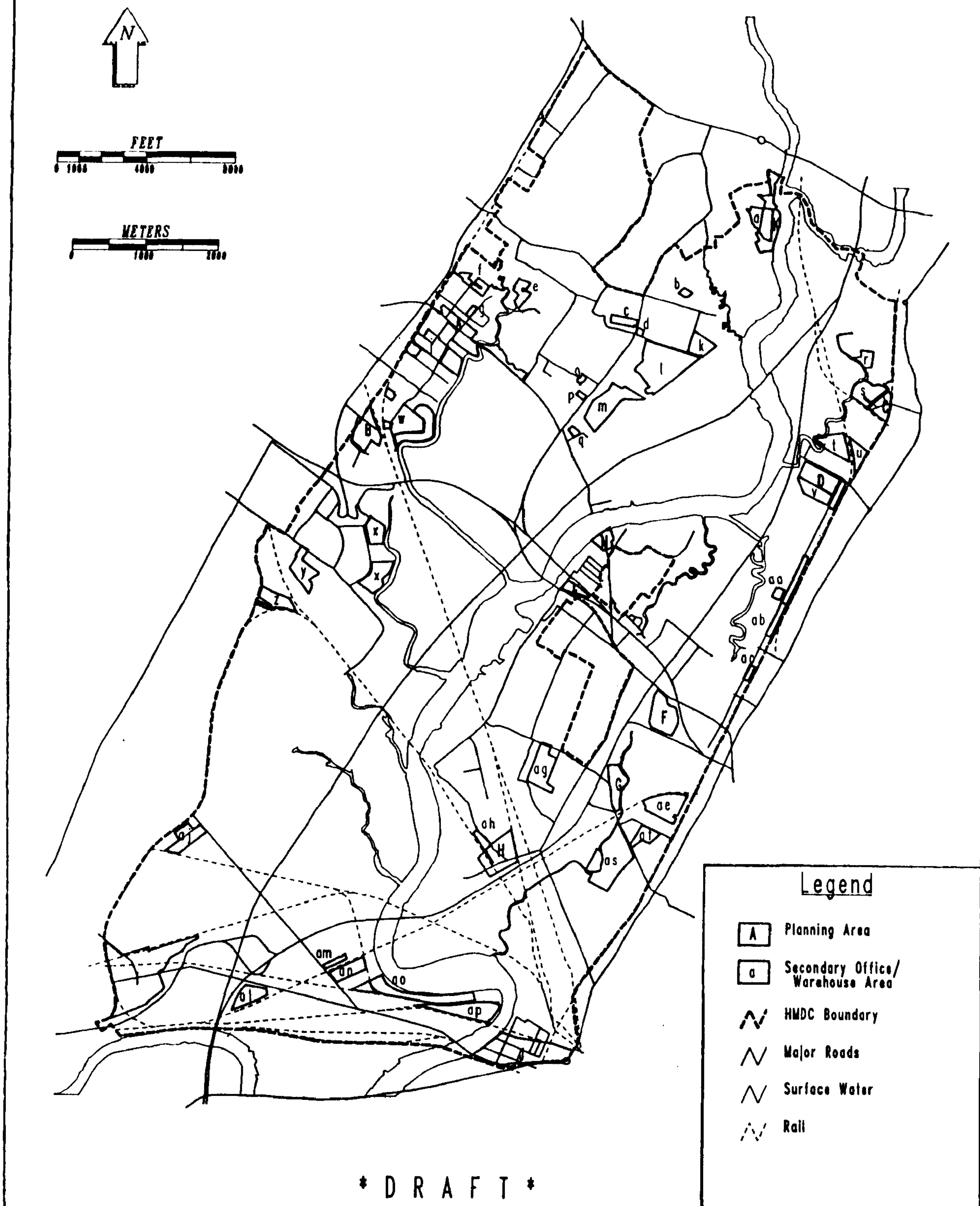
Table 1-1

ANTICIPATED LAND USES OF PLANNING AREAS

UPLAND ALTERNATIVE

Planning Area	Size (Acres)	Primary Office Land Use (sq. ft.)	Commercial Land Use (sq. ft.)	Residential Land Use (units)
(A) Bellman's Creek	31			1,550
(B) Arena	127	800,000		
(C) Sportsplex	14			700
(D) UOP	36	2,352,240		
(E) Red Roof Inn	22			1,100
	7			350
(H) Standard Tool	79	5,161,860		
(F) Tony's Old Mill	7			350
(G) Chromakill Creek	65			3,250
	20		435,600	
(K) Enterprise Ave. So.	38	2,482,920		
(M) PR - 2 (II)	79			3,950
(N) SCP	10		217,800	
(R) Koppers Coke	28		609,840	
(O) Laurel Hill	144			7,200
	25		544,500	
(L) Walsh	64	4,181,760		
(J) BCC East	6			300
(P) Kearny	27	1,764,180		
23-Jan-92	829	16,742,960	1,807,740	18,750

Secondary Office/Light Industrial/Warehousing land uses, in a variety of locations that are not within Planning Areas, total 14,270,256 square feet for this alternative.



Date: 01-24-1992

Figure 1-2

Redevelopment Alternative

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Hackensack Meadowlands SAMP/EIS

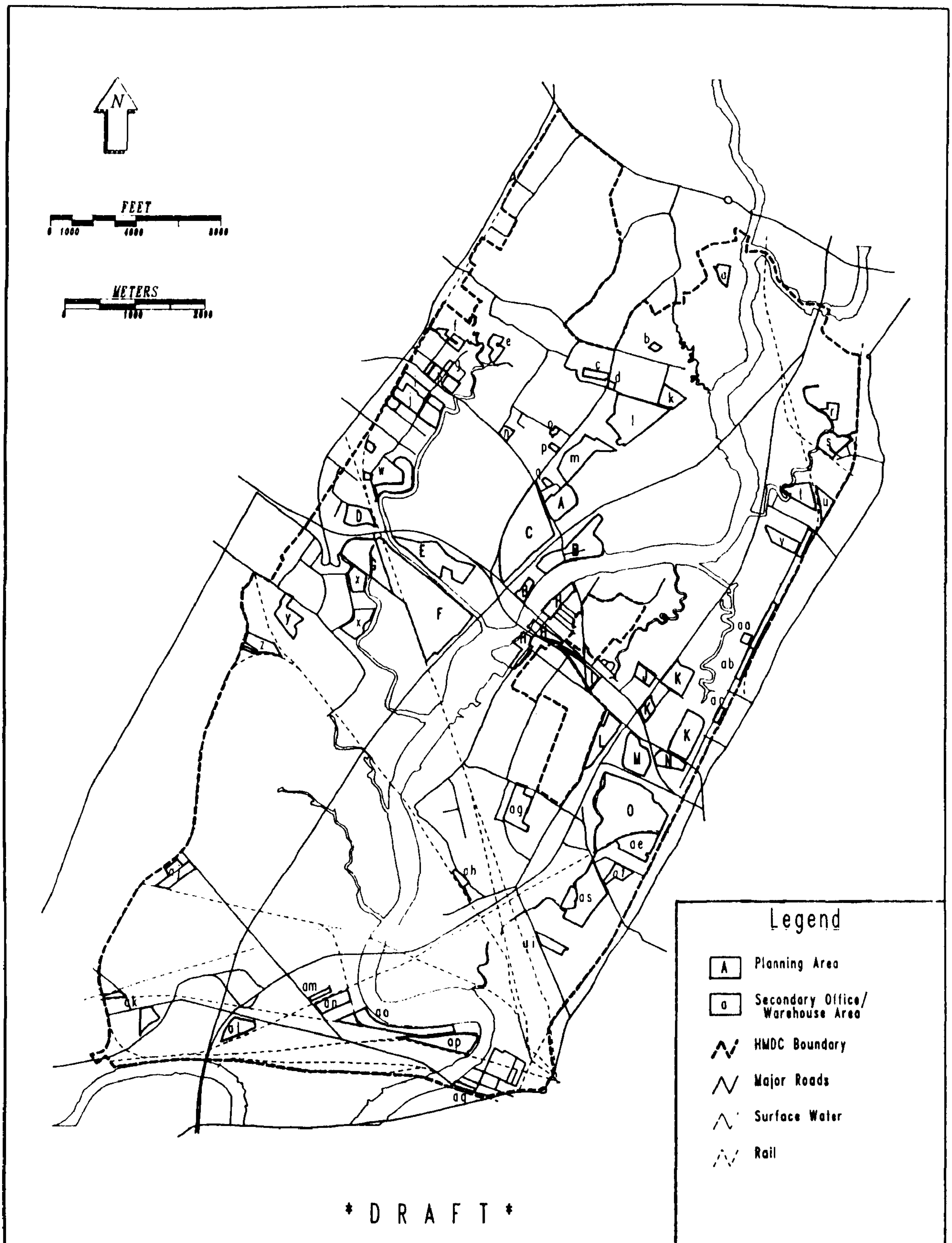
Table 1-2

ANTICIPATED LAND USES OF PLANNING AREAS

REDEVELOPMENT ALTERNATIVE

Planning Area	Size (Acres)	Primary Office Land Use (sq. ft.)	Commercial Land Use (sq. ft.)	Residential Land Use (units)
(A) UOP Site	50	3,267,000		
	36		784,080	
(B) Rutherford STP	36	2,352,240		
(C) Bellman's Creek	17			1,870
(D) North Bergen	31	2,025,540		
(E) Wood Ave.	8			880
(F) Secaucus I-495	28			3,080
	10	1,089,000		
(G) Secaucus Rd.	26			2,860
(H) Castle Rd.	33	2,156,220		
(I) Kearny West	42		914,760	
	111	4,835,160		
(J) Jersey City	22	1,437,480		
	10		217,800	
	50			5,500
(K) Little Ferry Waterfront	31			3410
(N) Riverview	10			1100
23-Jan-92	551	17,162,640	1,916,640	18,700

Secondary Office/Light Industrial/Warehousing land uses, in a variety of locations that are not within Planning Areas, total 15,489,936 square feet for this alternative.



Date: 01-24-1992

Figure 1-3

Highway Corridors Alternative

Hackensack Meadowlands SAMP/EIS

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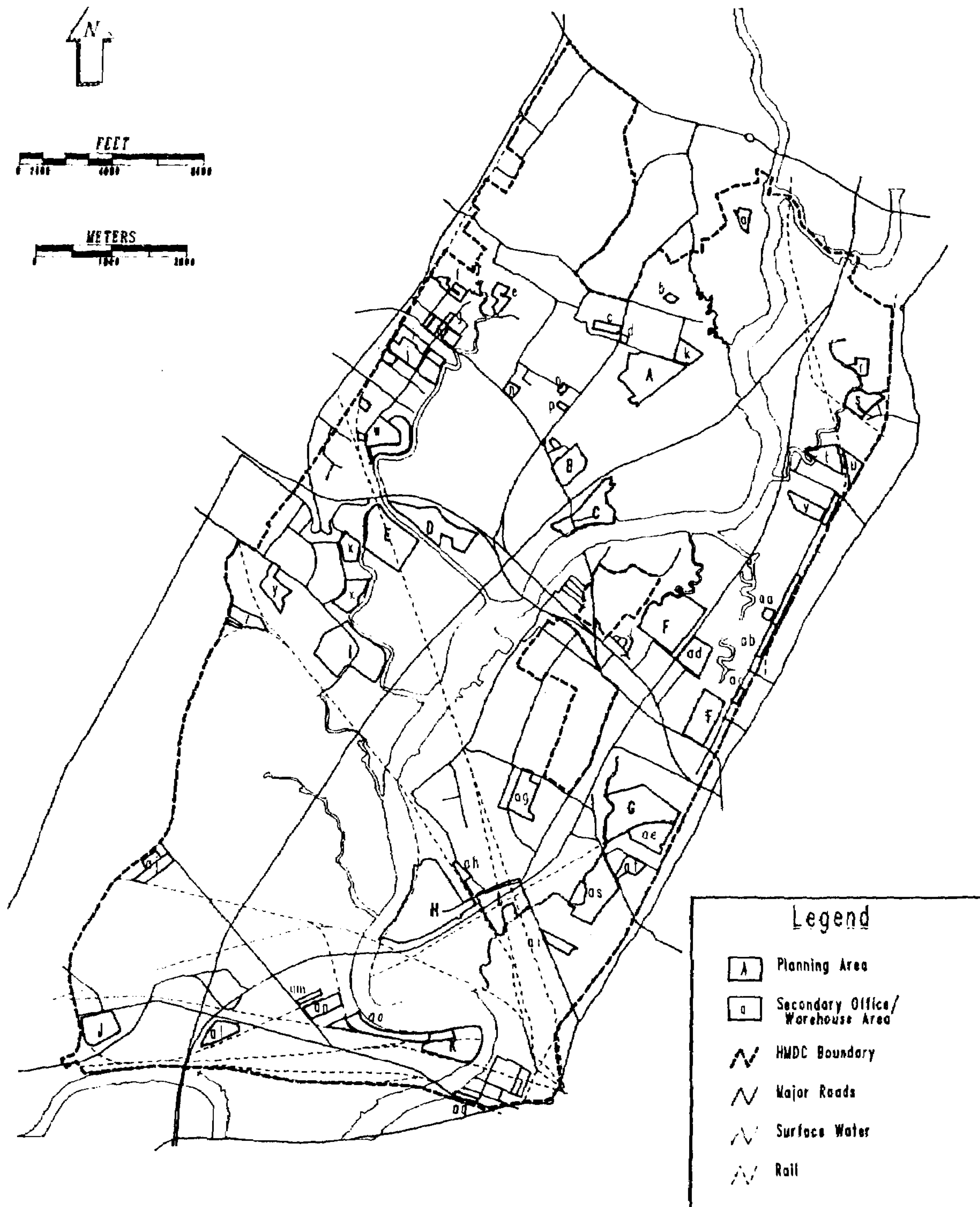
Table 1-3

ANTICIPATED LAND USES OF PLANNING AREAS

HIGHWAY CORRIDORS ALTERNATIVE

Planning Area	Size (Acres)	Primary Office Land Use (sq. ft.)	Commercial Land Use (sq. ft.)	Residential Land Use (units)
(D) Veterans Blvd	22	958,320		
(C) Arena	140	1,800,000		
(B) Sportsplex	78			3,120
(A) TAZ 92 (south)	32			1,280
(G) Bl.219A (Rutherford)	17	740,520		
	55			2,200
(F) East Ruth. Bl. 109	216			8,640
(E) Berrys Creek Center	65	4,247,100		
(H) Meadowlands Pkwy	35	1,524,600		
	22			880
(I) Plaza Center	17		370,260	
(J) Mill Creek	2		43,560	
	8	348,480		
(K) Chromakill Creek	65			2,600
	10	1,089,000		
	18		392,040	
(L) County Ave.	16		348,480	
	16	696,960		
(M) Secaucus I-495	10	653,400		
	28		609,840	
(N) Secaucus Pat Plank Rd.	17		370,260	
(O) SU - 2	142	6,185,520		
	28		609,840	
23-Jan-92	1,059	18,243,900	2,744,280	18,720

Secondary Office/Light Industrial/Warehousing land uses, in a variety of locations that are not within Planning Areas, total 16,300,000 square feet for this alternative.



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Date: 01-24-1992

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Figure 1-4

Dispersed Development Areas Alternative

Hackensack Meadowlands SAMP/EIS

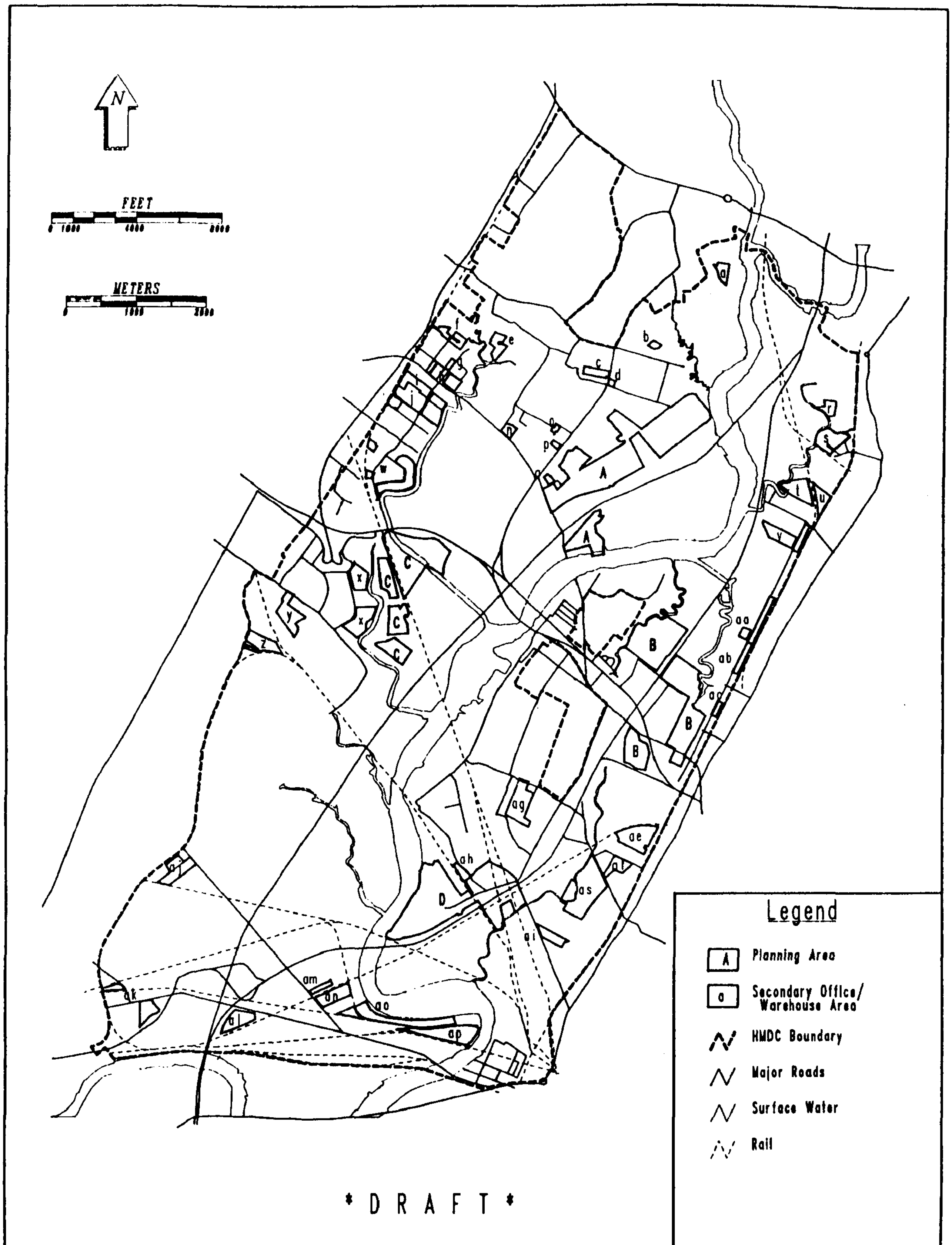
Table 1-4

ANTICIPATED LAND USES OF PLANNING AREAS

DISPERSED DEVELOPMENT AREAS ALTERNATIVE

Planning Area	Size (Acres)	Primary Office Land Use (sq. ft.)	Commercial Land Use (sq. ft.)	Residential Land Use (units)
(A) TAZ 92 (north)	81			3,240
(B) TAZ 92 (south)	32	1,393,920		
(C) Sportsplex	58			2,320
(D) Berrys Creek	65	2,831,400		
(E) Rutherford Bl. 109	70	3,049,200		
	20		435,600	
(F) Mill Creek	50	2,178,000		
	97			3,880
(G) SU - 2	92			3,680
(H) Laurel Hill	169			6,760
(J) Kearny West	37		805,860	
(L) Allied	28	4,878,720		
(K) Koppers Coke	28		609,840	
	39	1,698,840		
(I) PR - 2	58	2,526,480		
	20		435,600	
	27			1,080
23-Jan-92	971	18,556,560	2,286,900	20,960

Secondary Office/Light Industrial/Warehousing land uses, in a variety of locations that are not within Planning Areas, total 13,600,000 square feet for this alternative.



Date: 01-24-1992

Figure 1-5

Growth Centers Alternative

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Hackensack Meadowlands SAMP/EIS

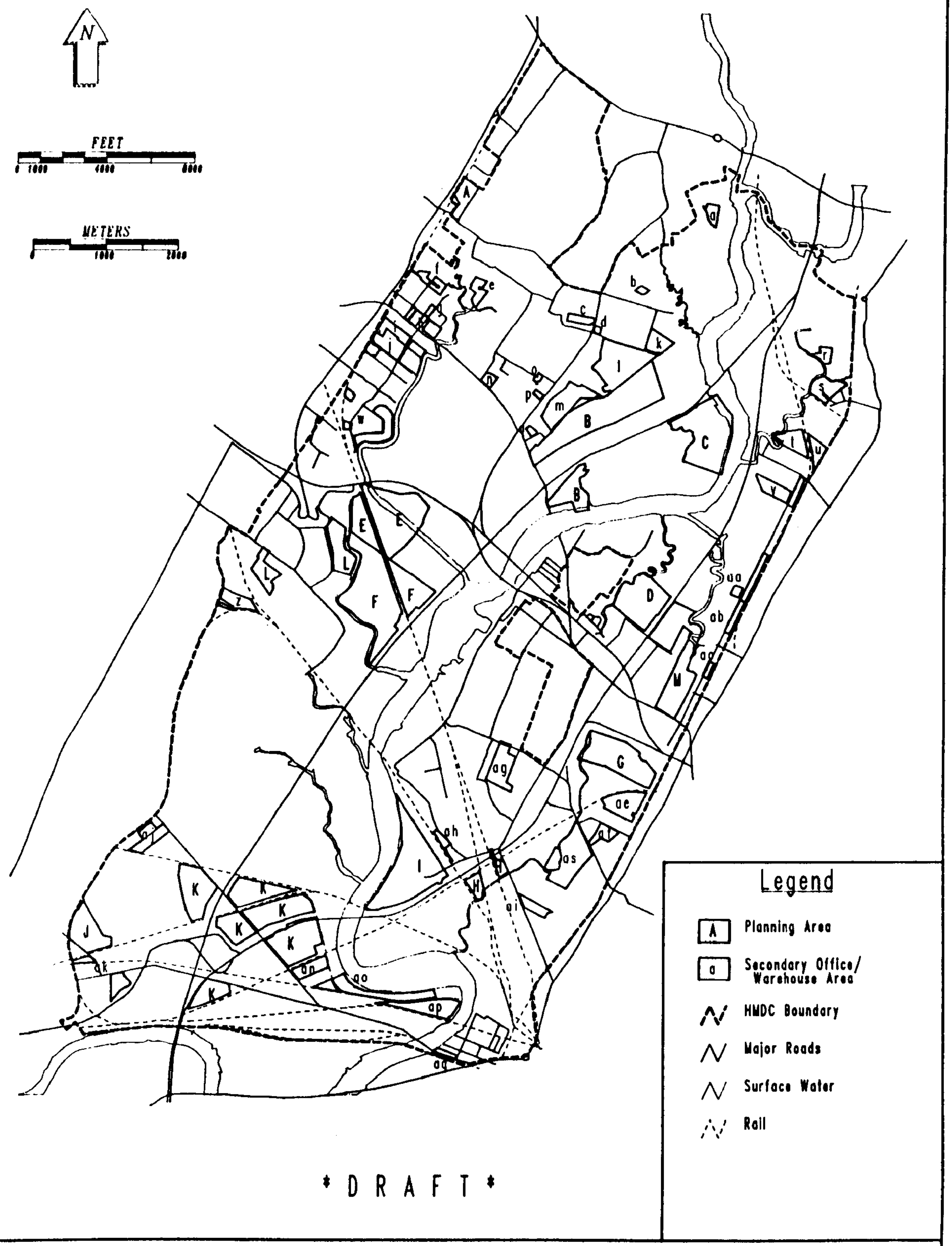
Table 1-5

ANTICIPATED LAND USES OF PLANNIN

GROWTH CENTERS ALTERNATIVE

Planning Area	Size (Acres)	Primary Office Land Use (sq. ft.)	Commercial Land Use (sq. ft.)	Residential Land Use (units)
(A) Empire Blvd Area	220			7,700
	69	3,005,640		
	62		1,350,360	
(B) Harmon Meadow Area	97			3,880
	67	2,918,520		
	63		1,372,140	
(D) Secaucus Transfer Area	20	4,356,000		
	63	2,744,280		
	169			6,760
(C) Berrys Creek Area	97			3,880
	86	5,619,240		
	10		217,800	
23-Jan-92	1,023	18,643,680	2,940,300	22,220

Secondary Office/Light Industrial/Warehousing land uses, in a variety of locations that are not within Planning Areas, total 16,300,000 square feet for this alternative.



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Date: 01-24-1992

Figure 1-6

No Action Alternative

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Hackensack Meadowlands SAMP/EIS

Table 1-6

ANTICIPATED LAND USES OF PLANNING AREAS

NO ACTION (NO SAMP) ALTERNATIVE

Planning Area	Size (Acres)	Primary Office Land Use (sq. ft.)	Commercial Land Use (sq. ft.)	Residential Land Use (units)
(A) Teterboro	23	500,940		
(B) IR-4	224			4,480
(B) IR-4	10		217,800	
(C) IR-3	147			2,940
(D) IR-2	87			1,740
(E) Berrys Creek	93	2,025,540		
(E) Berrys Creek	79		1,720,620	
(F) PR-2	226			7,910
(F) PR-2	10		217,800	
(G) SU-2	95	2,069,100		
(H) TC-3	22	479,160		
(I) PR-3	138			4,830
(I) PR-3	10		217,800	
(J) SU-1	76	1,655,280		
(K) SU-3	322	7,013,160		
(L) RD Park	73	1,568,160		
(M) HC Secaucus	133	2,896,740		
23-Jan-92	1,768	18,208,080	2,374,020	21,900

Secondary Office/Light Industrial/Warehousing land uses, in a variety of locations that are not within Planning Areas, total 15,524,784 square feet for this alternative.

Table 1-7

ANTICIPATED SIZE & ALTERNATIVE FOR SECONDARY OFFICE/WAREHOUSING AREAS

SECONDARY OFFICE, WAREHOUSING, & LIGHT INDUSTRIAL AREA
COMPONENTS OF IN-DISTRICT ALTERNATIVES

Secondary Office & & Warehousing Area	Size (Acres)	Warehousing & Office Areas in each Alternative (1)
a	10	GUSNHR
aa	18	GUSNHR
ab	9	GUSNHR
ac	4	GSNHR
ad	33	S
ae	38	GSNHR
af	15	GSNHR
ag	38	GSNHR
ah	7	GUSNHR
ai	13	GSNH
aj	26	GSNHR
ak	20	GUNH
al	22	GUSHR
am	5	GUSHR
an	20	GUSNHR
ao	47	GUSNHR
ap	41	GNHR
aq	5	SNH
ar	18	U
as	79	GUSNHR
b	3	GUSNHR
c	9	GUSNHR
d	2	GUSNHR
e	14	GUSNHR
f	13	GUSNHR
g	3	GUSNHR
h	18	GSNH
i	24	GSNH
j	48	GSNHR
k	19	USNHR
l	82	NHR
m	50	NHR
n	7	GSNH
o	2	GUSNHR
p	2	GUSNHR
q	3	GSNHR
r	10	GSNHR
s	26	GSNHR
t	26	GUSNHR
u	14	GUSNHR
v	28	GSNHR
w	36	GSNHR
x	45	GUSHR
y	28	GUSHR
z	22	GSNHR
23-Jan-92	1,001	

(1) NOTE: G-Growth Centers Alternative; U-Upland Alternative; S-Dispersed Development Areas Alt; N-No Action Alt; H-Highway Alt; R-Redevelopment Alt

2.0 WETLANDS

2.1 SCREENING-LEVEL IMPACT ASSESSMENT FOR IN-DISTRICT ALTERNATIVES

2.1.1 Method for Assessing Impacts

In order to assess impacts to wetlands in the District, an indexing system based on chemical, physical, and biological wetland characteristics was developed to track potential changes to wetlands for a range of growth alternatives. This indexing system provides a semi-quantitative measure of wetland characteristics currently present in the District, and allows for a measurement of impacts caused by potential changes to the wetland characteristics.

The wetland indexing method operates by assigning a numerical importance rank to wetland characteristics as they relate to four valuable wetland attributes: water quality improvement (WQ), wildlife habitat (WH), social significance (SS), and important (i.e. threatened or endangered species and remnant or unique) habitat (IH). Each wetland in the District is indexed on the basis of the presence or absence of these wetland characteristics. The indexing system provides an "index" for each attribute which indicates, on a scale of 0 to 100, how that wetland's characteristics compare to existing high quality wetlands in the Meadowlands. The index for each attribute is then multiplied by the area of the wetland (in acres) to arrive at a final attribute "score" for the wetland for each of the four attributes (i.e., "score" = "index" times acreage).

The list of wetland characteristics used to develop the indexing method is based on the questions used in the draft version of the Wetland Evaluation Technique (WET), developed by the USACE Waterways Experiment Station, and modified for the District. Of the initial list of more than 300 characteristics, over 190 are tracked in this wetland indexing system, including physical, hydrologic, biologic, and social parameters. The remaining characteristics that were not used were not applicable to wetland functioning in the District's wetlands. The wetlands characteristics present in the District under existing conditions (the "baseline" condition) were identified during the "Advanced Identification of Wetland Resources in the Hackensack Meadowlands, New Jersey" (AVID), conducted by USACE and USEPA. Wetlands comprising 92% of the District's wetland area were analyzed for the AVID, and this was considered a very effective database on which to base the impact analysis.

The alternatives screening tracks two types of wetland impacts using the wetland indexing system: direct and indirect. Direct impacts are those impacts directly associated with the filling of wetlands. The wetland indexing system tracks direct impacts by assuming that developed areas of a wetland are filled and lose all wetland characteristics. In other words, the developed area of a wetland ceases to be a wetland. Direct impacts to wetlands are tracked by reducing the baseline attribute score for a wetland based on the amount of wetland lost (i.e., the impact is the acreage of lost wetland multiplied by the existing attribute indexes).

Take, for example, a 100-acre wetland, whose existing WQ, WH, SS, and IH attribute indexes are 70, 60, 50, and 40 respectively. The baseline attribute scores for this wetland are 7,000 (WQ), 6,000 (WH), 5,000 (SS), and 4,000 (IH). Then assume that this wetland is to lose 25 acres as a result of development. The direct impact of this fill reduces the wetland's WQ attribute score by 1,750; the WH attribute score by 1,500; the SS attribute score by 1,250; and the IH attribute score by 1,000. The post-impact attribute scores, assuming only direct impacts to the wetland, would be 5,250 for the WQ attribute, 4,500 for the WH attribute, 3,750 for the SS attribute, and 3,000 for the IH attribute.

When part of a wetland is filled, however, the remaining wetlands are likely to experience secondary impacts from the new development. Wetlands adjacent to, and downstream from the development are also likely to experience impacts. Since these impacts are not caused by "direct" activity in the wetland area, they are termed "indirect" impacts. Indirect impacts to wetlands are measured in the alternatives screening process by evaluating potential changes to the wetland characteristics of remaining wetlands that are either adjacent to, or downstream of development areas. Using existing information regarding the possible effects of development on wetland characteristics, the possible changes to wetland characteristics in wetlands adjacent to, and downstream of development areas were assessed. For example, development upstream of a wetland often causes the water entering the wetland to become more channelized, with the introduction of storm discharges. This may also change the primary source of sediments, nutrients, and toxics to a wetland.

The wetlands near a development area that would experience changes in characteristics were re-indexed based on the changed set of characteristics. The revised attribute indexes were then multiplied by the acreage of the impacted wetland (i.e., if fill occurs in that wetland, the remaining acreage of the wetland), to determine the resulting, "post-impact" attribute scores for that wetland. In the example cited above, the indirect impacts might be assessed as follows:

> After examining the existing characteristics of the example wetland and assessing changes to these characteristics as a result of indirect impacts from the development, re-indexing of the wetland based on the changed characteristics results in "post-impact" WQ, WH, SS, and IH attribute indexes were 40, 40, 30, and 30, respectively (reduced from 70, 60, 50, and 40, respectively). Since only 75 acres of this wetland remain after construction directly impacts 25 acres, indirect impact of the development reduces the WQ attribute score by (2,250 = [70 - 40] * 75); the WH attribute score by (1,500 = [60 - 40] * 75); the SS attribute score by (1,500 = [50 - 30] * 75); and the IH attribute score by (750 = [40 - 30] * 75). Combining the direct and indirect impacts to the example wetland, the "post-impact" attribute scores would be 3,000 (WQ), 3,000 (WH), 2,250 (SS), and 2,250 (IH).

2.1.2 Results of Impact Screening

Table 2-1 summarizes the results of the wetland impact screening. The first two columns of table 2-1 present the total area of wetlands in the district that are affected by both direct impacts (i.e., wetland fill) and

TABLE 2-1
ALTERNATIVES COMPARISON--DIRECT AND INDIRECT WETLAND IMPACTS

	Total AA Acreage Direct	Total AA Acreage Indirect	Not Assessed Acreage Direct	Not Assessed Acreage Indirect	Attribute Scores (acre-points) Water Quality Improvement	Wildlife Habitat	Social Signi-ficance	Important Habitat
Baseline	8527.3		707.1		521445	592609	309522	294273
Upland								
Impact	(0.0)	(1532.7)	(0.0)	(45.0)	(19629)	(8034)	(27602)	(35994)
% Impact	0.0%	18.0%	0.0%	6.4%	3.8%	1.4%	8.9%	12.2%
Post-Impact	8527.3		707.1		501815	584575	281920	258278
Redevelopment								
Impact	(425.4)	(1887.4)	(32.3)	(38.0)	(67132)	(40950)	(59973)	(27123)
% Impact	5.0%	22.1%	4.6%	5.4%	12.9%	6.9%	19.4%	9.2%
Post-Impact	8101.9		674.8		454313	551660	249549	267150
Highway Corridors								
Impact	(978.2)	(1917.9)	(33.4)	(54.9)	(99574)	(72999)	(68903)	(55045)
% Impact	11.5%	22.5%	4.7%	7.8%	19.1%	12.3%	22.3%	18.7%
Post-Impact	7549.1		673.7		421870	519611	240619	239228
Dispersed Development Areas								
Impact	(793.9)	(2675.8)	(26.4)	(46.2)	(98942)	(82138)	(67786)	(57816)
% Impact	9.3%	31.4%	3.7%	6.5%	19.0%	13.9%	21.9%	19.6%
Post-Impact	7733.4		680.8		422503	510472	241737	236457
Growth Centers								
Impact	(885.6)	(2331.7)	(29.9)	(60.4)	(99956)	(71716)	(76817)	(59065)
% Impact	10.4%	27.3%	4.2%	8.5%	19.2%	12.1%	24.8%	20.1%
Post-Impact	7641.7		677.2		421488	520894	232705	235207
No Action								
Impact	(1625.0)	(3096.5)	(31.4)	(49.3)	(156502)	(130854)	(98160)	(96320)
% Impact	19.1%	36.3%	4.4%	7.0%	30.0%	22.1%	31.7%	32.7%
Post-Impact	6902.3		675.8		364943	461756	211362	197953

indirect impacts (i.e., changes in wetland characteristics due to nearby development) for each management alternative. The "Post-Impact" line for each alternative represents the total area of wetlands that will remain after the fill activity related to each alternative. There is no entry in the "Post-Impact" line for indirect impacts, as these wetlands will remain as wetlands; however, their functioning will be reduced. Because the Upland alternative precludes wetland fill, there is no direct impacts to wetlands for this alternative. However, there are indirect impacts to approximately 18% of the District's wetland area for the Upland alternative. The Redevelopment alternative has the next lowest direct and indirect wetland areal impacts, followed by the Highway Corridors, Growth Centers, and Dispersed Development Areas alternatives. The No Action alternative has the highest wetland areal impact.

The next two columns in table 2-1 present the area of direct and assumed indirect impacts to the subset of assessment areas which were not assessed in the AVID process (approximately 8% of the Districts wetland areas). These are wetlands for which no characteristic set is present and thus changes to these wetlands cannot be assessed in the wetland indexing system and are not reflected in the attribute scores. These impacts are measured only by areal extent.

The last four columns in table 2-1 present the changes to the wetland attributes scores, from both direct and indirect impacts. These attribute scores were calculated using the wetland indexing system described above. The impact screening analysis shows that the Upland alternative would cause the smallest change in the baseline score for the 4 attributes, and therefore, it can be considered to be the alternative which will cause the least impact to the wetlands in the District. The Redevelopment alternative is next in terms of the changes it will cause in the baseline attribute scores, while the Highway Corridors, Disperesed Development, and Growth Centers alternatives are all approximately the same. The latter three alternatives are all predicted to reduce the 4 baseline attribute scores by about the same amount (19% for Water Quality, 13% for Wildlife Habitat, 22-25% for Social Significance, and 20% for Important Habitat).

Finally, the No Action alternative will cause the largest decrease in all 4 attribute scores, and can therefore be considered to be the one with the largest negative impacts to the District's wetlands.

Tables 2-2 through 2-7 present the acreage and attribute score changes in each assessment area for the various management alternatives. The first column is the assessment area (AA) number assigned to the wetland during the AVID process. The next column identifies the planning areas (capital letters) or secondary office/warehousing areas (small letters) that impact the AA. The next column is the existing (baseline) acreage of the AA. The "Fill Acres" column was calculated by superimposing the map of AAs with the map of planning areas on the GIS. The next column is the remaining acreage after fill ("Total Acres" minus "Fill Acres"). The "Impact Type" reflects both the "status" of the AA (whether or not it was assessed as part of the AVID) and the type of impacts (direct, indirect, or both). An AA has direct impacts if there is any fill, and indirect impacts are indicated if there are changes to the wetland characteristics as a result of development. The remaining columns present the baseline attribute score, the post-impact attribute score, and the impact (change) for each attribute.

(ds/1969)

TABLE 2-2
UPLAND ALTERNATIVE--INDIRECT WETLAND IMPACTS

AANO	Planning Area	Total Acres	Fill Acres	Remain Acres	Impact Type	Water Quality Base	Water Quality Post	Score Impact	Wildlife Hab. Base	Wildlife Hab. Post	Score Impact	Social Sig. Base	Social Sig. Post	Score Impact	Important Hab. Base	Important Hab. Post	Score Impact
104	O	2.7	0.0	2.7	NI	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	(0)
106	K	5.7	0.0	5.7	NI	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	(0)
108	L,as	117.1	0.0	117.1	AI	9834	7024	(2810)	6907	5385	(1522)	4215	3863	(351)	0	0	(0)
112	L	12.2	0.0	12.2	AI	842	708	(134)	684	684	(0)	403	403	(0)	0	0	(0)
113	L	16.6	0.0	16.6	AI	1114	915	(200)	998	998	(0)	283	283	(0)	0	0	(0)
122	ak	4.0	0.0	4.0	NI	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	(0)
125	ak	1.9	0.0	1.9	NI	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	(0)
144	ao	8.8	0.0	8.8	NI	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	(0)
145	ao	8.3	0.0	8.3	AI	430	306	(124)	538	480	(58)	141	141	(0)	0	0	(0)
2 1	E	226.5	0.0	226.5	A	14040	14040	(0)	20381	20381	(0)	10870	10870	(0)	13156	13152	(4)
2 10	O	60.0	0.0	60.0	A	2882	2882	(0)	3843	3843	(0)	1981	1981	(0)	3172	2585	(587)
2 11	R,ao	274.7	0.0	274.7	A	16759	16759	(0)	21429	21429	(0)	8791	8791	(0)	20067	15080	(4987)
2 12	R	39.3	0.0	39.3	A	1533	1533	(0)	2044	2044	(0)	1101	1101	(0)	2736	2477	(258)
2 13	R	35.9	0.0	35.9	A	1399	1399	(0)	1865	1865	(0)	1435	1435	(0)	2469	2004	(464)
2 3	M,x	180.1	0.0	180.1	AI	12607	8825	(3782)	18010	15489	(2521)	13688	4142	(9545)	10489	957	(9532)
2 4	I,M,x	31.9	0.0	31.9	AI	2010	1563	(447)	2074	2074	(0)	734	734	(0)	1456	148	(1309)
2 5	M	9.2	0.0	9.2	A	536	536	(0)	610	610	(0)	0	0	(0)	119	102	(17)
2 8	O	868.8	0.0	868.8	A	69507	69507	(0)	79933	79933	(0)	79933	79933	(0)	10674	5654	(5020)
2 B	a	60.9	0.0	60.9	A	1583	1583	(0)	3228	3228	(0)	2436	2436	(0)	3878	3807	(71)
2 F	k	19.8	0.0	19.8	AI	1047	691	(356)	810	711	(99)	79	79	(0)	5	5	(0)
2 K	F	404.9	0.0	404.9	A	17410	17410	(0)	25103	25103	(0)	4859	4859	(0)	10077	100.	(19)
2 M	t	74.5	0.0	74.5	AI	6037	4546	(1491)	5739	4919	(820)	1342	1342	(0)	0	0	(0)
2 P	F	239.3	0.0	239.3	A	11246	11246	(0)	14595	14595	(0)	2871	2871	(0)	4128	2496	(1632)
2 Q	F	185.4	0.0	185.4	A	13347	13347	(0)	11122	11122	(0)	12234	12234	(0)	10037	8858	(1179)
2 R	G,aa,ab	215.7	0.0	215.7	AI	19846	14669	(5177)	16826	15100	(1726)	10786	0	(10786)	0	0	(0)
2 U	C,E	154.3	0.0	154.3	AI	4783	4783	(0)	9103	8949	(154)	7406	7406	(0)	8073	2902	(5170)
2 W	B	9.1	0.0	9.1	AI	648	612	(37)	511	511	(0)	0	0	(0)	0	0	(0)
2 Z	E	18.9	0.0	18.9	A	492	492	(0)	1098	1098	(0)	435	435	(0)	1003	113	(890)
208	I,M	8.5	0.0	8.5	AI	416	382	(34)	577	577	(0)	0	0	(0)	69	0	(69)
222	al	17.9	0.0	17.9	AI	1271	1020	(251)	1235	1110	(125)	0	0	(0)	0	0	(0)
24	D	17.3	0.0	17.3	AI	1210	1003	(207)	1089	1089	(0)	0	0	(0)	0	0	(0)
3 2	P	349.6	0.0	349.6	A	31116	31116	(0)	29368	29368	(0)	34962	34962	(0)	34962	33211	(1751)
3 6	am	74.2	0.0	74.2	AI	6824	5637	(1187)	5934	5414	(519)	6675	2967	(3709)	5266	3574	(1692)
3 8	an	23.4	0.0	23.4	A	2156	2156	(0)	1781	1781	(0)	1828	1828	(0)	1664	1443	(220)
301	F	58.1	0.0	58.1	AI	4645	4296	(348)	4006	4006	(0)	1510	1510	(0)	4113	3001	(1112)
33 A	A	13.4	0.0	13.4	AI	978	925	(54)	911	911	(0)	0	0	(0)	0	0	(0)
33 B	A	12.0	0.0	12.0	AI	825	765	(60)	837	837	(0)	0	0	(0)	0	0	(0)
39	aa	15.7	0.0	15.7	AI	1351	1084	(267)	1053	927	(126)	0	0	(0)	0	0	(0)
4 A	f	2.0	0.0	2.0	A	174	174	(0)	75	75	(0)	2	2	(0)	0	0	(0)
4 B	f	40.7	0.0	40.7	AI	3543	2525	(1018)	2891	2565	(326)	41	41	(0)	0	0	(0)
4 C	e,g	65.5	0.0	65.5	AI	5899	5571	(328)	4850	4850	(0)	3408	197	(3211)	0	0	(0)
4 D	D	222.2	0.0	222.2	AI	16664	15775	(889)	19774	19774	(0)	15330	15330	(0)	0	0	(0)
4 E	N	2.0	0.0	2.0	AI	88	80	(8)	120	120	(0)	0	0	(0)	0	0	(0)
4 F	N	7.4	0.0	7.4	AI	390	353	(37)	449	449	(0)	0	0	(0)	0	0	(0)
4 G	o,p	21.2	0.0	21.2	AI	1440	1356	(85)	1059	1059	(0)	360	360	(0)	0	0	(0)
40	G	3.4	0.0	3.4	NI	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	(0)
404	H	5.0	0.0	5.0	NI	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	(0)
422	O	2.5	0.0	2.5	NI	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	(0)
48	B	12.9	0.0	12.9	AI	1067	1002	(64)	694	655	(39)	0	0	(0)	0	0	(0)
501	d	3.4	0.0	3.4	NI	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	(0)
502	H	2.7	0.0	2.7	NI	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	(0)
58	H	2.0	0.0	2.0	NI	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	(0)
59	H	1.2	0.0	1.2	NI	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	(0)
6	ar	59.4	0.0	59.4	AI	2909	2671	(237)	3146	3146	(0)	2434	2434	(0)	1523	1512	(11)
73	P	1.7	0.0	1.7	NI	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	(0)
								(19629)			(8034)			(27602)			(35994)

	Direct	Indirect
Total acre	0.0	1532.7
NA acre	0.0	45.0

Impact type: AI = Assessed and Indirect only; AD = Assessed and Direct only; AB = Assessed and Both;
NI = Not assessed and Indirect only; ND = Not assessed and Direct only; NB = Not assessed and Both

NA = Not Assessed

TABLE 2-3
REDEVELOPMENT ALTERNATIVE--DIRECT & INDIRECT WETLAND IMPACTS

AANO	Planning Area	Total Acres	Fill Acres	Remain Acres	Impact Type	Water Quality Score Base	Water Quality Score Post	Water Quality Score Impact	Wildlife Hab. Score Base	Wildlife Hab. Score Post	Wildlife Hab. Score Impact	Social Sig. Score Base	Social Sig. Score Post	Social Sig. Score Impact	Important Hab. Score Base	Important Hab. Score Post	Important Hab. Score Impact
104	H	2.7	0.0	2.7	NI	NA	0	NA	NA	0	NA	NA	0	NA	0	0	(0)
106	ag	5.7	2.0	3.7	NB	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	(0)
108	G,as	117.1	58.1	59.0	AB	9834	3541	(6293)	6907	2891	(4016)	4215	1947	(2267)	0	0	(0)
112	ae	12.2	0.6	11.6	AB	842	753	(89)	684	649	(35)	403	382	(20)	0	0	(0)
113	ae	16.6	10.1	6.5	AB	1114	268	(846)	998	314	(684)	283	111	(172)	0	0	(0)
119	I	2.3	2.2	0.2	NB	NA	0	NA	NA	0	NA	NA	0	NA	0	0	(0)
122	I	4.0	4.0	0.0	NB	NA	0	NA	NA	0	NA	NA	0	NA	0	0	(0)
123	I	1.2	0.0	1.2	NB	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	(0)
125	I	1.9	1.8	0.1	NB	NA	0	NA	NA	0	NA	NA	0	NA	0	0	(0)
144	ao	8.8	7.2	1.7	NB	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	(0)
145	ao	8.3	7.7	0.6	AB	430	20	(410)	538	32	(506)	141	9	(131)	0	0	(0)
147	J	1.4	1.4	0.0	NB	NA	0	NA	NA	0	NA	NA	0	NA	0	0	(0)
16	B,w	7.2	0.1	7.2	NB	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	(0)
17	B	5.9	1.1	4.7	NB	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	(0)
18	B,w	4.0	2.6	1.4	AB	284	63	(221)	224	70	(154)	0	0	(0)	0	0	(0)
19	B	7.8	0.0	7.8	AI	489	349	(140)	458	419	(39)	0	0	(0)	0	0	(0)
2 1	E	226.5	0.0	226.5	A	14040	14040	(0)	20381	20381	(0)	10870	10870	(0)	13156	13036	(119)
2 11	ao	274.7	0.4	274.4	AD	16759	16735	(23)	21429	21399	(30)	8791	8779	(12)	20067	15080	(4987)
2 12	J,ap	39.3	0.0	39.3	A	1533	1533	(0)	2044	2044	(0)	1101	1101	(0)	2736	1223	(1512)
2 13	J	35.9	0.0	35.8	AD	1399	1398	(1)	1865	1864	(2)	1435	1434	(1)	2469	674	(1795)
2 3	x	180.1	30.9	149.2	AB	12607	7310	(5297)	18010	12829	(5181)	13688	3431	(10256)	10489	4154	(6335)
2 4	x	31.9	0.0	31.9	AI	2010	1467	(542)	2074	1882	(191)	734	734	(0)	1456	1343	(113)
2 B	K,a	60.9	0.5	60.4	AD	1583	1569	(14)	3228	3199	(29)	2436	2414	(22)	3878	494	(3384)
2 C	K	64.5	0.0	64.5	AD	1934	1934	(0)	3611	3610	(1)	1805	1805	(0)	2988	2203	(785)
2 E	l,m,q	465.0	119.0	346.[illegible]	AB	38132	20073	(18060)	33017	22149	(10868)	11161	8306	(2855)	2955	2955	(0)
2 F	k	19.8	12.1	7.7	AB	1047	268	(779)	810	276	(534)	79	31	(48)	5	5	(0)
2 K	D	404.9	0.0	404.9	A	17410	17410	(0)	25103	25103	(0)	4859	4859	(0)	10077	10066	(11)
2 M	D,t,v	74.5	27.9	46.6	AB	6037	2843	(3194)	5739	3076	(2663)	1342	792	(549)	0	0	(0)
2 R	aa	215.7	0.5	215.3	AB	19846	14637	(5209)	16826	15068	(1759)	10786	0	(10786)	0	0	(0)
2 U	N	154.3	0.5	153.8	AD	4783	4768	(15)	9103	9075	(28)	7406	7383	(23)	8073	5679	(2393)
2 Z	E	18.9	0.0	18.9	A	492	492	(0)	1098	1098	(0)	435	435	(0)	1003	723	(280)
201	q	1.9	1.8	0.1	NB	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	(0)
214	w	4.3	2.8	1.5	NB	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	(0)
220	ac	3.6	2.9	0.7	AB	156	27	(129)	69	12	(57)	0	0	(0)	0	0	(0)
222	al	17.9	10.2	7.7	AB	1271	441	(830)	1235	480	(755)	0	0	(0)	0	0	(0)
225	H	1.3	0.6	0.7	AB	76	24	(52)	46	18	(28)	0	0	(0)	0	0	(0)
226	I	2.7	2.4	0.3	NB	NA	0	NA	NA	0	NA	NA	0	NA	0	0	(0)
23	j	11.8	5.5	6.3	AB	787	270	(517)	717	346	(371)	0	0	(0)	0	0	(0)
24	A,j	17.3	17.2	0.1	AB	1210	4	(1207)	1089	4	(1085)	0	0	(0)	0	0	(0)
3 1	F,G,ae	173.6	1.1	172.5	AB	15276	11040	(4236)	11283	10005	(1278)	5728	0	(5728)	0	0	(0)
3 2	I,aj	349.6	0.0	349.6	AI	31116	22725	(8391)	29368	26222	(3147)	34962	17481	(17481)	34962	31466	(3496)
3 6	am	74.2	0.4	73.8	AB	6824	5607	(1216)	5934	5386	(548)	6675	2951	(3724)	5266	3574	(1692)
3 8	an	23.4	0.0	23.4	A	2156	2156	(0)	1781	1781	(0)	1828	1828	(0)	1664	1443	(220)
33 A	s	13.4	0.3	13.1	AB	978	744	(234)	911	797	(115)	0	0	(0)	0	0	(0)
33 B	C,s	12.0	0.8	11.2	AB	825	571	(253)	837	694	(142)	0	0	(0)	0	0	(0)
34	r	26.3	10.0	16.2	AB	1812	762	(1050)	1759	973	(786)	0	0	(0)	0	0	(0)
35	v	4.1	3.8	0.3	AD	239	16	(223)	170	11	(159)	0	0	(0)	0	0	(0)
37	v	1.2	1.0	0.2	AD	84	14	(69)	41	7	(34)	0	0	(0)	0	0	(0)
38 A	D,v	13.3	13.3	0.0	AB	1041	0	(1041)	920	0	(920)	227	0	(227)	0	0	(0)
39	aa	15.7	9.5	6.2	AB	1351	431	(921)	1053	368	(684)	0	0	(0)	0	0	(0)
4 A	f	2.0	1.8	0.2	AD	174	15	(159)	75	6	(69)	2	0	(2)	0	0	(0)
4 B	f	40.7	3.5	37.2	AB	3543	2306	(1237)	2891	2343	(548)	41	37	(4)	0	0	(0)
4 C	A,e,g	65.5	4.7	60.8	AB	5899	5168	(731)	4850	4499	(351)	3408	182	(3226)	0	0	(0)
4 D	A,w,j	222.2	35.3	186.9	AB	16664	13268	(3395)	19774	16632	(3142)	15330	12895	(2436)	0	0	(0)
4 E	A	2.0	0.1	1.9	AB	88	76	(12)	120	113	(7)	0	0	(0)	0	0	(0)
4 F	A	7.4	0.0	7.4	A	390	390	(0)	449	449	(0)	0	0	(0)	0	0	(0)
4 G	o,p	21.2	0.2	21.0	AB	1440	1345	(96)	1059	1051	(9)	360	357	(3)	0	0	(0)
401	A	2.3	0.1	2.2	NB	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	(0)
404	z	5.0	1.9	3.1	NB	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	(0)
410	w	0.6	0.0	0.6	NB	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	(0)
420	D	0.8	0.0	0.8	NI	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	(0)
421	D	1.1	0.0	1.1	NI	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	(0)
422	H	2.5	1.7	0.8	NB	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	(0)
501	d	3.4	1.7	1.7	NB	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	(0)
502	z	2.7	0.0	2.7	NI	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	(0)
58	z	2.0	0.2	1.8	NB	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	(0)
								(67132)			(40950)			(59973)			(27123)

	Direct	Indirect
Total acre	425.4	1887.4
NA acre	32.3	38.0

Impact type: AI = Assessed and Indirect only; AD = Assessed and Direct only; AB = Assessed and Both;
NI = Not assessed and Indirect only; ND = Not assessed and Direct only; NB = Not assessed and Both

NA = Not Assessed

TABLE 2-4
HIGHWAY CORRIDORS ALTERNATIVE--DIRECT AND INDIRECT WETLAND IMPACTS

AANO	Planning Area	Total Acres	Fill Acres	Remain Acres	Impact Type	Water Quality Score			Wildlife Hab. Score			Social Sig. Score			Important Hab. Score		
						Base	Post	Impact	Base	Post	Impact	Base	Post	Impact	Base	Post	Impact
106	ag	5.7	2.0	3.7	NB	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	(0)
108	O,ai,as	117.1	60.6	56.5	AB	9834	3391	(6443)	6907	2769	(4138)	4215	1865	(2349)	0	0	(0)
112	ae	12.2	0.6	11.6	AB	842	753	(89)	684	649	(35)	403	382	(20)	0	0	(0)
113	O,ae	16.6	16.0	0.6	AB	1114	25	(1089)	998	29	(969)	283	10	(272)	0	0	(0)
122	ak	4.0	1.9	2.2	NB	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	(0)
125	ak	1.9	1.3	0.6	NB	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	(0)
144	ao	8.8	7.2	1.7	NB	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	(0)
145	ao	8.3	7.7	0.6	AB	430	20	(410)	538	32	(506)	141	9	(131)	0	0	(0)
147	aq	1.4	1.4	0.0	NB	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	(0)
16	w	7.2	0.1	7.2	NB	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	(0)
17	D	5.9	0.0	5.8	NB	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	(0)
18	w	4.0	2.6	1.4	AB	284	63	(221)	224	70	(154)	0	0	(0)	0	0	(0)
19	D	7.8	0.0	7.8	AI	489	396	(93)	458	458	(0)	0	0	(0)	0	0	(0)
2 1	H	226.5	2.5	224.0	AD	14040	13886	(154)	20381	20157	(223)	10870	10751	(119)	13156	10987	(2168)
2 11	ao	274.7	0.4	274.4	AD	16759	16735	(23)	21429	21399	(30)	8791	8779	(12)	20067	15080	(4987)
2 12	ap	39.3	0.0	39.3	A	1533	1533	(0)	2044	2044	(0)	1101	1101	(0)	2736	1223	(1512)
2 13	aq	35.9	0.1	35.8	AD	1399	1395	(4)	1865	1860	(6)	1435	1430	(4)	2469	628	(1840)
2 2	F,G	97.2	4.8	92.3	AB	6315	5540	(776)	8259	7848	(411)	1166	1108	(58)	6898	3276	(3622)
2 3	G,x	180.1	62.3	117.8	AB	12607	5774	(6833)	18010	10133	(7877)	13688	2710	(10978)	10489	3197	(7292)
2 4	x	31.9	0.0	31.9	AI	2010	1467	(542)	2074	1882	(191)	734	734	(0)	1456	1343	(113)
2 4A	F,G	19.0	18.5	0.5	AB	1081	0	(1081)	1480	0	(1480)	228	0	(228)	1347	0	(1347)
2 B	a	60.9	0.0	60.9	A	1583	1583	(0)	3228	3228	(0)	2436	2436	(0)	3878	3807	(71)
2 E	A,l,m,q	465.0	149.6	315.4	AB	38132	18294	(19839)	33017	20186	(12831)	11161	7570	(3591)	2955	1361	(1594)
2 F	k	19.8	12.1	7.7	AB	1047	268	(779)	810	276	(534)	79	31	(48)	5	5	(0)
2 M	t,v	74.5	17.8	56.7	AB	6037	3461	(2576)	5739	3744	(1995)	1342	1021	(320)	0	0	(0)
2 Q	J	185.4	0.0	185.4	A	13347	13347	(0)	11122	11122	(0)	12234	12234	(0)	10037	7836	(2202)
2 R	K,aa-ac	215.7	4.0	211.7	AB	19846	14396	(5451)	16826	14819	(2007)	10786	0	(10786)	0	0	(0)
2 T	B	90.6	36.7	53.9	AB	4712	2209	(2503)	3262	1724	(1538)	1541	916	(624)	0	0	(0)
2 U	B,H	154.3	27.2	127.1	AD	4783	3941	(842)	9103	7501	(1602)	7406	6102	(1304)	8073	1200	(6873)
2 V	B,C	17.6	2.2	15.4	AB	1214	707	(507)	1091	800	(291)	0	0	(0)	0	0	(0)
2 W	C	9.1	3.6	5.5	AB	648	286	(362)	511	253	(258)	0	0	(0)	0	0	(0)
2 X	F	101.4	101.4	0.0	AB	4664	0	(4664)	1724	0	(1724)	1217	0	(1217)	7199	0	(7199)
2 YA	F	7.2	7.0	0.2	AB	376	0	(376)	87	0	(87)	0	0	(0)	0	0	(0)
2 YB	F	11.4	5.9	5.5	AB	685	230	(454)	856	362	(494)	0	0	(0)	0	0	(0)
2 Z	B,C,H	18.9	1.3	17.6	AD	492	458	(34)	1098	1021	(77)	435	405	(30)	1003	0	(1003)
20	D	4.0	2.4	1.6	NB	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	(0)
200	B	9.1	0.0	9.1	A	508	508	(0)	118	118	(0)	0	0	(0)	0	0	(0)
201	q	1.9	1.8	0.1	NB	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	(0)
214	w	4.3	2.8	1.5	NB	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	(0)
215	D	4.9	4.8	0.1	NB	NA	0	NA	NA	0	NA	NA	0	NA	0	0	(0)
216	D	10.3	0.0	10.3	NI	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	(0)
218	G	0.7	0.1	0.6	NB	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	(0)
22	F	6.3	0.0	6.3	NI	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	(0)
220	ac	3.6	2.9	0.7	AB	156	27	(129)	69	12	(57)	0	0	(0)	0	0	(0)
222	al	17.9	10.2	7.7	AB	1271	441	(830)	1235	480	(755)	0	0	(0)	0	0	(0)
23	j	11.8	5.5	6.3	AB	787	270	(517)	717	346	(371)	0	0	(0)	0	0	(0)
24	j	17.3	16.9	0.4	AB	1210	18	(1192)	1089	22	(1067)	0	0	(0)	0	0	(0)
3 1	O,ae	173.6	154.0	19.6	AB	15276	1075	(14201)	11283	919	(10365)	5728	645	(5083)	0	0	(0)
3 2	aj	349.6	0.0	349.6	AI	31116	23425	(7692)	29368	26571	(2797)	34962	17481	(17481)	34962	33322	(1640)
3 6	am	74.2	0.4	73.8	AB	6824	5607	(1216)	5934	5386	(548)	6675	2951	(3724)	5266	3574	(1692)
3 8	an	23.4	0.0	23.4	A	2156	2156	(0)	1781	1781	(0)	1828	1828	(0)	1664	1443	(220)
303	F	67.7	67.7	0.0	AB	4402	0	(4402)	5825	0	(5825)	4132	0	(4132)	4809	0	(4809)
304	E,F	96.6	43.4	53.3	AB	5315	2716	(2599)	8408	4420	(3988)	1160	639	(521)	4861	0	(4861)
33 A	s	13.4	0.3	13.1	AB	978	744	(234)	911	797	(115)	0	0	(0)	0	0	(0)
33 B	s	12.0	0.7	11.2	AB	825	572	(253)	837	695	(141)	0	0	(0)	0	0	(0)
34	r	26.3	10.0	16.2	AB	1812	762	(1050)	1759	973	(786)	0	0	(0)	0	0	(0)
35	v	4.1	3.8	0.3	AD	239	16	(223)	170	11	(159)	0	0	(0)	0	0	(0)
37	v	1.2	1.0	0.2	AD	84	14	(69)	41	7	(34)	0	0	(0)	0	0	(0)
38 A	v	13.3	11.9	1.4	AB	1041	84	(956)	920	83	(838)	227	25	(202)	0	0	(0)
39	aa	15.7	9.5	6.2	AB	1351	431	(921)	1053	368	(684)	0	0	(0)	0	0	(0)
4 A	f	2.0	1.8	0.2	AD	174	15	(159)	75	6	(69)	2	0	(2)	0	0	(0)
4 B	f	40.7	3.5	37.2	AB	3543	2306	(1237)	2891	2343	(548)	41	37	(4)	0	0	(0)
4 C	e,g,h	65.5	6.7	58.8	AB	5899	4999	(900)	4850	4352	(498)	3408	176	(3232)	0	0	(0)
4 D	w,j	222.2	35.2	187.0	AB	16664	13277	(3387)	19774	16643	(3131)	15330	12903	(2427)	0	0	(0)
4 F	n	7.4	0.7	6.6	AB	390	318	(72)	449	404	(45)	0	0	(0)	0	0	(0)
4 G	o,p	21.2	0.2	21.0	AB	1440	1345	(96)	1059	1051	(9)	360	357	(3)	0	0	(0)
40	K	3.4	0.3	3.1	NB	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	(0)
401	h	2.3	2.1	0.2	NB	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	(0)
404	z	5.0	1.9	3.1	NB	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	(0)
410	w	0.6	0.0	0.6	NB	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	(0)
48	C	12.9	12.9	0.0	AB	1067	0	(1067)	694	0	(694)	0	0	(0)	0	0	(0)
501	d	3.4	1.7	1.7	NB	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	(0)
502	z	2.7	0.0	2.7	NI	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	(0)
505	E	0.5	0.5	0.0	AB	28	0	(28)	21	0	(21)	0	0	(0)	0	0	(0)
58	z	2.0	0.2	1.8	NB	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	(0)
73	K	1.7	1.6	0.1	NB	NA	0	NA	NA	0	NA	NA	0	NA	0	0	(0)
								(99574)			(72999)			(68903)			(55045)

	Direct	Indirect
Total acre	978.2	1917.9
NA acre	33.4	54.9

Impact type: AI = Assessed and Indirect only; AD = Assessed and Direct only; AB = Assessed and Both;
NI = Not assessed and Indirect only; ND = Not assessed and Direct only; NB = Not assessed and Both

NA = Not Assessed

TABLE 2-5
DISPERSED DEVELOPMENT ALTERNATIVE--DIRECT AND INDIRECT WETLAND IMPACTS

AANO	Planning Area	Total Acres	Fill Acres	Remain Acres	Impact Type	Water Quality Score Base	Water Quality Score Post	Water Quality Score Impact	Wildlife Hab. Score Base	Wildlife Hab. Score Post	Wildlife Hab. Score Impact	Social Sig. Score Base	Social Sig. Score Post	Social Sig. Score Impact	Important Hab. Score Base	Important Hab. Score Post	Important Hab. Score Impact
100	L	22.1	0.0	22.1	AI	1614	1238	(376)	1260	1150	(111)	376	376	(0)	0	0	(0)
104	H	2.7	2.4	0.4	NB	NA	0	NA	NA	0	NA	NA	0	NA	0	0	(0)
106	ag	5.7	2.0	3.7	NB	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	(0)
108	G,al,as	117.1	60.6	56.5	AB	9834	3391	(6443)	6907	2769	(4138)	4215	1865	(2349)	0	0	(0)
112	ae	12.2	0.6	11.6	AB	842	753	(89)	684	649	(35)	403	382	(20)	0	0	(0)
113	G,ae	16.6	16.0	0.6	AB	1114	25	(1089)	998	29	(969)	283	10	(272)	0	0	(0)
119	J	2.3	0.8	1.5	NB	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	(0)
125	J	1.9	0.0	1.9	NI	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	(0)
144	ao	8.8	7.2	1.7	NB	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	(0)
145	ao	8.3	7.7	0.6	AB	430	20	(410)	538	32	(506)	141	9	(131)	0	0	(0)
147	aq	1.4	1.4	0.0	NB	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	(0)
16	w	7.2	0.1	7.2	NB	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	(0)
18	w	4.0	2.6	1.4	AB	284	63	(221)	224	70	(154)	0	0	(0)	0	0	(0)
2 10	H	60.0	0.0	60.0	A	2882	2882	(0)	3843	3843	(0)	1981	1981	(0)	3172	2585	(587)
2 11	K,ao	274.7	0.5	274.3	AB	16759	13439	(3320)	21429	19198	(2231)	8791	8776	(15)	20067	11846	(8221)
2 12	X	39.3	0.3	39.0	AB	1533	1054	(479)	2044	1834	(210)	1101	1093	(8)	2736	392	(2344)
2 13	K,aq	35.9	0.1	35.8	AB	1399	966	(433)	1865	1681	(185)	1435	1430	(4)	2469	623	(1846)
2 2	Z	97.2	6.1	91.1	AD	6315	5918	(397)	8259	7739	(519)	1166	1093	(73)	6898	5603	(1296)
2 3	E,I,x	180.1	65.0	115.1	AB	12607	5639	(6968)	18010	9897	(8113)	13688	2647	(11041)	10489	2	(10487)
2 4	I,x	31.9	2.7	29.2	AB	2010	1342	(668)	2074	1721	(352)	734	671	(63)	1456	0	(1456)
2 4A	E	19.0	17.5	1.4	AB	1081	82	(1000)	1480	103	(1377)	228	17	(210)	1347	0	(1347)
2 5	I	9.2	0.0	9.2	A	536	536	(0)	610	610	(0)	0	0	(0)	119	101	(18)
2 8	H	868.8	8.1	860.7	AD	69507	68857	(650)	79933	79185	(748)	79933	79185	(748)	60374	55354	(5020)
2 B	a	60.9	0.0	60.9	A	1583	1583	(0)	3228	3228	(0)	2436	2436	(0)	3878	3807	(71)
2 E	A,B,q	465.0	106.5	358.6	AB	38132	20796	(27336)	33017	8605	(24412)	11161	8605	(2555)	2955	1381	(1573)
2 F	A,k	19.8	12.1	7.7	AB	1047	268	(779)	810	276	(534)	79	31	(48)	5	5	(0)
2 G	A,B	44.4	0.0	44.4	A	3196	3196	(0)	2441	2441	(0)	888	888	(0)	134	134	(0)
2 M	t,v	74.5	17.8	56.7	AB	6037	3461	(2576)	5739	3744	(1995)	1342	1021	(320)	0	0	(0)
2 Q	F,ad	185.4	96.1	89.2	AB	13347	4729	(8617)	11122	4729	(6393)	12234	3621	(6613)	10037	1894	(8144)
2 R	F,aa-ac	215.7	1.4	214.4	AB	19846	14576	(5270)	16826	15005	(1821)	10786	0	(10786)	0	0	(0)
2 S	F	14.3	0.1	14.2	NB	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	(0)
2 T	C	90.6	38.1	52.6	AB	4712	1997	(2715)	3261	1682	(1580)	1541	894	(647)	0	0	(0)
2 U	C	154.3	10.6	143.7	AB	4783	4167	(616)	9103	8478	(625)	7406	6898	(508)	8073	4526	(3547)
2 V	C	17.6	0.1	17.5	AD	1214	1210	(4)	1091	1087	(4)	0	0	(0)	0	0	(0)
2 X	D,E	101.4	25.8	75.6	AB	4664	3098	(1566)	1724	1058	(666)	1217	907	(310)	7199	4015	(3184)
200	C	9.1	0.1	8.9	AB	508	286	(222)	118	98	(20)	0	0	(0)	0	0	(0)
201	q	1.9	1.8	0.1	NB	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	(0)
208	I	8.5	2.9	5.6	AD	416	275	(141)	577	381	(196)	0	0	(0)	69	0	(69)
214	w	4.3	2.8	1.5	NB	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	(0)
220	ac	3.6	2.9	0.7	AB	156	27	(129)	69	12	(57)	0	0	(0)	0	0	(0)
222	al	17.9	10.2	7.7	AB	1271	441	(830)	1235	480	(755)	0	0	(0)	0	0	(0)
225	L	1.3	1.3	0.0	AB	76	0	(76)	46	0	(46)	0	0	(0)	0	0	(0)
23	J	11.8	5.5	6.3	AB	787	270	(517)	717	346	(371)	0	0	(0)	0	0	(0)
24	J	17.3	16.9	0.4	AB	1210	18	(1192)	1089	22	(1067)	0	0	(0)	0	0	(0)
3 1	G,ae	173.6	84.0	89.6	AB	15276	5194	(10082)	11283	5104	(6179)	5728	2955	(2773)	0	0	(0)
3 2	aj	349.6	0.0	349.6	AI	31116	23425	(7692)	29368	26571	(2797)	34962	17481	(17481)	34962	33322	(1640)
3 6	am	74.2	0.4	73.8	AB	6824	5607	(1216)	5934	5386	(548)	6675	2951	(3724)	5266	3574	(1692)
3 8	an	23.4	0.0	23.4	A	2156	2156	(0)	1781	1781	(0)	1828	1828	(0)	1664	1443	(220)
301	F	38.1	0.0	38.1	AI	4645	3600	(1045)	4006	3600	(406)	1510	1510	(0)	4113	4113	(0)
303	E	67.7	3.5	64.2	AD	4402	4176	(227)	5825	5525	(300)	4132	3919	(213)	4809	3952	(857)
304	D,E	96.6	37.2	59.4	AB	5315	3268	(2047)	8408	4932	(3476)	1160	713	(447)	4861	665	(4196)
33 A	s	13.4	0.3	13.1	AB	978	744	(234)	911	797	(115)	0	0	(0)	0	0	(0)
33 B	s	12.0	0.7	11.2	AB	825	572	(253)	837	695	(141)	0	0	(0)	0	0	(0)
34	r	26.3	10.0	16.2	AB	1812	762	(1050)	1759	973	(786)	0	0	(0)	0	0	(0)
35	v	4.1	3.8	0.3	AD	239	16	(223)	170	11	(159)	0	0	(0)	0	0	(0)
37	v	1.2	1.0	0.2	AD	84	14	(69)	41	7	(34)	0	0	(0)	0	0	(0)
38 A	v	13.3	11.9	1.4	AB	1041	84	(956)	920	83	(838)	227	25	(202)	0	0	(0)
39	aa	15.7	9.5	6.2	AB	1351	431	(921)	1053	368	(684)	0	0	(0)	0	0	(0)
4 A	f	2.0	1.8	0.2	AD	174	15	(159)	75	6	(69)	2	0	(2)	0	0	(0)
4 B	f	40.7	3.5	37.2	AB	3543	2306	(1237)	2891	2343	(548)	41	37	(4)	0	0	(0)
4 C	e,g,h	65.5	6.7	58.8	AB	5899	4999	(900)	4850	4352	(498)	3408	176	(3232)	0	0	(0)
4 D	w,j	222.2	35.2	187.0	AB	16664	13277	(3387)	19774	16643	(3131)	15330	12903	(2427)	0	0	(0)
4 F	n	7.4	0.7	6.6	AB	390	318	(72)	449	404	(45)	0	0	(0)	0	0	(0)
4 G	o,p	21.2	0.2	21.0	AB	1440	1345	(96)	1059	1051	(9)	360	357	(3)	0	0	(0)
40	ad	3.4	0.4	3.0	NB	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	(0)
401	h	2.3	2.1	0.2	NB	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	(0)
404	z	5.0	1.9	3.1	NB	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	(0)
410	w	0.6	0.0	0.6	NB	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	(0)
422	H	2.5	1.6	0.9	NB	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	(0)
501	d	3.4	1.7	1.7	NB	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	(0)
502	z	2.7	0.0	2.7	NI	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	(0)
504	D	0.2	0.0	0.2	NI	NA	0	NA	NA	0	NA	NA	0	NA	0	0	(0)
505	D	0.5	0.5	0.0	AB	28	0	(28)	21	0	(21)	0	0	(0)	0	0	(0)
58	z	2.0	0.2	1.8	NB	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	(0)
91	L	2.3	2.2	0.1	AB	132	0	(132)	75	0	(75)	0	0	(0)	0	0	(0)
92	L	2.0	2.0	0.0	AB	111	0	(111)	38	0	(38)	0	0	(0)	0	0	(0)
97	L	13.8	0.0	13.8	AI	1088	757	(330)	578	509	(59)	689	689	(0)	0	0	(0)
98	L	4.9	0.0	4.9	AI	262	238	(24)	49	49	(0)	160	160	(0)	0	0	(0)
99	L	28.0	16.3	11.7	AB	1707	386	(1321)	1511	527	(985)	952	398	(554)	0	0	(0)
								(98942)			(82138)			(67786)			(57816)

	Direct	Indirect
Total acre	793.9	2675.8
NA acre	26.4	46.2

Impact type: AI = Assessed and Indirect only; AD = Assessed and Direct only; AB = Assessed and Both;
NI = Not assessed and Indirect only; ND = Not assessed and Direct only; NB = Not assessed and Both

NA = Not Assessed

TABLE 2-6
GROWTH CENTERS ALTERNATIVE--DIRECT AND INDIRECT WETLAND IMPACTS

AANO	Planning Area	Total Acres	Fill Acres	Remain Acres	Impact Type	Water Quality Base	Water Quality Post	Water Quality Score Impact	Wildlife Hab. Base	Wildlife Hab. Post	Wildlife Hab. Score Impact	Social Sig. Base	Social Sig. Post	Social Sig. Score Impact	Important Hab. Base	Important Hab. Post	Important Hab. Score Impact
104	D	2.7	2.4	0.4	NB	NA	0	NA	NA	0	NA	NA	0	NA	0	0	(0)
106	ag	5.7	2.0	3.7	NB	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	(0)
108	D,ai,as	117.1	60.6	56.5	AB	9835	3392	(6443)	6908	2770	(4138)	4215	1865	(2349)	0	0	(0)
112	ae	12.2	0.6	11.6	AB	842	753	(89)	684	649	(35)	403	382	(20)	0	0	(0)
113	ae	16.6	10.1	6.5	AB	1114	268	(846)	998	314	(684)	283	111	(172)	0	0	(0)
122	ak	4.0	1.9	2.2	NB	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	(0)
125	ak	1.9	1.3	0.6	NB	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	(0)
144	ao	8.8	7.2	1.7	NB	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	(0)
145	ao	8.3	7.7	0.6	AB	430	20	(410)	538	32	(506)	141	9	(131)	0	0	(0)
16	w	7.2	0.1	7.2	NB	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	(0)
18	w	4.0	2.6	1.4	AB	284	63	(221)	224	70	(154)	0	0	(0)	0	0	(0)
2 2	C	97.2	48.2	49.0	AB	6315	2794	(3522)	8259	3774	(4485)	1166	588	(578)	6898	6	(6893)
2 3	C	180.1	3.1	177.0	AB	12607	11505	(1102)	18010	17700	(310)	13688	4602	(9086)	10489	5262	(5227)
2 4A	C	19.0	8.1	10.9	AB	1081	501	(580)	1480	763	(717)	228	131	(97)	1347	0	(1347)
2 8	D	868.8	0.0	868.8	A	69507	69507	(0)	79933	79933	(0)	79933	79933	(0)	60374	55839	(4535)
2 10	D	60.0	0.0	60.0	A	2882	2882	(0)	3843	3843	(0)	1981	1981	(0)	3172	2549	(623)
2 11	ao	274.7	0.4	274.4	AD	16759	16735	(23)	21429	21399	(30)	8791	8779	(12)	20067	15080	(4987)
2 12	ap	39.3	0.0	39.3	A	1533	1533	(0)	2044	2044	(0)	1101	1101	(0)	2736	1223	(1512)
2 3	x	180.1	30.9	149.2	AB	12607	7310	(5297)	18010	12829	(5181)	13688	3431	(10256)	10489	4154	(6335)
2 4	x	31.9	0.0	31.9	AI	2010	1467	(542)	2074	1882	(191)	734	734	(0)	1456	[illegible]	(113)
2 B	a	60.9	0.0	60.9	A	1583	1583	(0)	3228	3228	(0)	2436	2436	(0)	3878	3807	(71)
2 E	A,q	465.0	259.7	205.3	AB	38132	11704	(26428)	33017	13142	(19875)	11161	4928	(6233)	2955	228	(2727)
2 F	A	19.8	6.2	13.5	AB	1047	473	(574)	810	540	(269)	79	54	(25)	5	0	(5)
2 G	A	44.4	21.7	22.7	AB	3196	978	(2218)	2441	1023	(1418)	888	455	(433)	134	0	(134)
2 H	A	99.8	0.5	99.3	AD	3293	3278	(16)	5489	5463	(26)	1198	1192	(6)	3693	2268	(1425)
2 M	t,v	74.5	17.8	56.7	AB	6037	3461	(2576)	5739	3744	(1995)	1342	1021	(320)	0	0	(0)
2 N	A	29.2	1.9	27.4	AB	1315	1122	(193)	1403	1313	(89)	701	657	(45)	126	84	(41)
2 Q	B	185.4	96.2	89.2	AB	13347	5174	(8173)	11122	4728	(6395)	12234	5620	(6615)	10037	1890	(8147)
2 R	B,aa-ac	215.7	5.9	209.9	AB	19846	14270	(5576)	16826	14690	(2137)	10786	0	(10786)	0	0	(0)
2 S	B	14.3	0.1	14.2	NB	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	(0)
2 T	A	90.6	38.1	52.6	AB	4712	2470	(2242)	3262	1840	(1423)	1541	894	(647)	0	0	(0)
2 U	A	154.3	2.1	152.2	AD	4783	4717	(66)	9103	8977	(126)	7406	7304	(102)	8073	5414	(2659)
2 X	C	101.4	26.2	75.2	AB	4664	2633	(2031)	1724	903	(821)	1217	903	(314)	7199	4047	(3152)
20	A	4.0	0.0	4.0	NI	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	(0)
200	A	9.1	0.1	8.9	AD	508	500	(8)	118	116	(2)	0	0	(0)	0	0	(0)
201	q	1.9	1.8	0.1	NB	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	(0)
202	A	5.0	0.0	5.0	A	282	282	(0)	65	65	(0)	0	0	(0)	0	0	(0)
214	w	4.3	2.8	1.5	NB	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	(0)
218	C	0.7	0.0	0.7	NI	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	(0)
219	B	2.6	0.0	2.6	NI	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	(0)
22	B	6.3	0.0	6.3	NI	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	(0)
220	ac	3.6	2.9	0.7	AB	156	27	(129)	69	12	(57)	0	0	(0)	0	0	(0)
222	al	17.9	10.2	7.7	AB	1271	441	(830)	1235	480	(755)	0	0	(0)	0	0	(0)
225	D	1.3	1.3	0.0	AB	76	0	(76)	46	0	(46)	0	0	(0)	0	0	(0)
23	j	11.8	5.5	6.3	AB	787	270	(517)	717	346	(371)	0	0	(0)	0	0	(0)
24	j	17.3	16.9	0.4	AB	1210	18	(1192)	1089	22	(1067)	0	0	(0)	0	0	(0)
3 1	B,ae	173.6	0.0	173.6	AI	15276	11110	(4166)	11283	10068	(1215)	5728	5728	(0)	0	0	(0)
3 2	aj	349.6	0.0	349.6	AI	31116	23425	(7692)	29368	26571	(2797)	34962	17481	(17481)	34962	33322	(1640)
3 6	am	74.2	0.4	73.8	AB	6824	5607	(1216)	5934	5386	(548)	6675	2951	(3724)	5266	3574	(1692)
3 8	an	23.4	0.0	23.4	A	2156	2156	(0)	1781	1781	(0)	1828	1828	(0)	1664	1443	(220)
303	C	67.7	3.7	64.1	AD	4402	4164	(239)	5825	5509	(316)	4132	3908	(224)	4809	3213	(1596)
304	C	96.6	60.6	36.1	AB	5315	1732	(3583)	8408	3032	(5376)	1160	433	(727)	4861	878	(3983)
33 A	s	13.4	0.3	13.1	AB	978	744	(234)	911	797	(115)	0	0	(0)	0	0	(0)
33 B	s	12.0	0.7	11.2	AB	825	572	(253)	837	695	(141)	0	0	(0)	0	0	(0)
34	r	26.3	10.0	16.2	AB	1812	762	(1050)	1759	973	(786)	0	0	(0)	0	0	(0)
35	v	4.1	3.8	0.3	AD	239	16	(223)	170	11	(159)	0	0	(0)	0	0	(0)
37	v	1.2	1.0	0.2	AD	84	14	(69)	41	7	(34)	0	0	(0)	0	0	(0)
38 A	v	13.3	11.9	1.4	AB	1041	84	(956)	920	83	(838)	227	25	(202)	0	0	(0)
39	aa	15.7	9.5	6.2	AB	1351	431	(921)	1053	368	(684)	0	0	(0)	0	0	(0)
4 A	f	2.0	1.8	0.2	AD	174	15	(159)	75	6	(69)	2	0	(2)	0	0	(0)
4 B	f	40.7	3.5	37.2	AB	3543	2306	(1237)	2891	2343	(548)	41	37	(4)	0	0	(0)
4 C	e,g,h	65.5	6.7	58.8	AB	5899	4999	(900)	4850	4352	(498)	3408	176	(3232)	0	0	(0)
4 D	w,j	222.2	35.2	187.0	AB	16664	13277	(3387)	19774	16643	(3131)	15330	12903	(2427)	0	0	(0)
4 F	n	7.4	0.7	6.6	AB	390	318	(72)	449	404	(45)	0	0	(0)	0	0	(0)
4 G	o,p	21.2	0.2	21.0	AB	1440	1345	(96)	1059	1051	(9)	360	357	(3)	0	0	(0)
40	B	3.4	3.0	0.4	NB	NA	0	NA	NA	0	NA	NA	0	NA	0	0	(0)
401	h	2.3	2.1	0.2	NB	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	(0)
404	z	5.0	1.9	3.1	NB	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	(0)
410	w	0.6	0.0	0.6	NB	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	(0)
422	D	2.5	1.6	0.9	NB	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	(0)
501	d	3.4	1.7	1.7	NB	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	(0)
502	z	2.7	0.0	2.7	NI	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	(0)
504	C	0.2	0.0	0.2	NI	NA	0	NA	NA	0	NA	NA	0	NA	0	0	(0)
58	z	2.0	0.2	1.8	NB	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	(0)
87 A	D	3.8	0.0	3.8	NI	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	(0)
90	D	5.4	0.0	5.4	AI	351	227	(124)	286	254	(32)	0	0	(0)	0	0	(0)
91	D	2.3	2.2	0.1	AB	132	0	(132)	75	0	(75)	0	0	(0)	0	0	(0)
92	D	2.0	2.0	0.0	AB	111	0	(111)	38	0	(38)	0	0	(0)	0	0	(0)
97	D	13.8	0.0	13.8	A	1088	1088	(0)	578	578	(0)	689	689	(0)	0	0	(0)
98	D	4.9	0.0	4.9	A	262	262	(0)	49	49	(0)	160	160	(0)	0	0	(0)
99	D	28.0	16.3	11.7	AB	1707	491	(1216)	1511	550	(962)	952	386	(566)	0	0	(0)
								(99956)			(71716)			(76817)			(59065)

	Direct	Indirect
Total acre	885.6	2331.7
NA acre	29.9	60.4

Impact type: AI = Assessed and Indirect only; AD = Assessed and Direct only; AB = Assessed and Both; NI = Not assessed and Indirect only; ND = Not assessed and Direct only; NB = Not assessed and Both

NA = Not Assessed

TABLE 2-7
NO ACTION ALTERNATIVE--DIRECT & INDIRECT WETLAND IMPACTS

AANO	Planning Area	Total Acres	Fill Acres	Remain Acres	Impact Type	Water Quality Base	Water Quality Post	Score Impact	Wildlife Hab. Base	Wildlife Hab. Post	Score Impact	Social Sig. Base	Social Sig. Post	Score Impact	Important Hab. Base	Important Hab. Post	Score Impact
100	H	22.1	0.0	22.1	AI	1614	1238	(376)	1260	1150	(111)	376	376	(0)	0	0	(0)
104	I	2.7	2.4	0.4	NB	NA	0	NA	NA	0	NA	NA	0	NA	0	0	(0)
106	ag	5.7	2.0	3.7	NB	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	(0)
108	G,ai,as	117.1	60.6	56.5	AB	9834	3391	(6443)	6907	2769	(4138)	4215	1865	(2349)	0	0	(0)
112	ae	12.2	0.6	11.6	AB	842	753	(89)	684	649	(35)	403	382	(20)	0	0	(0)
113	ae	16.6	10.1	6.5	AB	1114	268	(846)	998	314	(684)	283	111	(172)	0	0	(0)
122	ak	4.0	1.9	2.2	NB	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	(0)
123	J	1.2	1.2	0.0	NB	NA	0	NA	NA	0	NA	NA	0	NA	0	0	(0)
125	ak	1.9	1.3	0.6	NB	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	(0)
144	ao	8.8	7.2	1.7	NB	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	(0)
145	ao	8.3	7.7	0.6	AB	430	20	(410)	538	32	(506)	141	9	(131)	0	0	(0)
147	aq	1.4	1.4	0.0	NB	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	(0)
16	w	7.2	0.1	7.2	NB	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	(0)
18	w	4.0	2.6	1.4	AB	284	63	(221)	224	70	(154)	0	0	(0)	0	0	(0)
2 10	I	60.0	0.0	60.0	A	2882	2882	(0)	3843	3843	(0)	1981	1981	(0)	3168	2586	(581)
2 11	ao	274.7	0.4	274.4	AD	16759	16735	(23)	21429	21399	(30)	8791	8779	(12)	20067	15080	(4987)
2 12	ap	39.3	0.0	39.3	A	1533	1533	(0)	2044	2044	(0)	1101	1101	(0)	2736	1223	(1512)
2 13	aq	35.9	0.1	35.8	AD	1399	1395	(4)	1865	1860	(6)	1435	1430	(4)	2469	628	(1840)
2 2	E,F	97.2	90.4	6.7	AB	6315	350	(5965)	8259	485	(7773)	1166	81	(1085)	6898	0	(6898)
2 3	E,F,L	180.1	87.0	93.2	AB	12607	4844	(7763)	18010	8197	(9813)	13688	2142	(11545)	10489	701	(9788)
2 4A	E	19.0	13.2	5.8	AB	1081	301	(781)	1480	416	(1064)	228	69	(158)	1347	0	(1347)
2 8	I	868.8	14.4	854.5	AB	69507	66649	(2859)	79933	77757	(2177)	79933	78611	(1322)	60374	52231	(8143)
2 B	a	60.9	0.0	60.9	A	1583	1583	(0)	3228	3228	(0)	2436	2436	(0)	3878	3807	(71)
2 E	B,l,m,q	465.0	300.6	164.4	AB	38132	9535	(28597)	33017	10522	(22496)	11161	3946	(7215)	2955	1117	(1837)
2 F	k	19.8	12.1	7.7	AB	1047	268	(779)	810	276	(534)	79	31	(48)	5	5	(0)
2 G	B	44.4	0.0	44.4	AI	3196	2131	(1065)	2441	2220	(222)	888	888	(0)	134	134	(0)
2 J	C	8.5	5.1	3.5	AB	495	135	(359)	290	90	(200)	154	62	(91)	0	0	(0)
2 K	C	404.9	130.8	274.1	AB	17410	11513	(5898)	25103	16447	(8657)	4859	3289	(1569)	10077	3237	(6840)
2 M	t,v	74.5	17.8	56.7	AB	6037	3461	(2576)	5739	3744	(1995)	1342	1021	(320)	0	0	(0)
2 Q	D	185.4	85.3	100.1	AB	13347	5905	(7441)	11122	5405	(5717)	12234	6606	(5628)	10037	2574	(7463)
2 R	M,aa-ac	215.7	34.5	181.3	AB	19846	10513	(9333)	16826	11238	(5588)	10786	0	(10786)	0	0	(0)
2 S	D	14.3	0.0	14.3	NB	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	(0)
2 T	B	90.6	38.1	52.6	AB	4712	2208	(2505)	3262	1734	(1528)	1541	894	(647)	0	0	(0)
2 U	B	154.3	2.4	151.9	AD	4783	4708	(75)	9103	8961	(142)	7406	7290	(116)	8073	5364	(2709)
2 X	E,F	101.4	41.2	60.2	AB	4664	2047	(2617)	1724	1024	(700)	1217	723	(494)	7199	1836	(5363)
2 YA	F	7.2	0.2	7.0	AB	376	196	(180)	87	70	(17)	0	0	(0)	0	0	(0)
2 YB	F	11.4	5.9	5.5	AB	685	299	(386)	856	371	(485)	0	0	(0)	0	0	(0)
200	B	9.1	0.1	[illegible]	AD	508	500	(8)	118	116	(2)	0	0	(0)	0	0	(0)
201	q	1.9	1.8	0.1	NB	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	(0)
208	L	8.5	0.0	8.5	AI	416	280	(136)	577	518	(59)	0	0	(0)	69	69	(0)
211	A	161.7	18.7	143.0	AB	11154	6435	(4719)	11154	8580	(2574)	3880	3432	(448)	1719	1719	(0)
214	w	4.3	2.8	1.5	NB	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	(0)
220	ac	3.6	2.9	0.7	AB	156	27	(129)	69	12	(57)	0	0	(0)	0	0	(0)
221	J	2.7	2.7	0.0	NB	NA	0	NA	NA	0	NA	NA	0	NA	0	0	(0)
222	K	17.9	12.6	5.3	AB	1271	270	(1001)	1235	276	(960)	0	0	(0)	0	0	(0)
226	J	2.7	0.1	2.6	NB	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	(0)
23	j	11.8	5.5	6.3	AB	787	270	(517)	717	346	(371)	0	0	(0)	0	0	(0)
24	j	17.3	16.9	0.4	AB	1210	18	(1192)	1089	22	(1067)	0	0	(0)	0	0	(0)
3 1	G,ae	173.6	94.3	79.3	AB	15276	5072	(10204)	11283	4200	(7083)	5728	2615	(3113)	0	0	(0)
3 2	J,K,aj	349.6	64.3	285.4	AB	31116	19119	(11997)	29368	21687	(7681)	34962	14268	(20694)	34962	22464	(12498)
3 3	K	58.6	42.9	15.7	AB	5856	1210	(4646)	4978	974	(4004)	5388	628	(4759)	4158	0	(4158)
3 4	K	42.4	35.9	6.5	AB	3181	353	(2828)	2333	288	(2045)	339	52	(287)	637	71	(566)
3 5	K	77.3	62.1	15.1	AB	6566	952	(5614)	6180	846	(5334)	6953	604	(6348)	5485	0	(5485)
3 6	K	74.2	69.4	4.8	AB	6824	328	(6496)	5934	247	(5687)	6675	190	(6485)	5266	0	(5266)
3 8	K,an	23.4	0.0	23.4	AI	2156	1757	(398)	1781	1570	(211)	1828	656	(1172)	1664	1443	(220)
303	E,F	67.7	56.0	11.7	AB	4402	655	(3747)	5825	807	(5017)	4132	140	(3991)	4809	0	(4809)
304	E	96.6	65.7	30.9	AB	5315	1421	(3894)	8408	2534	(5874)	1160	371	(789)	4861	923	(3938)
33 A	s	13.4	0.3	13.1	AB	978	744	(234)	911	797	(115)	0	0	(0)	0	0	(0)
33 B	s	12.0	0.7	11.2	AB	825	572	(253)	837	695	(141)	0	0	(0)	0	0	(0)
34	r	26.3	10.0	16.2	AB	1812	762	(1050)	1759	973	(786)	0	0	(0)	0	0	(0)
35	v	4.1	3.8	0.3	AD	239	16	(223)	170	11	(159)	0	0	(0)	0	0	(0)
37	v	1.2	1.0	0.2	AD	84	14	(69)	41	7	(34)	0	0	(0)	0	0	(0)
38 A	v	13.3	11.9	1.4	AB	1041	84	(956)	920	83	(838)	227	25	(202)	0	0	(0)
39	aa	15.7	9.5	6.2	AB	1351	431	(921)	1053	368	(684)	0	0	(0)	0	0	(0)
4 A	f	2.0	1.8	0.2	AD	174	15	(159)	75	6	(69)	2	0	(2)	0	0	(0)
4 B	f	40.7	3.5	37.2	AB	3543	2306	(1237)	2891	2343	(548)	41	37	(4)	0	0	(0)
4 C	e,g,h	65.5	6.7	58.8	AB	5899	4999	(900)	4850	4352	(498)	3408	176	(3232)	0	0	(0)
4 D	w,j	222.2	35.2	187.0	AB	16664	13277	(3387)	19774	16643	(3131)	15330	12903	(2427)	0	0	(0)
4 F	n	7.4	0.7	6.6	AB	390	318	(72)	449	404	(45)	0	0	(0)	0	0	(0)
4 G	o,p	21.2	0.2	21.0	AB	1440	1345	(96)	1059	1051	(9)	360	357	(3)	0	0	(0)
40	M	3.4	0.6	2.8	NB	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	(0)
401	h	2.3	2.1	0.2	NB	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	(0)
404	s	5.0	1.9	3.1	NB	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	(0)
410	v	0.6	0.0	0.6	NB	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	(0)
422	I	2.5	0.1	2.4	NB	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	(0)
501	d	3.4	1.7	1.7	NB	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	(0)
502	z	2.7	0.0	2.7	NI	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	(0)
505	E	0.5	0.0	0.5	AI	28	27	(1)	21	21	(1)	0	0	(0)	0	0	(0)
58	z	2.0	0.2	1.8	NB	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	(0)
81	K	8.2	1.3	6.9	AB	555	302	(253)	261	192	(69)	0	0	(0)	0	0	(0)
97	H	13.8	0.0	13.8	AI	1088	757	(330)	578	509	(69)	689	689	(0)	0	0	(0)
99	H	28.0	14.0	14.0	AB	1707	462	(1245)	1511	644	(867)	952	462	(489)	0	0	(0)
								(156502)			(130854)			(98160)			(96320)

	Direct	Indirect
Total acre	1625.0	3096.5
NA acre	31.4	69.3

Impact type: AI = Assessed and Indirect only; AD = Assessed and Direct only; AB = Assessed and Both;
NI = Not assessed and Indirect only; ND = Not assessed and Direct only; NB = Not assessed and Both

NA = Not Assessed

3.0 THREATENED/ENDANGERED SPECIES AND RARE/UNIQUE HABITATS

3.1 SCREENING-LEVEL IMPACT ASSESSMENT FOR IN-DISTRICT ALTERNATIVES

3.1.1 Method for Assessing Impacts

Impacts to threatened or endangered (T/E) species and rare or unique (R/U) habitats were assessed by measuring direct loss or indirect effects for these important habitats. The important habitat (IH) attribute of the wetland indexing system provides an analytical basis to evaluate impacts to T/E species and R/U habitats. The wetland indexing system (briefly described in section 2.0 of the Alternatives Screening Analysis) allows for measurement of impacts to T/E and R/U habitats caused by potential impacts to wetlands. The indexing system has also been applied to assess impacts to T/E and R/U habitats in upland areas.

The two general characteristics measured for this analysis are: (1) whether or not the area is a habitat for T/E species, as identified from available sources; and (2) whether or not the habitat is rare or unique, also as identified from available sources. The identification and evaluation of T/E and R/U impacts are based on the potential for displacement of T/E species or loss of R/U habitats as previously identified in federal, state, and local sources (see figure 3-8 in "Chapter 3: Description of the Affected Environment"). The loss of T/E and R/U habitats assumes loss of environmental and habitat characteristics. Such characteristics are incorporated by reference as identified by the original sources.

In the wetland indexing system, a wetland attribute was established to evaluate T/E and R/U habitat impacts--the important habitat (IH) attribute. To calculate the IH attribute, a numerical rank of 5 was assigned to the T/E characteristic, and a numerical rank of 2 was assigned to the R/U characteristic, indicating the relative importance of each characteristic. Because T/E species are protected under federal and state law they were assigned a higher numerical rank. As with the other wetland attributes in the wetland indexing system, the numerical ranks for the characteristics present in each AA are summed, and then normalized to a scale of 0 to 100 (by dividing by the maximum achieved value in the Meadowlands District and multiplying by 100). There are areas in the District that have been classified as both T/E and R/U habitats (Kearny Marsh, for example). Thus, the maximum achieved value in the District is 7 (a rank of 5 for T/E plus a rank of 2 for R/U). Thus, the maximum achieved index value for the IH attribute for areas that are both T/E and R/U habitats is 100 (7 divided by 7 times 100); the index value for areas that are only T/E habitats is 71 (5 divided by 7 times 100); the index value for areas that are only R/U habitats is 29 (2 divided by 7 times 100); and the index value for areas that are neither T/E nor R/U habitats is 0. This index value is multiplied by the acreage of the habitat to obtain the IH attribute score.

Two types of impacts to T/E and R/U habitats have been assessed: direct and indirect. As with the other wetland attributes, direct impacts are caused by direct fill in wetlands, and involve the complete loss of any characteristics that were previously present in that area. Direct impacts are assessed by determining the area of T/E or R/U habitats that are within the planning areas for each of the alternatives. This area is assumed to lose its T/E and/or R/U habitat characteristics.

Indirect impacts are assumed for T/E habitats that are within 200 meters of a planning area. Within this distance, substantial disturbance and activity in the planning area may indirectly cause impacts to T/E habitat. Computerized mapping (GIS) was used to identify T/E habitats that are within 200 meters of a planning area. This border area was then assumed to lose its T/E habitat characteristic.

After identifying the loss of T/E and R/U habitat area due to the direct and indirect impacts from the planning areas, the wetland and upland areas were rescored for the IH attribute. The impact is the difference between the post-impact IH attribute score and the baseline IH attribute score.

TABLE 3-1
ALTERNATIVES COMPARISON
T/E AND R/U HABITAT IMPACTS

	Total Habitat Area (acres)	Total IH Attribute Score	Wetland Habitat Area (acres)	Wetland IH Attribute Score	Upland Habitat Area (acres)	Upland IH Attribute Score
Baseline	5,611.7	401,922	4,977.5	358,324	634.3	43,598
Upland						
Impact	(790.0)	(54,886)	(516.6)	(36,678)	(273.4)	(18,209)
% Impact	14.1%	13.7%	10.4%	10.2%	43.1%	41.8%
Post-Impact	4,821.8	347,036	4,460.9	321,647	360.9	25,389
Redevelopment						
Impact	(616.1)	(41,436)	(481.6)	(31,890)	(134.5)	(9,546)
% Impact	11.0%	10.3%	9.7%	8.9%	21.2%	21.9%
Post-Impact	4,995.6	360,486	4,495.9	326,434	499.8	34,052
Highway Corridors						
Impact	(1,062.3)	(73,076)	(913.6)	(62,519)	(148.7)	(10,557)
% Impact	18.9%	18.2%	18.4%	17.4%	23.4%	24.2%
Post-Impact	4,549.4	328,847	4,063.9	295,805	485.5	33,041
Dispersed Development						
Impact	(1,213.1)	(82,650)	(889.8)	(60,902)	(323.3)	(21,748)
% Impact	21.6%	20.6%	17.9%	17.0%	51.0%	49.9%
Post-Impact	4,398.7	319,272	4,087.7	297,422	311.0	21,850
Growth Centers						
Impact	(1,079.8)	(73,002)	(888.7)	(60,694)	(191.1)	(12,308)
% Impact	19.2%	18.2%	17.9%	16.9%	30.1%	28.2%
Post-Impact	4,532.0	328,920	4,088.8	297,630	443.1	31,290
No Action						
Impact	(1,905.9)	(133,041)	(1,591.9)	(111,960)	(314.0)	(21,081)
% Impact	34.0%	33.1%	32.0%	31.2%	49.5%	48.4%
Post-Impact	3,705.9	268,882	3,385.6	246,365	320.2	22,517

Note: T = T/E Habitat, R = R/U Habitat, M = Both T/E and R/U habitat

3.1.2 Results of Impact Screening

Table 3-1 summarizes the results of the T/E and R/U impact screening. The first two columns in table 3-1 present the total area of T/E and R/U habitat impacts and the impact to the IH attribute score for each management alternative. The following four columns in table 3-1 provide a breakdown by wetland and upland areas. The "Post-Impact" line for each alternative represents the total habitat area and IH attribute score subsequent to assignment of impacts from development related to each alternative.

As shown in table 3-1, the Redevelopment alternative has the lowest impacts to T/E and R/U habitats (10% decline in the existing IH attribute score). The Upland alternative has the next lowest T/E and R/U habitat impacts (14% decline in the existing IH attribute score), followed by the Growth Centers (18%), Highway Corridors (18%), and Dispersed Development (21%) alternatives. The No Action alternative has the greatest IH attribute impacts (33% decline in the existing IH attribute score).

Tables 3-2 through 3-7 present the acreage and attribute score changes in each assessment area and upland area impacted by the various growth locations identified for the six management alternatives. The first column in tables 3-2 through 3-7 indicates the assessment area (AA) number assigned to each wetland (during the AVID process). For upland areas, this column contains "Upland". The next column presents the type of habitat in the AA or upland area (T/E habitat, R/U habitat, or both). AAs that contain more than one distinct habitat areas are indicated. For example, AA 2-10 has a T/E habitat (the Hackensack River), and a R/U habitat (the eastern bank of the Hackensack River), and this is indicated by "R+T" in the TERU Habitat column. The third column of tables 3-2 through 3-7 specifies which of the planning areas impact the AA or upland area. The fourth column of tables 3-2 through 3-7 presents the acreage of direct impact, which is the area within the AA or upland area that is either a T/E or R/U habitat and is within a planning area. The fifth column is the acreage of indirect impact, which is the area within the AA that is a T/E habitat, and is in the 200 foot buffer around the planning areas.

TABLE 3-2
T/E AND R/U HABITAT IMPACTS
UPLAND ALTERNATIVE

AANO	TERU Habitat	Impact Planning Area(s)	Direct Impact (Acres)	Indirect Impact (Acres)	Baseline IH Attribute Index	Baseline IH Attribute Acres	Baseline IH Attribute Score	Post-Impact IH Attribute Index	Post-Impact IH Attribute Acres	Post-Impact IH Attribute Score	Impact IH Attribute Acres	Impact IH Attribute Score
123	T	ak	0.0	1.2	71	1.2	87	71	0.0	3	(1.2)	(84)
2 1	T	E	0.0	0.1	71	224.4	15935	71	224.4	15931	(0.1)	(4)
2 10	R+T	O	0.0	8.0	55	57.7	3168	52	49.7	2602	(8.0)	(566)
2 11	M+R+T	R,an,ao	0.0	69.1	74	271.2	20078	75	202.1	15173	(69.1)	(4,906)
2 12	T	R	0.0	3.6	71	38.5	2736	71	34.9	2477	(3.6)	(259)
2 13	T	R	0.0	6.5	71	34.8	2469	71	28.2	2004	(6.5)	(464)
2 3	T	M,x	0.0	114.1	71	179.4	12739	71	65.3	4636	(114.1)	(8,103)
2 4	T	M,x,y	0.0	21.9	71	31.9	2265	71	10.0	707	(21.9)	(1,558)
2 5	T	M	0.0	0.2	71	1.7	120	71	1.4	102	(0.2)	(18)
2 8	T	O	0.0	70.7	71	850.3	60374	71	779.6	55354	(70.7)	(5,020)
2 B	T	a	0.0	1.0	71	54.6	3878	71	53.6	3807	(1.0)	(71)
2 K	T	F	0.0	0.3	71	141.9	10077	71	141.7	10058	(0.3)	(19)
2 P	T	F	0.0	23.0	71	58.1	4128	71	35.2	2496	(23.0)	(1,632)
2 Q	T	F,G	0.0	16.6	71	141.4	10037	71	124.8	8858	(16.6)	(1,179)
2 U	T	C,E	0.0	72.8	71	113.7	8072	71	40.9	2902	(72.8)	(5,170)
2 Z	T	E	0.0	12.5	71	14.1	1002	71	1.6	113	(12.5)	(889)
208	T	M,y	0.0	6.6	71	8.5	601	71	1.9	135	(6.6)	(466)
226	T	ak	0.0	2.7	71	2.7	191	71	0.0	0	(2.7)	(191)
3 2	M	P	0.0	25.2	100	349.6	34962	95	349.6	33171	(25.2)	(1,791)
3 6	T	am,an	0.0	23.8	71	74.2	5266	71	50.3	3574	(23.8)	(1,692)
3 8	T	an	0.0	3.1	71	23.4	1664	71	20.3	1444	(3.1)	(220)
301	T	F	0.0	15.7	71	57.9	4113	71	42.3	3001	(15.7)	(1,112)
46	T	J	0.0	0.7	71	0.7	51	71	0.0	0	(0.7)	(51)
50	T	J	0.0	0.7	71	2.6	188	71	2.0	140	(0.7)	(48)
54	T	y	0.0	16.4	71	47.8	3392	71	31.4	2227	(16.4)	(1,165)
			0.0	516.6							(516.6)	(36,678)
Upland	T	J	3.9	5.2	71	9.1	644	71	0.0	0	(9.1)	(644)
Upland	T	ak	0.0	8.3	71	8.3	588	71	0.0	0	(8.3)	(588)
Upland	T	y	23.7	44.0	71	67.6	4801	71	0.0	0	(67.6)	(4,801)
Upland	T	M,x	79.1	80.7	71	159.8	11346	71	0.0	0	(159.8)	(11,346)
Upland	R	x	28.6	0.0	29	28.6	830	29	0.0	0	(28.6)	(830)
			135.4	138.0							(273.4)	(18,209)
			135.4	654.6							(790.0)	(54,886)

Note: T = T/E Habitat, R = R/U Habitat, M = Both T/E and R/U habitat

06/25/92

TABLE 3-3
T/E AND R/U HABITAT IMPACTS
REDEVELOPMENT ALTERNATIVE

AANO	TERU Habitat	Impact Planning Area(s)	Direct Impact (Acres)	Indirect Impact (Acres)	Baseline IH Attribute Index	Baseline IH Attribute Acres	Baseline IH Attribute Score	Post-Impact IH Attribute Index	Post-Impact IH Attribute Acres	Post-Impact IH Attribute Score	Impact IH Attribute Acres	Impact IH Attribute Score
123	T	I	0.0	1.2	71	1.2	87	71	0.0	0	(1.2)	(87)
2 1	T	E	0.0	1.7	71	224.4	15935	71	222.8	15816	(1.7)	(119)
2 11	M+R+T	an,ao,ap	0.0	70.1	74	271.2	20078	75	201.1	15100	(70.1)	(4,978)
2 12	T	J,ap	0.0	21.6	71	38.5	2736	71	16.9	1199	(21.6)	(1,537)
2 13	T	J,ap	0.0	26.9	71	34.8	2469	71	7.8	555	(26.9)	(1,913)
2 3	T	x	30.9	76.3	71	179.4	12739	71	72.2	5127	(107.2)	(7,612)
2 4	T	x,y	0.0	4.4	71	31.9	2265	71	27.5	1956	(4.4)	(309)
2 B	T	K,a	0.0	47.6	71	54.6	3878	71	7.0	494	(47.7)	(3,384)
2 C	T	K	0.0	11.1	71	42.1	2988	71	31.0	2203	(11.1)	(785)
2 E	R	l	55.0	0.0	29	101.9	2955	29	46.9	1361	(55.0)	(1,594)
2 K	T	D	0.0	0.2	71	141.9	10077	71	141.8	10066	(0.2)	(11)
2 U	T	N	0.3	33.4	71	113.7	8072	71	80.0	5679	(33.7)	(2,393)
2 Z	T	E	0.0	3.9	71	14.1	1002	71	10.2	723	(3.9)	(279)
208	T	y	0.0	1.2	71	8.5	601	71	7.2	513	(1.2)	(88)
226	T	I	2.4	0.3	71	2.7	191	71	0.0	0	(2.7)	(191)
3 2	M	I,aj	0.0	49.7	100	349.6	34962	90	349.6	31431	(49.7)	(3,532)
3 6	T	am,an	0.0	23.8	71	74.2	5266	71	50.3	3574	(23.8)	(1,692)
3 8	T	an	0.0	3.1	71	23.4	1664	71	20.3	1444	(3.1)	(220)
54	T	y	0.0	16.4	71	47.8	3392	71	31.4	2227	(16.4)	(1,165)
			88.6	393.0							(481.6)	(31,890)
Upland	T	y	23.7	44.0	71	67.6	4801	71	0.0	0	(67.6)	(4,801)
Upland	T	x	6.8	23.4	71	30.2	2147	71	0.0	0	(30.2)	(2,147)
Upland	T	I	1.5	35.1	71	36.6	2597	71	0.0	0	(36.6)	(2,597)
Upland	R	l	0.1	0.0	29	0.1	2	29	0.0	0	(0.1)	(2)
			32.0	102.5							(134.5)	(9,546)
			120.6	495.5							(616.1)	(41,436)

Note: T = T/E Habitat, R = R/U Habitat, M = Both T/E and R/U habitat

TABLE 3-4
T/E AND R/U HABITAT IMPACTS
HIGHWAY CORRIDORS ALTERNATIVE

AANO	TERU Habitat	Impact Planning Area(s)	Direct Impact (Acres)	Indirect Impact (Acres)	Baseline IH Attribute Index	Baseline IH Attribute Acres	Baseline IH Attribute Score	Post-Impact IH Attribute Index	Post-Impact IH Attribute Acres	Post-Impact IH Attribute Score	Impact IH Attribute Acres	Impact IH Attribute Score
123	T	ak	0.0	1.2	71	1.2	87	71	0.0	3	(1.2)	(84)
2 1	T	F,H	2.5	40.9	71	224.4	15935	71	181.0	12854	(43.4)	(3,081)
2 11	M+R+T	an,ao,ap	0.0	70.1	74	271.2	20078	75	201.1	15140	(70.1)	(4,938)
2 12	T	ap	0.0	21.3	71	38.5	2736	71	17.2	1224	(21.3)	(1,512)
2 13	T	ap,aq	0.0	25.9	71	34.8	2469	71	8.9	628	(25.9)	(1,840)
2 2	T	F,G	4.8	46.2	71	97.2	6898	71	46.1	3276	(51.0)	(3,623)
2 3	T	G,x	62.3	60.7	71	179.4	12739	71	56.5	4008	(123.0)	(8,731)
2 4	T	x,y	0.0	4.4	71	31.9	2265	71	27.5	1956	(4.4)	(309)
2 4A	T	F,G	18.5	0.5	71	19.0	1347	71	-0.0	-0	(19.0)	(1,347)
2 B	T	a	0.0	1.0	71	54.6	3878	71	53.6	3807	(1.0)	(71)
2 E	R	l	55.0	0.0	29	101.9	2955	29	46.9	1361	(55.0)	(1,594)
2 Q	T	J,K	0.0	31.0	71	141.4	10037	71	110.4	7836	(31.0)	(2,202)
2 U	T	B,H	1.8	95.0	71	113.7	8072	71	16.9	1200	(96.8)	(6,873)
2 X	T	F	101.4	0.0	71	101.4	7199	71	0.0	0	(101.4)	(7,199)
2 YA	T	F	7.0	0.2	71	7.2	514	71	0.0	0	(7.2)	(514)
2 YB	T	F	5.9	5.5	71	11.4	810	71	0.0	0	(11.4)	(810)
2 Z	T	B,H	1.0	13.2	71	14.1	1002	71	0.0	0	(14.1)	(1,002)
208	T	y	0.0	1.2	71	8.5	601	71	7.2	513	(1.2)	(88)
218	T	G	0.1	0.6	71	0.7	46	71	0.0	0	(0.7)	(46)
226	T	ak	0.0	2.7	71	2.7	191	71	0.0	0	(2.7)	(191)
3 2	M	aj	0.0	23.1	100	349.6	34962	95	349.6	33320	(23.1)	(1,643)
3 6	T	am,an	0.0	23.8	71	74.2	5266	71	50.3	3574	(23.8)	(1,692)
3 8	T	an	0.0	3.1	71	23.4	1664	71	20.3	1444	(3.1)	(220)
303	T	F	67.7	0.0	71	67.7	4809	71	0.0	0	(67.7)	(4,809)
304	T	E,F	43.4	53.2	71	96.6	6861	71	0.0	0	(96.6)	(6,861)
46	T	C	0.0	0.3	71	0.7	51	71	0.4	27	(0.3)	(24)
504	T	E	0.0	0.2	71	0.2	14	71	0.0	0	(0.2)	(14)
505	T	E	0.5	0.0	71	0.5	36	71	0.0	0	(0.5)	(36)
54	T	y	0.0	16.4	71	47.8	3392	71	31.4	2227	(16.4)	(1,165)
			371.8	541.8							(913.6)	(62,519)
Upland	T	y	23.7	44.0	71	67.6	4801	71	0.0	0	(67.6)	(4,801)
Upland	T	F	6.4	0.0	71	6.4	458	71	0.0	0	(6.4)	(458)
Upland	T	E	11.8	9.1	71	20.9	1486	71	0.0	0	(20.9)	(1,486)
Upland	T	G,x	22.4	23.0	71	45.4	3223	71	0.0	0	(45.4)	(3,223)
Upland	T	ak	0.0	8.3	71	8.3	588	71	0.0	0	(8.3)	(588)
Upland	R	l	0.1	0.0	29	0.1	2	29	0.0	0	(0.1)	(2)
			64.4	84.3							(148.7)	(10,557)
			436.2	626.1							(1,062.3)	(73,076)

Note: T = T/E Habitat, R = R/U Habitat, M = Both T/E and R/U habitat

TABLE 3-5
T/E AND R/U HABITAT IMPACTS
DISPERSED DEVELOPMENT ALTERNATIVE

AANO	TERU Habitat	Impact Planning Area(s)	Direct Impact (Acres)	Indirect Impact (Acres)	Baseline IH Attribute Index	Baseline IH Attribute Acres	Baseline IH Attribute Score	Post-Impact IH Attribute Index	Post-Impact IH Attribute Acres	Post-Impact IH Attribute Score	Impact IH Attribute Acres	Impact IH Attribute Score
2 10	R+T	H	0.0	8.0	55	57.7	3168	52	49.7	2602	(8.0)	(566)
2 11	M+R+T	K,an,ao	0.4	79.0	74	271.2	20078	75	191.8	14444	(79.4)	(5,634)
2 12	T	K	0.0	33.0	71	38.5	2736	71	5.5	392	(33.0)	(2,344)
2 13	T	K,aq	0.0	26.6	71	34.8	2469	71	8.1	578	(26.6)	(1,890)
2 2	T	E	6.1	12.1	71	97.2	6898	71	78.9	5602	(18.3)	(1,296)
2 3	T	E,I,x	65.0	113.6	71	179.4	12739	71	0.8	56	(178.6)	(12,683)
2 4	T	I,x,y	2.7	21.2	71	31.9	2265	71	8.0	565	(23.9)	(1,700)
2 4A	T	E	17.5	1.4	71	19.0	1347	71	0.0	0	(19.0)	(1,347)
2 5	T	I	0.0	0.3	71	1.7	120	71	1.4	101	(0.3)	(19)
2 8	T	H	6.2	64.5	71	850.3	60374	71	779.6	55354	(70.7)	(5,020)
2 B	T	s	0.0	1.0	71	54.6	3878	71	53.6	3807	(1.0)	(71)
2 E	R	A	54.2	0.0	29	101.9	2955	29	47.6	1382	(54.2)	(1,573)
2 Q	T	F,ad	94.2	20.6	71	141.4	10037	71	26.7	1893	(114.7)	(8,144)
2 U	T	C	1.7	48.2	71	113.7	8072	71	63.7	4525	(50.0)	(3,547)
2 X	T	D,E	25.8	19.0	71	101.4	7199	71	56.5	4015	(44.9)	(3,185)
208	T	I,y	2.9	3.7	71	8.5	601	71	1.9	136	(6.6)	(465)
3 2	M	aj	0.0	23.1	100	349.6	34962	95	349.6	33320	(23.1)	(1,643)
3 6	T	am,an	0.4	23.4	71	74.2	5266	71	50.3	3574	(23.8)	(1,692)
3 8	T	an	0.0	3.1	71	23.4	1664	71	20.3	1444	(3.1)	(220)
303	T	E	3.5	8.6	71	67.7	4809	71	55.7	3952	(12.1)	(857)
304	T	D,E	37.2	44.3	71	96.6	6861	71	15.1	1070	(81.6)	(5,791)
504	T	D	0.0	0.2	71	0.2	14	71	0.0	0	(0.2)	(14)
505	T	D	0.5	0.0	71	0.5	36	71	0.0	0	(0.5)	(36)
54	T	y	0.0	16.4	71	47.8	3392	71	31.4	2227	(16.4)	(1,165)
			318.4	571.4							(889.8)	(60,902)
Upland	T	I,x	86.1	96.4	71	182.5	12956	71	0.0	0	(182.5)	(12,956)
Upland	T	D	11.8	9.1	71	20.9	1486	71	0.0	0	(20.9)	(1,486)
Upland	T	y	23.7	44.0	71	67.6	4801	71	0.0	0	(67.6)	(4,801)
Upland	T	E	15.0	8.5	71	23.6	1675	71	0.0	0	(23.6)	(1,675)
Upland	R	H	28.6	0.0	29	28.6	830	29	0.0	0	(28.6)	(830)
			165.3	158.0							(323.3)	(21,748)
			483.7	729.4							(1,213.1)	(82,650)

Note: T = T/E Habitat, R = R/U Habitat, M = Both T/E and R/U habitat

TABLE 3-6
T/E AND R/U HABITAT IMPACTS
GROWTH CENTERS ALTERNATIVE

AANO	TERU Habitat	Impact Planning Area(s)	Direct Impact (Acres)	Indirect Impact (Acres)	Baseline IH Attribute Index	Baseline IH Attribute Acres	Baseline IH Attribute Score	Post-Impact IH Attribute Index	Post-Impact IH Attribute Acres	Post-Impact IH Attribute Score	Impact IH Attribute Acres	Impact IH Attribute Score
123	T	ak	0.0	1.2	71	1.2	87	71	0.0	3	(1.2)	(84)
2 10	R+T	D	0.0	8.7	55	57.7	3168	52	49.0	2553	(8.7)	(615)
2 11	M+R+T	an,ao,ap	0.3	69.8	74	271.2	20078	75	201.1	15100	(70.1)	(4,978)
2 12	T	ap	0.0	21.3	71	38.5	2736	71	17.2	1224	(21.3)	(1,512)
2 13	T	ap	0.0	10.7	71	34.8	2469	71	24.0	1706	(10.7)	(763)
2 2	T	C	48.1	48.9	71	97.2	6898	71	0.1	6	(97.1)	(6,893)
2 3	T	C,x	34.0	113.5	71	179.4	12739	71	31.9	2264	(147.5)	(10,475)
2 4	T	x,y	0.0	4.4	71	31.9	2265	71	27.5	1956	(4.4)	(309)
2 4A	T	C	8.1	10.9	71	19.0	1347	71	0.0	0	(19.0)	(1,347)
2 8	T	D	0.0	63.9	71	850.3	60374	71	786.5	55839	(63.9)	(4,535)
2 B	T	a	0.0	1.0	71	54.6	3878	71	53.6	3807	(1.0)	(71)
2 E	R	A	51.0	0.0	29	101.9	2955	29	50.9	1476	(51.0)	(1,479)
2 F	R	A	0.2	0.0	29	0.2	5	29	0.0	0	(0.2)	(5)
2 G	R	A	4.6	0.0	29	4.6	134	29	0.0	0	(4.6)	(134)
2 H	T	A	0.0	20.1	71	80.3	5704	71	60.3	4279	(20.1)	(1,425)
2 N	R	A	1.4	0.0	29	4.3	126	29	2.9	84	(1.4)	(42)
2 Q	T	B	94.2	20.6	71	141.4	10037	71	26.6	1890	(114.7)	(8,147)
2 U	T	A	2.0	35.4	71	113.7	8072	71	76.2	5414	(37.4)	(2,659)
2 X	T	C	26.2	18.2	71	101.4	7199	71	57.0	4047	(44.4)	(3,152)
208	T	y	0.0	1.2	71	8.5	601	71	7.2	513	(1.2)	(88)
226	T	ak	0.0	2.7	71	2.7	191	71	0.0	0	(2.7)	(191)
3 2	M	aj	0.0	23.1	100	349.6	34962	95	349.6	33320	(23.1)	(1,643)
3 6	T	am,an	0.4	23.4	71	74.2	5266	71	50.3	3574	(23.8)	(1,692)
3 8	T	an	0.0	3.1	71	23.4	1664	71	20.3	1444	(3.1)	(220)
303	T	C	3.7	18.8	71	67.7	4809	71	45.2	3213	(22.5)	(1,596)
304	T	C	60.5	15.9	71	96.6	6861	71	20.2	1436	(76.4)	(5,425)
504	T	C	0.0	0.2	71	0.2	14	71	0.0	0	(0.2)	(14)
505	T	C	0.0	0.5	71	0.5	36	71	0.0	0	(0.5)	(36)
54	T	y	0.0	16.4	71	47.8	3392	71	31.4	2227	(16.4)	(1,165)
			334.8	553.8							(888.7)	(60,694)
Upland	T	C,x	39.0	46.1	71	85.2	6048	71	0.0	0	(85.2)	(6,048)
Upland	T	y	23.7	44.0	71	67.6	4801	71	0.0	0	(67.6)	(4,801)
Upland	T	ak	0.0	8.3	71	8.3	588	71	0.0	0	(8.3)	(588)
Upland	R	D	28.8	0.0	29	28.8	837	29	0.0	0	(28.8)	(837)
Upland	R	A	1.2	0.0	29	1.2	35	29	0.0	0	(1.2)	(35)
			92.7	98.4							(191.1)	(12,308)
			427.6	652.2								

Note: T = T/E Habitat, R = R/U Habitat, M = Both T/E and R/U habitat

TABLE 3-7
T/E AND R/U HABITAT IMPACTS
NO ACTION ALTERNATIVE

AANO	TERU Habitat	Impact Planning Area(s)	Direct Impact (Acres)	Indirect Impact (Acres)	Baseline IH Attribute Index	Baseline IH Attribute Acres	Baseline IH Attribute Score	Post-Impact IH Attribute Index	Post-Impact IH Attribute Acres	Post-Impact IH Attribute Score	Impact IH Attribute Acres	Impact IH Attribute Score
123	T	J,ak	1.2	0.0	71	1.2	87	71	0.0	0	(1.2)	(87)
2 1	T	F	0.0	7.9	71	224.4	15935	71	216.5	15373	(7.9)	(562)
2 10	R+T	I	0.0	8.2	55	57.7	3168	52	49.5	2587	(8.2)	(581)
2 11	M+R+T	K,an,ao,ap	0.3	69.8	74	271.2	20078	75	201.1	15100	(70.1)	(4,978)
2 12	T	ap	0.0	21.3	71	38.5	2736	71	17.2	1224	(21.3)	(1,512)
2 13	T	ap,aq	0.0	25.9	71	34.8	2469	71	8.9	628	(25.9)	(1,840)
2 2	T	E,F	90.4	6.7	71	97.2	6898	71	0.0	0	(97.2)	(6,898)
2 3	T	E,F,L	86.9	82.6	71	179.4	12739	71	9.9	701	(169.5)	(12,038)
2 4	T	L	0.0	2.1	71	31.9	2265	71	29.8	2115	(2.1)	(150)
2 4A	T	E	13.2	5.8	71	19.0	1347	71	0.0	0	(19.0)	(1,347)
2 6	R+T	F	0.0	8.9	54	153.5	8290	53	144.6	7656	(8.9)	(635)
2 8	T	I,K	0.1	114.6	71	850.3	60374	71	735.7	52232	(114.7)	(8,143)
2 B	T	a	0.0	1.0	71	54.6	3878	71	53.6	3807	(1.0)	(71)
2 E	R	B,1	63.4	0.0	29	101.9	2955	29	38.5	1117	(63.4)	(1,838)
2 H	T	C	0.0	0.1	71	80.3	5704	71	80.3	5698	(0.1)	(5)
2 K	T	C	17.7	78.6	71	141.9	10077	71	45.6	3237	(96.3)	(6,840)
2 Q	T	D,M	83.7	21.5	71	141.4	10037	71	36.3	2575	(105.1)	(7,463)
2 U	T	B	2.3	35.9	71	113.7	8072	71	75.5	5364	(38.2)	(2,709)
2 X	T	E,F	41.2	34.4	71	101.4	7199	71	25.9	1836	(75.5)	(5,363)
2 YA	T	F	0.2	4.0	71	7.2	514	71	3.0	215	(4.2)	(299)
2 YB	T	F	5.9	5.5	71	11.4	810	71	0.0	0	(11.4)	(810)
208	T	L	0.0	1.2	71	8.5	601	71	7.2	513	(1.2)	(88)
211	M+T	A	18.7	33.3	82	161.7	13197	82	109.7	8959	(51.9)	(4,238)
221	T	J	2.7	0.0	71	2.7	191	71	0.0	0	(2.7)	(191)
226	T	J,ak	0.1	2.6	71	2.7	191	71	-0.0	-0	(2.7)	(191)
3 2	M	J,K,aj	64.3	85.5	100	349.6	34962	79	285.4	22461	(149.8)	(12,501)
3 3	T	K	42.9	15.7	71	58.6	4158	71	0.0	0	(58.6)	(4,158)
3 4	R	K	19.5	0.0	29	22.0	637	29	2.5	71	(19.5)	(565)
3 5	T	K	62.1	15.1	71	77.2	5485	71	0.0	0	(77.2)	(5,485)
3 6	T	K,an	69.4	4.7	71	74.2	5266	71	0.0	0	(74.2)	(5,266)
3 7	T	K	0.0	14.5	71	27.9	1977	71	13.4	951	(14.5)	(1,026)
3 8	T	K,an	0.0	19.3	71	23.4	1664	71	4.1	293	(19.3)	(1,371)
303	T	E,F	56.0	11.7	71	67.7	4809	71	-0.0	-0	(67.7)	(4,809)
304	T	E	65.7	9.5	71	96.6	6861	71	21.4	1521	(75.2)	(5,340)
500	M+T	A	0.0	3.6	71	385.0	27339	71	381.5	27084	(3.6)	(255)
504	T	E	0.0	0.2	71	0.2	14	71	0.0	0	(0.2)	(14)
505	T	E	0.0	0.5	71	0.5	36	71	0.0	0	(0.5)	(36)
54	T	L	0.0	16.4	71	47.8	3392	71	31.4	2227	(16.4)	(1,165)
69	T	K	0.0	0.5	71	312.5	22189	71	312.0	22151	(0.5)	(38)
81	T	K	1.3	6.9	71	8.2	579	71	-0.0	-0	(8.2)	(579)
82	T	K	0.0	6.7	71	6.7	476	71	0.0	0	(6.7)	(476)
			809.2	782.7							(1,591.9)	(111,960)
Upland	T	L	26.5	52.4	71	78.9	5601	71	0.0	0	(78.9)	(5,601)
Upland	T	J,ak	49.1	31.2	71	80.3	5702	71	0.0	0	(80.3)	(5,702)
Upland	T	A	6.4	8.2	71	14.6	1039	71	0.0	0	(14.6)	(1,039)
Upland	T	E	26.9	9.2	71	36.0	2558	71	0.0	0	(36.0)	(2,558)
Upland	T	C	0.0	1.1	71	1.1	76	71	0.0	0	(1.1)	(76)
Upland	T	K	1.4	0.6	71	2.0	145	71	0.0	0	(2.0)	(145)
Upland	T	F	46.3	25.8	71	72.1	5120	71	0.0	0	(72.1)	(5,120)
Upland	R	1	0.1	0.0	29	0.1	2	29	0.0	0	(0.1)	(2)
Upland	R	I	28.8	0.0	29	28.8	837	29	0.0	0	(28.8)	(837)
			185.5	128.5							(314.0)	(21,081)
			994.7	911.2							(1,905.9)	(133,041)

Note: T = T/E Habitat, R = R/U Habitat, M = Both T/E and R/U habitat

The remaining columns of tables 3-2 through 3-7 present the existing condition (baseline), post-impact, and impact values for the IH attribute. The index is calculated based on the type of habitat (R/U habitats have an index of 29, T/E habitats have an index of 71, and habitats that are both T/E and R/U have an index of 100). The acreage is the area within the AA or upland area that is also a T/E or R/U habitat. The baseline and post-impact scores are determined by multiplying the index by the acreage.

(ds/3190)

4.0 WATER QUALITY

4.1 SCREENING-LEVEL IMPACT ASSESSMENT FOR IN-DISTRICT ALTERNATIVES

4.1.1 Method for Assessing Impacts

The major source of impacts to water quality from the different management alternatives is considered to be from stormwater runoff. It is assumed that solid and sanitary (liquid) wastes for all management plans will be handled in the same way for all alternatives, and therefore these pollutant sources are not determinative in the comparison of alternatives. For the screening level impact assessment it will also be assumed that storm runoff will be discharged into the nearest stream or tidal channel without any treatment. These assumptions facilitate a more equitable comparison between the different management alternatives.

The impacts of storm discharges on water quality in the District were assessed by estimating the impacts of specific pollutants to be discharged from each developed area. The mass of pollutants discharged during an average storm event was estimated using the regression models that have been developed from the data collected in the National Urban Runoff Program [NURP](Tasker, G.D. and N.E. Driver, 1988. Nationwide Regression Models for Predicting Urban Runoff Water Quality at Unmonitored Sites. Water Resources Bulletin 24: 1091-1101). These regression equations calculate the mass contribution to a waterway in terms of "pounds of contaminant per storm" discharged for each modeled development area. These mass loadings were then converted into concentrations based on the volume of water discharged during a rain event from each modeled area. The volume of rain during an average storm was based on an annual average rainfall of 43 inches and an average of 50 rain events per year.

Of the ten contaminants for which regression models have been developed, seven are considered to be significant in the Meadowlands, and have the potential of changing water quality. These are:

- o Chemical Oxygen demand (COD) as a substitute for, and indicator of biochemical oxygen demand (BOD), which was not modeled

- o Total Suspended Solids (SS)

- o Nitrogen (evaluated as TKN)
  - total nitrogen (TN)
  - ammonia (TA)

- o Toxic metals
  - lead (Pb)
  - copper (Cu)
  - zinc (Zn)

Three contaminants for which equations are available (dissolved solids, total phosphorus, and dissolved phosphorus) were not evaluated in the alternatives screening because they are not considered to cause major impacts in a brackish estuary such as the Meadowlands. Dissolved solids are always high in marshes as a result of high primary productivity, and phosphorus is not usually the limiting nutrient in estuarine areas.

The concentrations of contaminants in the runoff (as calculated from the regression equations) were then compared with the available data on ambient water quality values in the Hackensack River and its tributaries. Where the estimated concentrations are greater than background, there is a potential for some impact to water quality the modeled area.

The severity of the impacts were ranked in a semi-quantitative manner using the following potential impact ratings: Low impact potential, Moderate impact potential, and Severe impact potential. A series of criteria were developed by which these semi-quantitative ranks have been assigned. These ranks were determined based on the statistical distributions of the water quality concentrations calculated for each planning area, and are not based on evaluations of instream dispersion nor have the concentrations been tested for actual aquatic effect. However, the water quality concentrations did group into ranges that were useful for comparing relative potential impacts. The criteria are summarized in table 4-1.

TABLE 4-1

CRITERIA FOR RANKING IMPACTS

Parameter	Low Impacts	Moderate Impacts	Severe Impacts
Oxygen Demand Change is DO:	< 0.1 mg/l	0.1-0.5 mg/l	>0.5 mg/l
SS	< 1.5x increase over background	< 2x increase over background	> 2x increase over background
Nitrogen	< 10% increase over background	10-50% increase over background	>50% increase over background
Copper, Lead Zinc	Factor of 2 or less greater than EPA "Gold Book" criteria	2-5 fold increase over "Gold Book" criteria	>5 fold increase over "Gold Book" criteria

(ds/1975)

4.1.2 Results of Impact Screening

The estimated loadings of contaminants from each planning area are summarized by alternative in tables 4-2 to 4-8. When these results are compared to the water quality data collected by the HMDC between 1978 and 1988, only SS in the discharges is usually higher than background values.

Of the metals, which were not sampled in the HMDC study, Copper and Lead were modeled to be present in concentrations higher than the EPA standards for acute toxicity to marine organisms (Gold Book standards), <u>at the discharge point</u>.

The concentrations in the discharges estimated for the Secondary Office/ Warehousing component of the alternatives (table 4-8) are also generally higher than those exhibited by the principal planning areas in each of the alternatives (tables 4-2 to 4-7 do not contain the secondary office/ warehousing component). The suspended solids concentrations range as high as 369 mg/l, and the copper levels in some areas may be as high as 0.06 mg/l (for both constituents a factor of two larger than those typically exhibited in the principal planning areas for the alternatives). The secondary office/warehousing component, however, exhibits similar impacts for all six principal alternatives. The water quality concentrations at the point of discharge (based on the mass loadings) shown for the secondary office/warehousing component occur in addition to the concentrations from the principal planning areas associated with each of the alternatives.

The results of the modeling of water quality runoff for each contaminant are presented below.

<u>COD (Chemical Oxygen Demand)</u>. The predicted COD in stormwater discharges from the screening analysis ranged between 5 mg/l and 60 mg/l for all modeled areas. The average year-to-year background concentration of COD at the 18 stations monitored by HMDC ranges between 50 mg/l and 300 mg/l. All of the predicted concentrations in the stormwater discharges are approximately equal to or less than recorded COD levels, thus there is

TABLE 4-2

WATER QUALITY OF PLANNING AREA RUNOFF

UPLAND ALTERNATIVE

Planning Area	Size (Acres)	COD mg/l	SS mg/l	TN mg/l	AN mg/l	CU mg/l	PB mg/l	ZN mg/l
(A) Bellman's Creek	31	7.82	51.69	0.30	0.27	0.01	0.02	0.01
(B) Arena	127	5.41	28.81	0.17	0.15	0.01	0.02	0.01
(C) Sportsplex	14	12.40	87.87	0.50	0.45	0.01	0.04	0.02
(D) UOP	36	7.29	47.39	0.27	0.24	0.01	0.02	0.01
(E) Red Roof Inn	22	9.39	64.15	0.37	0.33	0.01	0.03	0.02
	7	20.31	149.96	0.85	0.77	0.02	0.06	0.04
(H) Standard Tool	79	5.63	32.81	0.19	0.17	0.01	0.02	0.01
(F) Tony's Old Mill	7	20.31	149.96	0.85	0.77	0.02	0.06	0.04
(G) Chromakill Creek	65	5.88	35.38	0.20	0.18	0.01	0.02	0.01
	20	9.92	68.37	0.39	0.35	0.01	0.03	0.02
(K) Enterprise Ave. So.	38	7.11	45.98	0.26	0.24	0.01	0.02	0.01
(M) PR - 2 (II)	79	5.63	32.81	0.19	0.17	0.01	0.02	0.01
(N) SCP	10	15.62	113.12	0.64	0.58	0.02	0.05	0.03
(R) Koppers Coke	28	8.23	54.99	0.31	0.28	0.01	0.02	0.02
(O) Laurel Hill	144	5.45	28.24	0.17	0.15	0.01	0.02	0.01
	25	8.74	59.04	0.34	0.30	0.01	0.03	0.02
(L) Walsh	64	5.91	35.61	0.21	0.18	0.01	0.02	0.01
(J) BCC East	6	22.86	170.06	0.96	0.87	0.03	0.07	0.04
(P) Kearny	27	8.39	56.24	0.32	0.29	0.01	0.02	0.02
23-Jan-92	829							

TABLE 4-3
WATER QUALITY OF PLANNING AREA RUNOFF

REDEVELOPMENT ALTERNATIVE

Planning Area	Size (Acres)	COD mg/l	SS mg/l	TN mg/l	AN mg/l	CU mg/l	PB mg/l	ZN mg/l
(A) UOP Site	50	6.42	40.11	0.23	0.21	0.01	0.02	0.01
	36	7.34	47.70	0.27	0.24	0.01	0.02	0.01
(B) Rutherford STP	36	7.34	47.70	0.27	0.24	0.01	0.02	0.01
(C) Bellman's Creek	17	11.03	76.98	0.43	0.39	0.01	0.03	0.02
(D) North Bergen	31	7.87	52.04	0.30	0.27	0.01	0.02	0.01
(E) Wood Ave.	8	18.49	135.63	0.76	0.69	0.02	0.06	0.03
(F) Secaucus I-495	28	8.29	55.35	0.31	0.28	0.01	0.02	0.02
	10	15.73	113.87	0.64	0.58	0.02	0.05	0.03
(G) Secaucus Rd.	26	8.62	57.97	0.33	0.30	0.01	0.03	0.02
(H) Castle Rd.	33	7.64	50.15	0.28	0.26	0.01	0.02	0.01
(I) Kearny West	42	6.86	43.83	0.25	0.22	0.01	0.02	0.01
	111	5.45	29.83	0.17	0.15	0.01	0.02	0.01
(J) Jersey City	22	9.45	64.58	0.37	0.33	0.01	0.03	0.02
	10	15.73	113.87	0.64	0.58	0.02	0.05	0.03
	50	6.42	40.11	0.23	0.21	0.01	0.02	0.01
(K) Little Ferry Waterfront	31	7.87	52.04	0.30	0.27	0.01	0.02	0.01
(N) Riverview	10	15.73	113.87	0.64	0.58	0.02	0.05	0.03
23-Jan-92	551							

TABLE 4-4

WATER QUALITY OF PLANNING AREA RUNOFF

HIGHWAY CORRIDORS ALTERNATIVE

Planning Area	Size (Acres)	COD mg/l	SS mg/l	TN mg/l	AN mg/l	CU mg/l	PB mg/l	ZN mg/l
(D) Veterans Blvd	22	9.45	64.58	0.37	0.33	0.01	0.03	0.02
(C) Arena	140	5.47	28.54	0.17	0.15	0.01	0.02	0.01
(B) Sportsplex	78	5.68	33.17	0.19	0.17	0.01	0.02	0.01
(A) TAZ 92 (south)	32	7.75	51.06	0.29	0.26	0.01	0.02	0.01
(G) Bl.219A (Rutherford)	17	11.03	76.98	0.43	0.39	0.01	0.03	0.02
	55	6.22	38.33	0.22	0.20	0.01	0.02	0.01
(F) East Ruth. Bl. 109	216	5.99	28.00	0.17	0.15	0.01	0.02	0.01
(E) Berrys Creek Center	65	5.92	35.61	0.20	0.18	0.01	0.02	0.01
(H) Meadowlands Pkwy	35	7.43	48.47	0.28	0.25	0.01	0.02	0.01
	22	9.45	64.58	0.37	0.33	0.01	0.03	0.02
(I) Plaza Center	17	11.03	76.98	0.43	0.39	0.01	0.03	0.02
(J) Mill Creek	2	57.14	442.06	2.46	2.24	0.07	0.17	0.10
	8	18.49	135.63	0.76	0.69	0.02	0.06	0.03
(K) Chromakill Creek	65	5.92	35.61	0.20	0.18	0.01	0.02	0.01
	10	15.73	113.87	0.64	0.58	0.02	0.05	0.03
	18	10.64	73.97	0.42	0.38	0.01	0.03	0.02
(L) County Ave.	16	11.45	80.35	0.45	0.41	0.01	0.03	0.02
	16	11.45	80.35	0.45	0.41	0.01	0.03	0.02
(M) Secaucus I-495	10	15.73	113.87	0.64	0.58	0.02	0.05	0.03
	28	8.29	55.35	0.31	0.28	0.01	0.02	0.02
(N) Secaucus Pat Plank Rd.	17	11.03	76.98	0.43	0.39	0.01	0.03	0.02
(O) SU - 2	142	5.48	28.48	0.17	0.15	0.01	0.02	0.01
	28	8.29	55.35	0.31	0.28	0.01	0.02	0.02
23-Jan-92	1,059							

TABLE 4-5

WATER QUALITY OF PLANNING AREA RUNOFF

DISPERSED DEVELOPMENT AREAS
ALTERNATIVE

Planning Area	Size (Acres)	COD mg/l	SS mg/l	TN mg/l	AN mg/l	CU mg/l	PB mg/l	ZN mg/l
(A) TAZ 92 (north)	81	5.64	32.73	0.19	0.17	0.01	0.016	0.01
(B) TAZ 92 (south)	32	7.75	51.06	0.29	0.26	0.01	0.023	0.01
(C) Sportsplex	58	6.12	37.41	0.21	0.19	0.01	0.018	0.01
(D) Berrys Creek	65	5.92	35.61	0.20	0.18	0.01	0.017	0.01
(E) Rutherford Bl. 109	70	5.81	34.56	0.20	0.18	0.01	0.017	0.01
	20	9.99	68.83	0.39	0.35	0.01	0.030	0.02
(F) Mill Creek	50	6.42	40.11	0.23	0.21	0.01	0.019	0.01
	97	5.50	30.91	0.18	0.16	0.01	0.016	0.01
(G) SU - 2	92	5.53	31.40	0.18	0.16	0.01	0.016	0.01
(H) Laurel Hill	169	5.61	27.99	0.16	0.15	0.01	0.015	0.01
(J) Kearny West	37	7.25	46.97	0.27	0.24	0.01	0.021	0.01
(L) Allied	28	8.29	55.35	0.31	0.28	0.01	0.024	0.02
(K) Koppers Coke	28	8.29	55.35	0.31	0.28	0.01	0.024	0.02
	39	7.08	45.62	0.26	0.23	0.01	0.021	0.01
(I) PR - 2	58	6.12	37.41	0.21	0.19	0.01	0.018	0.01
	20	9.99	68.83	0.39	0.35	0.01	0.030	0.02
	27	8.44	56.62	0.32	0.29	0.01	0.025	0.02
23-Jan-92	971							

TABLE 4-6

WATER QUALITY OF PLANNING AREA RUNOFF

GROWTH CENTERS ALTERNATIVE

Planning Area	Size (Acres)	COD mg/l	SS mg/l	TN mg/l	AN mg/l	CU mg/l	PB mg/l	ZN mg/l
(A) Empire Blvd Area	220	6.03	28.04	0.17	0.15	0.01	0.02	0.01
	69	5.83	34.75	0.20	0.18	0.01	0.02	0.01
	62	6.00	36.33	0.21	0.19	0.01	0.02	0.01
(B) Harmon Meadow Area	97	5.50	30.91	0.18	0.16	0.01	0.02	0.01
	67	5.88	35.17	0.20	0.18	0.01	0.02	0.01
	63	5.97	36.08	0.21	0.19	0.01	0.02	0.01
(D) Secaucus Transfer Area	20	9.99	68.83	0.39	0.35	0.01	0.03	0.02
	63	5.97	36.08	0.21	0.19	0.01	0.02	0.01
	169	5.61	27.99	0.16	0.15	0.01	0.02	0.01
(C) Berrys Creek Area	97	5.50	30.91	0.18	0.16	0.01	0.02	0.01
	86	5.58	32.07	0.19	0.17	0.01	0.02	0.01
	10	15.73	113.87	0.64	0.58	0.02	0.05	0.03
23-Jan-92	1,023							

TABLE 4-7

WATER QUALITY OF PLANNING AREA RUNOFF

NO ACTION (NO SAMP) ALTERNATIVE

Planning Area	Size (Acres)	COD mg/l	SS mg/l	TN mg/l	AN mg/l	CU mg/l	PB mg/l	ZN mg/l
(A) Teterboro	23	9.21	62.72	0.13	0.12	0.01	0.03	0.02
(B) IR-4	224	6.06	28.08	0.17	0.15	0.01	0.02	0.01
(B) IR-4	10	15.73	113.87	0.23	0.21	0.02	0.05	0.03
(C) IR-3	147	5.50	28.35	0.17	0.15	0.01	0.02	0.01
(D) IR-2	87	5.57	31.95	0.18	0.16	0.01	0.02	0.01
(E) Berrys Creek	93	5.52	31.29	0.07	0.06	0.01	0.02	0.01
(E) Berrys Creek	79	5.67	33.02	0.07	0.06	0.01	0.02	0.01
(F) PR-2	226	6.08	28.10	0.17	0.15	0.01	0.02	0.01
(F) PR-2	10	15.73	113.87	0.23	0.21	0.02	0.05	0.03
(G) SU-2	95	5.51	31.10	0.06	0.06	0.01	0.02	0.01
(H) TC-3	22	9.45	64.58	0.13	0.12	0.01	0.03	0.02
(I) PR-3	138	5.47	28.60	0.17	0.15	0.01	0.02	0.01
(I) PR-3	10	15.73	113.87	0.23	0.21	0.02	0.05	0.03
(J) SU-1	76	5.71	33.49	0.07	0.06	0.01	0.02	0.01
(K) SU-3	322	7.27	30.06	0.06	0.06	0.01	0.02	0.01
(L) RD Park	73	5.76	34.00	0.07	0.06	0.01	0.02	0.01
(M) HC Secaucus	133	5.45	28.76	0.06	0.05	0.01	0.02	0.01
23-Jan-92	1,768							

TABLE 4-8

WATER QUALITY OF WAREHOUSING/SEC. OFFICE AREA RUNOFF

SECONDARY OFFICE, WAREHOUSING, & LIGHT INDUSTRIAL AREA
COMPONENTS OF IN-DISTRICT ALTERNATIVES

Secondary Office & & Warehousing Area	Size (Acres)	Warehousing & Office Areas in each Alternative (1)	COD mg/l	SS mg/l	TN mg/l	AN mg/l	CU mg/l	PB mg/l	ZN mg/l
a	10	GUSNHR	15.60	112.92	0.23	0.21	0.02	0.05	0.03
aa	18	GUSNHR	10.74	74.72	0.15	0.14	0.01	0.03	0.02
ab	9	GUSNHR	16.96	123.59	0.25	0.23	0.02	0.05	0.03
ac	4	GSNHR	29.81	224.87	0.45	0.42	0.04	0.09	0.05
ad	33	S	7.62	50.04	0.10	0.09	0.01	0.02	0.01
ae	38	GSNHR	7.19	46.55	0.10	0.09	0.01	0.02	0.01
af	15	GSNHR	12.14	85.71	0.17	0.16	0.01	0.04	0.02
ag	38	GSNHR	7.19	46.55	0.10	0.09	0.01	0.02	0.01
ah	7	GUSNHR	19.56	144.03	0.29	0.27	0.02	0.06	0.04
ai	13	GSNH	12.97	92.25	0.19	0.17	0.02	0.04	0.02
aj	26	GSNHR	8.59	57.79	0.12	0.11	0.01	0.03	0.02
ak	20	GUNH	10.04	69.22	0.14	0.13	0.01	0.03	0.02
al	22	GUSHR	9.54	65.31	0.13	0.12	0.01	0.03	0.02
am	5	GUSHR	24.99	186.77	0.38	0.35	0.03	0.08	0.05
an	20	GUSNHR	9.88	67.98	0.14	0.13	0.01	0.03	0.02
ao	47	GUSNHR	6.59	41.55	0.09	0.08	0.01	0.02	0.01
ap	41	GNHR	6.95	44.51	0.09	0.08	0.01	0.02	0.01
aq	5	SNH	28.79	216.83	0.44	0.41	0.03	0.09	0.05
ar	18	U	10.53	73.08	0.15	0.14	0.01	0.03	0.02
as	79	GUSNHR	5.67	33.08	0.07	0.06	0.01	0.02	0.01
b	3	GUSNHR	37.27	283.99	0.57	0.53	0.04	0.11	0.07
c	9	GUSNHR	16.73	121.79	0.25	0.23	0.02	0.05	0.03
d	2	GUSNHR	49.51	381.30	0.76	0.71	0.06	0.15	0.09
e	14	GUSNHR	12.57	89.11	0.18	0.17	0.01	0.04	0.02
f	13	GUSNHR	13.47	96.16	0.19	0.18	0.02	0.04	0.02
g	3	GUSNHR	42.66	326.80	0.66	0.61	0.05	0.13	0.08
h	18	GSNH	10.80	75.23	0.15	0.14	0.01	0.03	0.02
i	24	GSNH	8.96	60.68	0.12	0.11	0.01	0.03	0.02
j	48	GSNHR	6.52	40.92	0.08	0.08	0.01	0.02	0.01
k	19	USNHR	10.34	71.58	0.15	0.13	0.01	0.03	0.02
l	82	NHR	5.63	32.62	0.07	0.06	0.01	0.02	0.01
m	50	NHR	6.41	40.03	0.08	0.08	0.01	0.02	0.01
n	7	GSNH	20.67	152.72	0.31	0.29	0.02	0.06	0.04
o	2	GUSNHR	47.78	367.51	0.74	0.69	0.06	0.15	0.09
p	2	GUSNHR	47.29	363.59	0.73	0.68	0.06	0.14	0.09
q	3	GSNHR	40.03	305.91	0.61	0.57	0.05	0.12	0.07
r	10	GSNHR	15.44	111.65	0.23	0.21	0.02	0.05	0.03
s	26	GSNHR	8.53	57.31	0.12	0.11	0.01	0.03	0.02
t	26	GUSNHR	8.65	58.23	0.12	0.11	0.01	0.03	0.02
u	14	GUSNHR	12.59	89.29	0.18	0.17	0.01	0.04	0.02
v	28	GSNHR	8.33	55.67	0.11	0.10	0.01	0.02	0.02
w	36	GSNHR	7.36	47.88	0.10	0.09	0.01	0.02	0.01
x	45	GUSHR	6.69	42.38	0.09	0.08	0.01	0.02	0.01
y	28	GUSHR	8.32	55.61	0.11	0.10	0.01	0.02	0.02
z	22	GSNHR	9.48	64.81	0.13	0.12	0.01	0.03	0.02
23-Jan-92	1,001								

(1) NOTE: G=Growth Centers Alternative; U=Upland Alternative;
S=Dispersed Development Areas Alt; N=No Action Alt;
H=Highway Alt; R=Redevelopment Alt

little potential of impacts on existing oxygen levels from additional stormwater runoff.

The values estimated for COD can also be used to predict the BOD concentrations on the basis of the ratio between COD and BOD found in the data collected in the NURP program. On the average, the ratio of COD/BOD concentration from runoff in residential areas is 7, and from commercial areas it is 6. Assuming the modeled areas have a mix of residential and commercial development, a reasonable estimate of the BOD in the storm discharges can be estimated by applying a ratio of 6.5. On this basis, the BOD in the stormwater discharges from the modeled areas will also be approximately equal to or less than the existing BOD levels. The BOD concentration in the discharges from the modeled areas will range from approximately 0.8 mg/l to 9 mg/l, while the range in average background values at the 18 stations was approximately 5 mg/l to 40 mg/l.

Nitrogen. The estimated concentrations of total and ammonia nitrogen in the stormwater discharges from the different modeled areas are, with one exception, less than 1 mg/l and most are less than 0.5 mg/l. Although total nitrogen or ammonia were not measured by HMDC, the information on TKN can be used for comparison. TKN is a combined measure of organic nitrogen and ammonia, which in estuarine marshes comprise most of the nitrogen. Of the 90 annual average values for TKN obtained in the study (18 locations monitored for 6 years), only 14 were below 1 mg/l, and most were in the 2 mg/l - 4 mg/l range.

Although there is some overlap in the concentrations of nitrogen in the concentration ranges predicted for the stormwater discharges and for ambient concentrations, the stormwater discharges are much lower overall. The qualitative assessment is that nitrogen is not a critical factor that will affect the choice of management plans. A more quantitative assessment is not possible because nitrogen values are highly variable in the Meadowlands and the annual average can change by an order of magnitude at one location (e.g., see data for Penhorn Creek-upper between 1985 and 1986). Thus, because of the changes in ambient concentrations it is difficult to predict if a stormwater discharge will be slightly higher or lower than ambient concentrations.

In estuarine areas nitrogen, rather than phosphorus, becomes the limiting nutrient for plant growth (Nixon and Pilson, (1983). Nitrogen in estuarine and coastal marine ecosystems. in Nitrogen in the Marine Environment, eds. Carpenter, E.J. and D.G. Capone. Academic Press). As a result, the nitrogen loading to estuaries is a critical factor in assessing the potential for water quality impacts. In the Lower Hackensack River, however, the existing nitrogen loadings are very high, and the ambient concentrations of inorganic N (as nitrate, nitrite, and ammonium) are very much above those that can inhibit phytoplankton growth. As in most eutrophied estuaries, the limiting factor for phytoplankton growth becomes light (Keller, A. (1988). Estimating phytoplankton productivity from light availability and biomass in the MERL mesocosms and Narragansett Bay. Marine Ecology Progress Series 45: 159-168.). The light penetration in the estuary is limited by the high populations of phytoplankton, and by the suspended sediments. Nitrogen begins to limit phytoplankton growth below concentrations of 0.05 mg/l inorganic nitrogen. The concentrations of inorganic nitrogen as measured by the HMDC are in the 1-3 mg/l range. Additional discharges approximately equal to or lower than the ambient concentrations will have little potential of impacting nutrient dynamics in the estuary.

Zinc. The EPA water quality criteria for zinc in marine waters is 0.095 mg/l for acute toxicity. Because the stormwater discharges are sporadic rather than continuous, the acute criterion is the appropriate measure in assessing water quality. The acute criterion was developed to protect marine organisms from a single discharge event, while the chronic criteria was developed to protect organisms from continuous discharges. None of the estimated zinc concentrations in the stormwater coming from the different modeled areas are above these levels, and therefore, there is little potential for impacts for this metal.

SS (suspended solids). The concentration of suspended solids discharged in the stormwater for all alternatives will probably be slightly higher than those currently exhibited. The average annual concentration at the 18 stations monitored by HMDC was usually between 20 mg/l and 50 mg/l, while those calculated for the stormwater discharge for all alternatives were mostly between 40 mg/l and 120 mg/l. Large day-to-day variations in existing concentrations were measured by HMDC, so it is difficult to quantify an impact. The variation within a year at one station could be as high as a 30-fold difference (e.g., minimum of 3.9 mg/l and a maximum of 117 mg/l in 1984 at Moonachie Creek), while year-to-year average concentrations could differ by a factor of 5 at one station.

Because of this variation it is not possible to rate the severity of the impacts from the SS discharged at individual areas. An assessment, however, can be made of the impacts of the different management alternatives because these show certain distinct patterns. On the average, the SS concentrations under the No Action Alternative are the lowest while those from the Redevelopment Alternative are the highest. The table below indicates the (area-weighed) mean concentration of all SS discharges for the six alternatives. These averages include the secondary office/ warehousing component of the alternatives. An assessment of the severity of the impact to SS concentration can be made by comparing these values with the overall average of ambient SS values measured during the 5 year HMDC study (36 mg/l). Using the criterion listed in table 4-1 above, an approximate level of potential impact has been predicted in table 4-9.

Lead. The EPA water quality criterion for Lead is 0.14 mg/l for acute toxicity. Only one discharge from a planning area (area J for the Highway Corridors alternative) is expected to exceed this value and cause a water quality problem. Because the predicted concentration, however, is 0.17 mg/l, the increase in concentration is less than factor or two. The potential for impact from the lead discharge from this planning area can be characterized as Low according to the ratings established previously.

Copper. The EPA acute toxic water quality criterion for Copper is 0.0029 mg/l. All of the stormwater discharges will exceed this criterion at the point of discharge, before mixing with the receiving stream. Because the lowest concentration to be discharged is at least 3 times greater than the

TABLE 4-9

AVERAGE SS CONCENTRATION IN DISCHARGES
FROM PLANNING AREAS AND PREDICTED IMPACTS

Alternative	Mean SS Concentration	Potential Impact
Upland	53 mg/l	Low
Redevelopment	57 mg/l	Moderate
Highway Corridors	52 mg/l	Low
Dispersed Devel.	52 mg/l	Low
Growth Centers	48 mg/l	Low
No Action	42 mg/l	Low

(ds/1976)

criterion, all discharges have a potential to cause at least a moderate impact on water quality. Some projected discharges have concentrations at least 5 times higher and can be considered to have a potential to cause severe impacts. The management alternatives can be compared relative to the volume of the discharges for each alternative that can be considered as potentially severe. The drainage area, measured in acres, can be used as a surrogate for discharge volume (because area times rainfall depth equals discharge volume). The total acreage of the modeled areas for which copper concentrations above 0.0145 mg/l were predicted is shown in table 4-10.

Summary. The potential impacts on water quality of seven contaminants typically present in stormwater runoff were assessed based on mass loading rates calculated from EPA's national NURP data. Of the seven contaminants modeled, only two--suspended solids and copper--will have discharge concentrations greater than ambient concentrations in the District. In terms of the six alternatives being considered, the Growth Centers, Dispersed Development, and Upland alternatives will have the lowest discharge concentrations. The Redevelopment, No Action, and Highway Corridors alternatives will have the greatest discharge concentrations.

(ds/1970)

TABLE 4-10

ACREAGE OF PLANNING AREAS WITH SEVERE WATER QUALITY IMPACTS AS A RESULT OF COPPER CONCENTRATIONS

Alternative	Acres with Potentially Severe Impacts
Upland	125
Redevelopment	150
Highway Corridors	167
Dispersed Devel.	137
Growth Centers	142
No Action	162

(ds/1977)

5.0 AQUATIC RESOURCES

5.1 SCREENING-LEVEL IMPACT ASSESSMENT FOR IN-DISTRICT ALTERNATIVES

5.1.1 Method for Assessing Impacts

The aquatic resources in the Meadowlands include the estuarine and marine fauna and the flora that inhabit the main channels and permanently flooded estuarine areas of the Hackensack River and its major tributaries. The permanently flooded areas provide a distinct, but ecologically linked, habitat that is different from the wetlands. During a high tide many aquatic species will move into a tidal wetland for food and shelter. The wetland and aquatic resources are different, however, because their basic habitat characteristics such as temperature, hydrology, and substrate are different.

None of the alternatives involve the filling of major streams, ditches, or rivers, based on an analysis of the geographic extent of the planning areas identified for each alternative. The direct impacts to the aquatic resources in terms of lost aquatic habitat are predicted to be minimal for all alternatives, and are not determinative in the comparison of alternatives. Impacts to aquatic resources will be indirect, and will result from the following changes in existing conditions:

1. Discharge of storm runoff containing potentially harmful levels of contaminants and sediments that can affect the growth or metabolism of aquatic organisms.
2. The loss of primary productivity in filled estuarine wetlands that support the aquatic food webs through the export of organic matter.

In the first case, the impact of stormwater discharges has been assessed using the results of the water quality analyses. The concentrations of contaminants in discharges from planning areas were determined using the regression equations described in section 4. Based on these estimates, the alternatives were ranked with regards to the potential for causing toxicity to the aquatic organisms.

In the second case, the loss of primary productivity of estuarine wetlands for the different alternatives was compared on the basis of the total area of estuarine tidal wetlands that would be filled under each alternative. AAs in the District that were estuarine or brackish (i.e. with a salinity greater than 5 ppt) were identified using the appropriate answers in the WET database. The "footprints" of the different alternatives were superimposed on the map of estuarine AAs to calculate the area of wetlands that would be filled, and that would, thus, be removed as a source of primary productivity.

5.1.2 Results of Impact Screening

The water quality impact assessment indicated that there are two contaminants that will be discharged in stormwater runoff that have potential for changing water quality. These two constituents, suspended sediments and copper, can also cause potential impacts to aquatic resources.

Impacts of Stormwater Discharges - Suspended Solids. An increase in suspended solids (SS) can reduce the feeding efficiency of filter feeding invertebrates and fish. The predicted contribution of SS in stormwater runoff from all the alternatives, however, is not expected to be high enough to actually smother organisms. Natural estuaries typically exhibit sufficient sediment transport (resulting from the tidal flow) so that most organisms have adapted to some levels of SS in the water. The SS concentrations recorded by HDMC average 36 mg/l, and those modeled for the stormwater (end of pipe) discharges for all alternatives are higher by a relative factor of only 2-3 times.

The expected concentration of SS in the discharges fall within the maximum measured during the HMDC survey. The aquatic organisms currently living in the District are adapted to episodic (i.e., storm-related) increases in SS. Because the volume of the stormwater discharges is low relative to the volume of the receiving waters, the moderately higher concentrations will be quickly diluted. Any localized increase in SS during a rain event will be exerted only in the immediate vicinity of the stormwater discharge.

Based on the qualitative assessment described above, the SS impacts on aquatic resources are predicted to be of a low severity for all management alternatives.

Impacts of Stormwater Discharges - Copper

The EPA water quality criterion for copper is based on its toxicity to marine organisms. Thus, the criterion can also be used to assess impacts to aquatic resources. Any discharges that have copper concentrations higher than 0.0029 mg/l have the potential to pose a threat to marine organisms. The potential impacts can be classified as Low, Moderate, or Severe based on the dilution that needs to be achieved instream to meet the criterion. When higher dilutions are needed the mixing zone where the discharge does not meet the criterion is larger. This in turn means that potentially toxic concentrations of the contaminant will be found over a larger area.

As mentioned in the Water Quality section, discharges for all alternatives do not achieve the EPA criterion for copper. Because the lowest concentration that is predicted to be in the discharges is at least 3 times higher than the criterion, there will be a zone around each discharge where Copper may be toxic. Thus, the impacts of all discharges can be considered to be at least moderate. By assuming that a discharge with a concentration that is 5 times higher than the EPA criterion has the potential for causing severe impacts to the aquatic resources, the management alternatives can be ranked in the same order as they were shown for water quality (see table 4-10). The impacts of copper in storm discharges on aquatic resources were considered to be the same as for water quality because EPA water quality criterion is based on toxicity to aquatic organisms.

Loss of Primary Productivity in Wetlands. The primary productivity of estuarine wetlands provide the base of much of the food web in the aquatic ecosystem. Removing this productivity by filling wetlands, therefore, has the potential to reduce the amount of food available. It is assumed, for the purpose of an initial screening, that the estuarine wetlands in the Meadowlands all have approximately similar productivity. This assumption is based on the fact that of the 6583 acres of estuarine wetlands assessed in the AVID/WET, 6510 acres (99 percent) were rated at Moderate for the Production Export Function. Proceeding from this assumption, the alternatives have been compared on the basis of the total area of estuarine wetlands filled.

The comparison of impact to primary productivity is summarized in table 5-1. Tables 5-2 through 5-6 indicate the amount of estuarine wetland loss by planning area for each of the in-District alternatives. Table 5-1 shows that the largest area of estuarine wetlands loss (1,041 acres, or 15.8% of the District's existing estuarine wetlands) occurs under the No Action alternative. This alternative can, therefore, be expected to have the most impact on the food web and aquatic resources in the estuary. Lower levels of impact are exhibited under the Highway Corridors alternative (401 acres of estuarine wetland loss or 6.1% of the District inventory), Dispersed Development Areas alternative (417 acres or 6.3% of the District inventory), and the Growth Centers alternative (422 acres or 6.4% of the District inventory). The second lowest impacts are exhibited under the Redevelopment alternative, because this alternative is characterized by the lowest acreage requirement given the limited amount of land available under this alternative. The Redevelopment alternative would incur the loss of 188 acres or 2.9% of the District's estuarine wetland inventory. The lowest level of impact is exhibited by the Upland alternative, which exhibits no loss of estuarine wetland area, by definition.

Please note that the loss of estuarine wetland acreage for each alternative includes the use of infill parcels for Secondary Office/Warehousing activity, that impacts 135 acres, 169 acres, 176 acres, 177 acres, and 179 acres for the No Action, Redevelopment, Growth Centers, Highway Corridors, and Dispersed Development Areas alternatives, respectively. These impacts are included in the primary productivity impacts totals presented above for each alternative.

(ds/1971)

TABLE 5-1
AQUATIC RESOURCES IMPACTS
ALTERNATIVES COMPARISON

	Estuarine Wetland Acreage
Baseline	6582.94
Upland	
Impact	0.00
% Impact	0.0%
Post-Impact	6582.94
Redevelopment	
Impact	187.90
% Impact	2.9%
Post-Impact	6395.04
Highway Corridors	
Impact	401.97
% Impact	6.1%
Post-Impact	6180.97
Dispersed Development	
Impact	416.57
% Impact	6.3%
Post-Impact	6166.37
Growth Centers	
Impact	422.29
% Impact	6.4%
Post-Impact	6160.65
No Action	
Impact	1041.15
% Impact	15.8%
Post-Impact	5541.79

TABLE 5-2
AQUATIC RESOURCES IMPACTS
REDEVELOPMENT ALTERNATIVE

Planning Area	Estuarine Wetland Acreage	Secondary Office/ Warehousing Area	Estuarine Wetland Acreage
A	5.29	aa	9.94
C	0.01	al	10.16
D	11.86	am	0.39
J	0.03	ao	8.10
K	0.55	f	5.34
N	0.47	j	31.61
		p	0.17
Subtotal	18.22	r	10.04
		t	13.24
		v	21.26
		w	28.51
		x	30.92
		Subtotal	169.68
		Total	187.90

TABLE 5-3
AQUATIC RESOURCES IMPACTS
HIGHWAY CORRIDORS ALTERNATIVE

Planning Area	Estuarine Wetland Acreage	Secondary Office/ Warehousing Area	Estuarine Wetland Acreage
B	27.32	aa	9.94
C	16.48	al	10.16
E	36.07	am	0.39
F	101.99	ao	8.10
G	34.18	aq	0.11
H	5.86	f	5.34
K	3.55	h	6.73
		j	31.61
Subtotal	225.45	p	0.17
		r	10.04
		t	13.24
		v	21.26
		w	28.51
		x	30.92
		Subtotal	176.52
		Total	401.97

TABLE 5-4
AQUATIC RESOURCES IMPACTS
DISPERSED DEVELOPMENT AREAS ALTERNATIVE

Planning Area	Estuarine Wetland Acreage
C	10.64
D	36.07
E	39.12
F	97.02
H	8.13
I	29.39
K	0.37
L	16.29
Subtotal	237.04

Secondary Office/ Warehousing Area	Estuarine Wetland Acreage
aa	9.94
ad	3.01
al	10.16
am	0.39
ao	8.10
aq	0.11
f	5.34
h	6.73
j	31.61
p	0.17
r	10.04
t	13.24
v	21.26
w	28.51
x	30.92
Subtotal	179.53
Total	416.57

TABLE 5-5
AQUATIC RESOURCES IMPACTS
GROWTH CENTERS ALTERNATIVE

Planning Area	Estuarine Wetland Acreage
A	4.47
B	101.57
C	123.54
D	16.29
Subtotal	245.88

Secondary Office/ Warehousing Area	Estuarine Wetland Acreage
aa	9.94
al	10.16
am	0.39
ao	8.10
f	5.34
h	6.73
j	31.61
p	0.17
r	10.04
t	13.24
v	21.26
w	28.51
x	30.92
Subtotal	176.41
Total	422.29

TABLE 5-6
AQUATIC RESOURCES IMPACTS
NO ACTION ALTERNATIVE

Planning Area	Estuarine Wetland Acreage	Secondary Office/ Warehousing Area	Estuarine Wetland Acreage
A	18.65	aa	9.94
B	2.41	ao	8.10
C	130.78	aq	0.11
D	85.28	f	5.34
E	101.24	h	6.73
F	191.53	j	31.61
H	13.98	p	0.17
I	14.38	r	10.04
J	1.32	t	13.24
K	287.11	v	21.26
L	25.44	w	28.51
M	33.99		
		Subtotal	135.05
Subtotal	906.10		
		Total	1041.15

6.0 TERRESTRIAL IMPACTS

6.1 SCREENING-LEVEL IMPACT ANALYSIS FOR IN-DISTRICT ALTERNATIVES

6.1.1 Method for Assessing Impacts

The major terrestrial resources in the District are the open vegetated upland habitats that have developed on unused portions of filled wetlands. These vegetated filled areas provide a habitat for numerous terrestrial species that have moved in from nearby uplands, as well as providing habitat for species that use both wetlands and uplands. Because the terrestrial habitats within the planning areas are all located on areas filled over the last century, there are no upland habitats that can be considered indigenous. Furthermore, the dominant community on these open spaces is one that can be characterized as "early successional". Because most of the fill is recent, the local upland climax community has not had sufficient time to develop. Many open spaces have also subject to continuous disturbances, such as vehicular traffic and fire which have slowed the natural process of succession.

An analysis of aerial photographs taken in 1985 (printed at a scale of 1 in. = 200 ft.) indicate that the terrestrial habitats that fall within the proposed planning areas for the management alternatives can all be characterized as exhibiting an early successional community. A comparison of the aerial photographs with the land use map developed by the HMDC also indicated that this habitat corresponds well with to the "vacant" land use category. Thus, this land use category, or more specifically, those areas not in wetlands that were characterized by "vacant" land use, were used as the basis for assessing the impacts of the management alternatives on the terrestrial resources.

The dominant vegetation in the early successional community is mixed scrub/shrub and grasses, with some young trees. In some planning areas the vegetation is thinner because of vehicular traffic (i.e., dirt roads currently criss-cross vegetated areas). None of the planning areas being evaluated through the screening, however, include fully developed, mature grasslands or forests.

For this initial screening analysis it was assumed that all the terrestrial vegetation and its associated community will be removed in each planning area. The impacts of the different alternatives on terrestrial resources were, therefore, assessed on the basis of the area of vacant upland (and thus the area of the early successional community) that is removed/impacted under each alternative.

6.1.2 Results of Impact Screening

Table 6-1 summarizes the area of the early successional community (as measured by the area of upland vacant land use) found in the planning areas for the different alternatives. Tables 6-2 through 6-7 present the acreage of upland impact for each planning area for the six alternatives (including the No Action alternative). The No Action alternative impacts 798 acres of early successional habitat (38% of that current found in the District), the Dispersed Development ALternative impacts 749 acres of early successional habitat (36% of the District inventory), and the Upland alternative impacts 726 acres of the early successional habitat (35% of the District inventory). On a relative basis, the lowest levels of impact are associated with the Redevelopment alternative (loss of 507 acres, or 24% of the District inventory), and the Highway Corridors alternative (loss of 578 acres, or 28% of the District inventory).

None of the terrestial habitats found within the planning areas have been reported as important to endangered species or as raptor feeding grounds. (This was determined by overlaying the HMDC Habitat Cover Map with the planning area maps for each alternative. Confirmation of this result is pending additional analysis from the Natural Heritage Program.) In regard to effect on T & E species therefore, there are no significant differences

TABLE 6-1
TERRESTRIAL RESOURCES IMPACTS
ALTERNATIVES COMPARISON

	Vacant Upland Acreage
Baseline	2096.14
Upland	
Impact	726.65
% Impact	34.7%
Post-Impact	1369.49
Redevelopment	
Impact	507.57
% Impact	24.2%
Post-Impact	1588.57
Highway Corridors	
Impact	578.43
% Impact	27.6%
Post-Impact	1517.71
Dispersed Development Areas	
Impact	749.11
% Impact	35.7%
Post-Impact	1347.03
Growth Centers	
Impact	690.18
% Impact	32.9%
Post-Impact	1405.96
No Action	
Impact	798.33
% Impact	38.1%
Post-Impact	1297.81

TABLE 6-2
TERRESTRIAL RESOURCES IMPACTS
UPLAND ALTERNATIVE

Planning Area	Vacant Upland Acreage	Secondary Office/ Warehousing Area	Vacant Upland Acreage
A	20.61	c	9.17
B	22.93	d	0.63
C	4.32	e	10.12
D	31.11	f	5.61
E	15.04	k	6.79
F	7.11	o	2.46
G	50.11	p	2.33
H	23.63	u	13.82
J	3.91	x	5.32
K	35.57	y	23.66
L	47.31	aa	7.71
M	78.97	ab	8.83
N	6.07	ak	12.57
O	154.04	al	11.47
P	15.57	am	3.62
R	29.19	ao	31.24
		ar	14.75
Subtotal	545.49	as	11.06
		Subtotal	181.16
		Total	726.65

TABLE 6-3
TERRESTRIAL RESOURCES IMPACTS
REDEVELOPMENT ALTERNATIVE

Planning Area	Vacant Upland Acreage	Secondary Office/ Warehousing Area	Vacant Upland Acreage
A	48.22	c	9.17
B	1.56	d	0.63
D	0.16	e	10.12
E	4.17	f	5.61
F	8.19	j	16.35
G	13.96	k	6.79
H	1.30	l	4.65
I	45.43	m	8.09
J	8.12	o	2.46
K	9.97	p	2.33
N	5.00	r	0.22
		s	20.14
Subtotal	146.08	u	13.82
		v	6.48
		w	2.57
		x	5.32
		y	23.66
		z	19.73
		aa	7.71
		ab	8.83
		ae	25.59
		af	11.76
		ag	35.65
		aj	15.57
		al	11.47
		am	3.62
		ao	31.24
		ap	40.82
		as	11.06
		Subtotal	361.49
		Total	507.57

TABLE 6-4
TERRESTRIAL RESOURCES IMPACTS
HIGHWAY CORRIDORS ALTERNATIVE

Planning Area	Vacant Upland Acreage
A	2.75
B	4.50
C	22.93
D	0.02
E	11.84
F	6.37
G	15.55
H	22.19
J	3.71
K	56.52
L	3.30
M	8.19
O	4.69
Subtotal	162.56

Secondary Office/ Warehousing Area	Vacant Upland Acreage
c	9.17
d	0.63
e	10.12
f	5.61
h	3.67
i	24.19
j	16.35
k	6.79
l	4.65
m	8.09
n	6.17
o	2.46
p	2.33
r	0.22
s	20.14
u	13.82
v	6.48
w	2.57
x	5.32
y	23.66
z	19.73
aa	7.71
ab	8.83
ae	25.59
af	11.76
ag	35.65
ai	7.80
aj	15.57
ak	12.57
al	11.47
am	3.62
ao	31.24
ap	40.82
as	11.06
Subtotal	415.87
Total	578.43

TABLE 6-5
TERRESTRIAL RESOURCES IMPACTS
DISPERSED DEVELOPMENT AREAS ALTERNATIVE

Planning Area	Vacant Upland Acreage
A	3.92
B	3.14
C	4.34
D	11.84
E	14.97
F	53.93
G	1.45
H	154.03
I	79.10
J	2.57
K	59.66
L	10.18
Subtotal	399.13

Secondary Office/ Warehousing Area	Vacant Upland Acreage
c	9.17
d	0.63
e	10.12
f	5.61
h	3.67
i	24.19
j	16.35
k	6.79
n	6.17
o	2.46
p	2.33
r	0.22
s	20.14
u	13.82
v	6.48
w	2.57
x	5.32
y	23.66
z	19.73
aa	7.71
ab	8.83
ad	0.24
ae	25.59
af	11.76
ag	35.65
ai	7.80
aj	15.57
al	11.47
am	3.62
ao	31.24
as	11.06
Subtotal	349.98
Total	749.11

TABLE 6-6
TERRESTRIAL RESOURCES IMPACTS
GROWTH CENTERS ALTERNATIVE

Planning Area	Vacant Upland Acreage	Secondary Office/ Warehousing Area	Vacant Upland Acreage
A	7.62	c	9.17
B	75.91	d	0.63
C	32.16	e	10.12
D	178.16	f	5.61
		h	3.67
Subtotal	293.85	i	24.19
		j	16.35
		n	6.17
		o	2.46
		p	2.33
		r	0.22
		s	20.14
		u	13.82
		v	6.48
		w	2.57
		x	5.32
		y	23.66
		z	19.73
		aa	7.71
		ab	8.83
		ae	25.59
		af	11.76
		ag	35.65
		ai	7.80
		aj	15.57
		ak	12.57
		al	11.47
		am	3.62
		ao	31.24
		ap	40.82
		as	11.06
		Subtotal	396.33
		Total	690.18

TABLE 6-7
TERRESTRIAL RESOURCES IMPACTS
NO ACTION ALTERNATIVE

Planning Area	Vacant Upland Acreage
A	6.41
B	6.95
C	1.57
D	3.46
E	26.85
F	46.29
G	3.93
H	8.74
I	146.86
J	49.11
K	35.88
L	26.52
M	63.94
Subtotal	426.53

Secondary Office/ Warehousing Area	Vacant Upland Acreage
c	9.17
d	0.63
e	10.12
f	5.61
h	3.67
i	24.19
j	16.35
k	6.79
l	4.65
m	8.09
n	6.17
o	2.46
p	2.33
r	0.22
s	20.14
u	13.82
v	6.48
w	2.57
z	19.73
aa	7.71
ab	8.83
ae	25.59
af	11.76
ag	35.65
ai	7.80
aj	15.57
ak	12.57
ao	31.24
ap	40.82
as	11.06
Subtotal	371.80
Total	798.33

in the impacts of the different management alternatives on the terrestrial resources, other than the actual area of vegetated uplands (habitat) that would be lost under each alternative.

There are, however, some qualitative differences in the importance of the terrestrial habitats in two locations that can be inferred from the aerial photographs. Two upland areas, which do contain the early successional community, can be considered relatively more important from an ecological perspective. The two areas and the reasons for their relative importance are as follows:

1. The dirt road between Berrys Creek and Berrys Creek Canal (created as an access road to the former Rutherford Landfill) will be impacted by planning area "E" in the Dispersed Development alternative, planning area "G" in the Highway Corridors alternative, planning area "C" in the Growth Centers alternative, and planning areas "L","E","P" in the No Action alternative. This dirt road is a long upland finger that provides an undisturbed terrestrial corridor between the edge of the upland and the river. As such is provides access for terrestrial species to the river and wetlands, and passage between wetlands.

2. The empty lots just north of Rt. 3 bridge on the east bank of the Hackensack River will be impacted by planning area "H" in Highway Corridors alternative, and planning area "E" in the Upland alternative. This vacant area contains relatively more trees than in other vacant areas, and is adjacent to the river. The area can be considered as a suitable habitat for many terrestrial birds and other small animals that live in uplands but also use rivers (e.g., kingfishers, kingbirds). It is one of the few remaining undeveloped upland areas that are adjacent to the river itself, rather than to a wetland.

<u>Summary</u>

The No Action alternative will have the greatest impact on terrestrial resources relative to the other alternatives, followed in close succession by the Dispersed Development Areas alternative and the Upland alternative. It will impact 38% of the remaining vegetated open lands in the District. The least impacts will be from the Redevelopment alternative which will affect 24% of the open space. Furthermore, neither of the two more important open space areas that have been identified will be impacted in the latter alternative. Please note that the area of disturbed land for each alternative includes the use of infill parcels for secondary office and warehousing activity that impacts 181 acres, 349 acres, 361 acres, 371 acres, 396 acres, and 415 acres for the Upland, Dispersed Development, Redevelopment, No Action, and Growth Centers, and Highway Corridor alternative, respectively. These impacts are included in the terrestrial impact totals presented above for each of the alternatives.

(ds/1972)

7.0 TRANSPORTATION

7.1 SUMMARY OF METHODS

Transportation system modeling was performed using the Hackensack Meadowlands Transportation Model (HMTM) to screen alternative land use configurations as part of the development of a Special Area Management Plan (SAMP) for the District. The land use was described by indicating the quantity of development in 30 land use categories that would take place in each of 52 transportation analysis zones within the study area. The land use scenarios were provided by HMDC, based on input from the SAMP partner agencies.

The HMT Model is a state-of-the-industry computer-based planning tool that can project future travel patterns and volumes based on assumptions regarding future land development patterns, future transportation improvements and future travel behavior characteristics. Transportation and transit assumptions in the network include existing facilities and services plus regional improvements that may be in place during the 20 year planning period. The assumptions regarding regional improvements represent projects that were contained in proposed short-and long-range state or local transportation plans and were considered reasonable alternatives in 1990. Transportation project development is a dynamic process which is influenced by many social and economic factors, and as such, changes have occurred, are occurring, and will continue to occur, to the information used to develop the 2010 transportation network.

The model uses separate but coordinated analytical procedures to project future public transportation usage and future highway travel demand, with the information regarding public transportation usage serving as an input data item when projecting future highway travel demand. The study area boundary consists of the 52 Traffic Analysis Zones (TAZ) with land use activity forecasts developed for each zone to keep track of where people will live and where business will locate in the future. Differing patterns of land use and development will have differing impacts on the transportation system. Not only will the gross amount of development affect the overall demand for transportation services, but so will the net density of development as well as the mixture of land uses and the location of land development within the District.

The Meadowland Transportation Model uses the traditional four-step modeling process; trip generation, trip distribution, model split and trip assignment. For each of the land use types, a set of trip generation rates were assumed based on national standards, primarily the Trip Generation Handbook (Fourth Edition) published by the Institute of Transportation Engineers (ITE). These rates were then further broken down into three major trip purposes; home-based work (HBW), home-based other (HBO) and non-home based (NHB).

Within the primary study area the land use types were identified with trip generation rates for each of the 30 land uses by peak hours and by directions. Trip distribution analysis determines the origin and destination of trips produced or attracted to each TAZ. The results are displayed as a set of matrices or trip tables which show the traffic flow between each pair of study zones. The trip distribution module of the HMTM defines a total of twenty-one (21) different trip distribution patterns by major land use types.

After the trip distribution patterns for the land use alternatives were defined, the next step was to estimate transit ridership and potential ridership into and out of the Meadowlands District. The final phase of the travel demand forecasting process assigned trips to specific routes in the transportation network and estimated traffic volumes on each of the individual network links within the system. An important element of the assignment process dealt with defining the "path" or routes that trips would likely take. This step is commonly known as "pathfinding". The determination of assignment path is typically based on the relative ease by which traffic may flow along alternative routes, and includes consideration of travel time, cost, and distance. With the knowledge of such paths, various trip assignment techniques could be used to "load" trips onto the network by assigning them to each specific paths. This results in estimates of the level of use of each network link.

The traffic assignment module of the HMTM utilized the incremental assignment technique provided by the MicroTRIPS transportation planning package. The trip tables were assigned in three increments. The first increment assigned 40% of the trip tables, the second and third increments assigned the remaining 30% and 30% respectively. Previous experiments and initial testing of this method on the study network produced realistic results.

Using the previously described land use categories for each of the alternatives, travel demands were estimated for the morning peak hour period. The trip generation results closely followed the expected relationships based on the land use activity level for each alternative. The travel demands were subjected to trip distribution, modal split, and assignment to develop estimates of the traffic volumes that would be carried on each link of the future year highway network.

7.2 TRANSPORTATION SCREENING RESULTS

7.2.1 District-wide Analysis Of Transportation System Performance

Results of the transportation screening effort are presented in Tables 7-1 through 7-6. Table 7-7 provides summary information on the link types and network composition.

Average Speed. Table 7-1 contains average speed information from the model runs of the alternative land use scenarios reported by each highway network link type. The highway network was modeled using 32 distinct link types as defined in Table 7-7. Link type 32, centroid connectors, is not included in the system totals because centroid connectors do not represent actual roadway segments. (Centroid connectors are essentially artificial links used by the model to allow traffic volumes to enter and exit the network from the planning areas.) The average speed reported in Table 7-1 is the total length of the link type divided by the time it takes to travel the links of that type, weighted by the volume of traffic on each link in miles per hour. In general, the higher the total average speed, the less the

TABLE 7-1

EVALUATION OF SYSTEM PERFORMANCE
BY LINK TYPES (AM)

AVERAGE SPEED

LINK TYPE	1988 AVERAGE SPEED	GC AVERAGE SPEED	HC AVERAGE SPEED	RD AVERAGE SPEED	DD AVERAGE SPEED	UG AVERAGE SPEED	NA AVERAGE SPEED
1	32.48	19.76	17.55	24.79	19.01	18.97	19.98
2	27.77	11.03	9.36	11.81	11.58	9.75	11.65
3	23.79	6.45	5.81	12.29	15.78	11.63	11.60
4	40.39	35.04	34.69	36.38	35.98	35.61	35.95
6	33.36	33.46	34.12	30.71	34.36	32.60	34.11
7	19.77	22.35	18.23	14.02	20.69	17.06	20.36
9	35.10	29.63	31.77	30.32	30.13	29.41	27.49
8,10	23.55	18.67	14.88	20.51	19.94	19.33	20.03
12	25.80	23.03	21.99	21.83	23.34	22.25	22.56
13	16.51	14.57	13.44	15.64	15.37	12.92	14.15
15	23.62	22.37	22.54	24.69	23.58	24.07	22.65
17,22	30.48	31.57	29.59	9.89	30.28	23.65	12.01
19,20	28.51	25.94	25.60	26.41	25.97	25.59	26.01
23	3.90	1.30	2.93	2.53	1.72	1.00	2.06
11,16,24	13.87	6.33	11.69	5.80	11.14	6.62	8.62
14,25	13.15	7.42	5.39	17.30	7.46	13.63	7.59
26	22.81	9.89	8.55	10.77	12.06	9.45	10.72
5,18,21,27-31	31.20	28.28	26.72	27.74	27.70	27.07	26.56
TOTAL	31.48	25.51	24.51	26.44	25.79	24.23	25.29

NOTE:
1988 - 1988 LAND USE
GC - GROWTH CENTERS ALTERNATIVE
NA - NO ACTION ALTERNATIVE
HC - HIGHWAY CORRIDORS ALTERNATIVE
RD - REDEVELOPMENT ALTERNATIVE
DD - DISPERSED DEVELOPMENT AREAS ALTERNATIVE
UG - UPLAND GROWTH ALTERNATIVE

congestion on the network and the better the performance of the alternative. Analyses of the average speed by link type can be instructive for determining where highway improvements might be considered.

The results of the alternatives screening indicate that the Redevelopment alternative results in the highest average speed, or lowest impact, for the alternatives tested. The Growth Centers, Dispersed Development and the No-Action alternatives were grouped about a midpoint value. The Upland Growth and Highway Corridors had higher impacts, or lower overall average speeds.

Vehicle Miles of Travel. Vehicle miles of travel (VMT) are reported by link type in Table 7-2. This number represents the sum of the number of vehicles multiplied by the length of each link type. Total VMT on the network is the composite summation of the individual link type VMT. In general, a lower value of vehicle miles of travel is more desirable than a higher value. The addition of improvements to expressways often results in increased vehicle miles, but with these type improvements, total travel time is reduced because the increased speed more than compensates for the increased distance.

Results of the alternatives screening for VMT indicate that Dispersed Development Areas had lower impact, or VMT, followed closely by Growth Centers and Redevelopment. The remaining alternatives, No Action, Upland Growth, and Highway Corridors had more impact with Highway Corridors resulting in the highest VMT of the alternatives tested.

Vehicle Hours of Travel. Vehicle hours of travel (VHT) are reported in Table 7-3. The values in the table represent the total travel time spent by all vehicles in the network reported by link type. A decrease in vehicle hours of travel is always desired as this value is the best indicator of network wide travel efficiency. Results of the alternatives screening for VHT indicate that the Redevelopment alternative had the least impact, or lowest VHT. The Dispersed Development Areas and Growth Centers were grouped around a midpoint value. The No Action, Highway Corridors and Upland Growth had higher impact VHT with the Upland Growth alternative resulting in the highest VHT among the alternatives.

TABLE 7-2

EVALUATION OF SYSTEM PERFORMANCE
BY LINK TYPES (AM)

VEHICLE MILES OF TRAVEL

LINK TYPE	1988 VEH MILES	GC VEH MILES	HC VEH MILES	RD VEH MILES	DD VEH MILES	UG VEH MILES	NA VEH MILES
1	96312	121670	125853	111663	123002	122968	121696
2	3971	5892	5615	5042	5247	4572	5474
3	4353	9660	10356	7807	9155	9284	9619
4	589742	705919	711251	695424	693610	700970	698898
6	11344	11276	10715	12560	10444	9651	10300
7	12220	21012	22042	21287	20922	21592	20929
9	23870	29042	28782	31080	28350	31143	32248
8,10	25834	33040	39217	34854	33273	34689	35468
12	103408	130300	131694	130864	131699	136655	134265
13	5498	5245	5337	6208	5242	6046	6210
15	35544	35093	36179	35534	34636	35136	36038
17,22	12434	15187	16276	18425	17776	18635	23550
19,20	78789	92413	92455	90915	92253	94097	93203
23	3170	7457	8427	6228	10764	10950	7334
11,16,24	12861	14548	15115	17344	12459	16323	12643
14,25	7772	23695	30666	20361	20594	19482	21674
26	11495	24107	26033	24951	24099	24979	24048
5,18,21,27-31	1743231	1897035	1918322	1909699	1897373	1934014	1923848
TOTAL	2781848	3182591	3234335	3180246	3170898	3231186	3217445

TABLE 7-3

EVALUATION OF SYSTEM PERFORMANCE
BY LINK TYPES (AM)

VEHICLE HOURS OF TRAVEL

LINK TYPE	1988 VEH HOURS	GC VEH HOURS	HC VEH HOURS	RD VEH HOURS	DD VEH HOURS	UG VEH HOURS	NA VEH HOURS
1	2965	6156	7173	4505	6472	6481	6092
2	143	534	600	427	453	469	470
3	183	1498	1781	635	580	798	829
4	14602	20148	20506	19117	19275	19683	19442
6	340	337	314	409	304	296	302
7	618	940	1209	1518	1011	1266	1028
9	680	980	906	1025	941	1059	1173
8,10	1097	1770	2635	1699	1669	1795	1771
12	4008	5659	5990	5995	5643	6143	5951
13	333	360	397	397	341	468	439
15	1505	1569	1605	1439	1469	1460	1591
17,22	408	481	550	1863	587	788	1961
19,20	2764	3562	3612	3443	3552	3677	3583
23	812	5749	2881	2458	6260	10972	3561
11,16,24	927	2297	1293	2990	1118	2466	1467
14,25	591	3192	5687	1177	2760	1429	2855
26	504	2437	3046	2317	1999	2642	2243
5,18,21,27-31	55880	67079	71789	68852	68497	71439	72446
TOTAL	88360	124748	131974	120266	122931	133331	127204

Vehicle Hours of Delay. Vehicle hours of delay (VHD), reported in Table 7-4, is a subset of the VHT data reported in Table 7-3. Specifically, VHD is the vehicle hours of travel spent traveling on links that are congested. As with the vehicle hours of travel, a lower value of VHD is more desirable than a higher one. Congested links are defined as those links where the predicted volume of traffic exceeds the capacity of the link. Results of the alternatives screening for VHD indicate that the Redevelopment alternative had the lowest impact, or lowest VHD, followed closely by the Dispersed Development Areas and Growth Centers alternatives. The No Action alternative resulted in a midpoint value for VHD. The Highway Corridors and Upland Growth had higher impact on VHD with the Upland Growth alternative resulting in the highest impact on VHD of the alternatives tested.

Volume to Capacity Ratio. The volume to capacity ratio by link type (v/c) presented in Table 7-5 is the projected average of the volume of traffic on a link divided by the link capacity. In theory, v/c for "good" performance conditions cannot exceed 1.0. However, in the application of travel demand forecasting and transportation network simulation models, v/c values often exceed 1.0 on individual links. Links exceeding 1.0 are defined as congested as discussed above for estimating VHD.

As with the other parameters evaluated, the alternatives were grouped with respect to impacts on v/c ratio. Results of the alternatives screening for v/c ratio indicate that Dispersed Development Areas had the lowest impact on network congestion followed closely by Growth Centers and the Redevelopment alternatives. The remaining alternatives,the No Action, Upland Growth and Highway Corridors alternatives, had higher impact on the network v/c ratio. The Highway Corridors alternative resulted in the highest v/c ratios, creating a higher potential for congestion among the alternatives.

Transit Modal Split. Modal split results are presented in Table 7-6. The total person trips reported in the table are all trips that are related to the land uses within the Hackensack Meadowlands District. This includes trips:

TABLE 7-4

EVALUATION OF SYSTEM PERFORMANCE
BY LINK TYPES (AM)

VEHICLE HOURS OF DELAY

LINK TYPE	1988 HRS OF DELAYS	GC HRS OF DELAYS	HC HRS OF DELAYS	RD HRS OF DELAYS	DD HRS OF DELAYS	UG HRS OF DELAYS	NA HRS OF DELAYS
1	1213	3944	4885	2475	4235	4245	3879
2	55	403	476	315	336	368	348
3	59	1222	1485	412	319	532	554
4	4773	8382	8652	7526	7715	8000	7794
6	56	55	46	95	43	55	44
7	312	415	658	986	488	726	504
9	150	335	267	334	311	367	457
8,10	445	938	1648	822	831	922	878
12	1423	2402	2698	2724	2350	2727	2595
13	176	210	244	220	191	295	262
15	489	566	571	424	480	456	561
17,22	70	79	118	1362	118	296	1353
19,20	1164	1687	1736	1599	1680	1769	1694
23	685	5451	2544	2209	5830	10534	3267
11,16,24	558	1881	861	2495	761	1999	1105
14,25	332	2402	4665	498	2074	780	2132
26	216	1834	2395	1694	1397	2017	1642
5,18,21,27-31	21433	29477	33721	30918	30876	33026	34194
TOTAL	33609	61683	67670	57108	60035	69114	63263

TABLE 7-5

EVALUATION OF SYSTEM PERFORMANCE
BY LINK TYPES (AM)

VOLUME TO CAPACITY RATIO

LINK TYPE	1988 V/C RATIO	GC V/C RATIO	HC V/C RATIO	RD V/C RATIO	DD V/C RATIO	UG V/C RATIO	NA V/C RATIO
1	0.828	1.016	1.051	0.932	1.027	1.027	1.016
2	0.365	0.541	0.516	0.463	0.482	0.420	0.503
3	0.490	0.686	0.736	0.555	0.650	0.659	0.683
4	0.666	0.731	0.737	0.720	0.718	0.726	0.724
6	0.486	0.484	0.460	0.539	0.448	0.414	0.442
7	0.733	0.887	0.930	0.898	0.883	0.911	0.883
9	0.479	0.582	0.577	0.623	0.568	0.624	0.647
8,10	0.729	0.694	0.823	0.732	0.699	0.728	0.745
12	0.815	0.796	0.805	0.800	0.805	0.835	0.820
13	0.661	0.630	0.641	0.746	0.630	0.727	0.747
15	0.504	0.498	0.513	0.504	0.491	0.499	0.511
17,22	0.427	0.417	0.447	0.506	0.488	0.512	0.647
19,20	0.824	0.792	0.792	0.779	0.791	0.806	0.799
23	0.231	0.526	0.595	0.440	0.760	0.773	0.518
11,16,24	0.393	0.418	0.434	0.498	0.358	0.469	0.363
14,25	0.334	0.464	0.601	0.399	0.404	0.382	0.425
26	0.480	0.780	0.842	0.807	0.779	0.808	0.778
5,18,21,27-31	0.698	0.750	0.759	0.755	0.751	0.765	0.761
TOTAL	0.684	0.739	0.751	0.738	0.736	0.750	0.747

TABLE 7-6

HACKENSACK MEADOWLANDS SPECIAL AREA MANAGEMENT PLAN/EIS
TRANSIT MODAL SPLIT

ALTERNATIVE	1988	GC	HC	RD	DD	UG	NA
PERSON TRIPS	64,703	136,706	138,300	123,997	134,443	135,357	138,906
AUTO TRIPS	61,580	121,299	127,703	114,964	120,259	124,648	127,823
PERCENT AUTO	95.2%	88.7%	92.3%	92.7%	89.5%	92.1%	92.0%
PERCENT TRANSIT	4.8%	11.3%	7.7%	7.3%	10.6%	7.9%	8%
TRANSIT TRIPS IN THOUSANDS	3.1	15.4	10.6	9.0	14.2	10.7	11.1

1) between home and work, if either home or work is located within the District;
2) between home and shopping locations;
3) between work and restaurants;
4) among shopping locations;
5) between home and recreational or social activities; and,
6) among recreational or social activities.

Obviously, many of these trips are short trips within the District that are not candidates for transit use. These short, intra-district trips, however, must be included in the count to accurately represent the total travel volumes in the District. This, in part, explains the relatively low transit mode share estimates. The remainder of the numbers presented in Table 7-6 are derived from the first two. In general, a higher modal split percentage and a larger number of person trips by transit is preferred over a lower percentage or number because the higher percentage or number of transit trips indicate fewer automobile trips and a better utilization of the transit system infrastructure.

7.2.2 Summary of District-wide Results

Highway. The results of the transportation network testing are summarized in Table 7-8. The Redevelopment Alternative has the best performance in all categories, except vehicle miles of travel where it is second and modal split where it is sixth. The Upland Growth Alternative, on the other hand, has the poorest performance indicators overall.

The No Action Alternative has the highest travel demand, followed closely by the Highway Corridors, Growth Centers and Dispersed Development Areas alternatives. The No Action Alternative has slightly higher travel demand than the Highway Corridors Alternative. The Upland Growth Alternative has about 3 percent less travel demand than the No Action Alternative and the Redevelopment Alternative has about 11 percent fewer trips than the No Action Alternative.

TABLE 7-7

EVALUATION OF SYSTEM PERFORMANCE
NETWORK LINK TYPES (AM)

LINK TYPE	DEFINITION
1	ROUTE 3 MAINLINE
2	ROUTE 3 SERVICE ROADS
3	MEADOWLAND PARKWAY
4	NEW JERSEY TURNPIKE (EAST & WEST)
6	ROUTE 20
7	ROUTE 20 (PATERSON PLANK ROAD)
9	RT. 1/9 SKYWAY
8,10	ROUTE 1&9 / ROUTE 1-9 & 48
12	ROUTE 17
13	RIDGE ROAD / KERNY AVE.
15	SCHUYLER AVE. / ORIENT WAY
17,22	RT. 7 / HARRISON AVE.
19,20	ROUTE 46
23	ROADWAYS IN HMD @ 25 MPH
11,16,24	ROADWAYS IN HMD @ 35 MPH
14,25	ROADWAYS IN HMD @ 30 MPH
26	ROADWAYS IN HMD @ 40 MPH
5,18,21,27-31	OTHERS
32	CENTROID CONNECTORS

LINK TYPE	1988 NETWORK COUNT	1988 NETWORK TOTAL DIST	2010 NETWORK COUNT	2010 NETWORK TOTAL DIST
1	25	21.55	25	21.55
2	20	3.6	20	3.6
3	14	4.2	16	5.8
4	49	99.4	56	99.4
6	6	4.4	6	4.4
7	12	14.2	12	14.2
9	4	9.8	4	9.8
8,10	30	16.4	30	16.4
12	30	31.2	36	40.2
13	14	10.4	14	10.4
15	26	26.3	26	26.3
17,22	20	13	22	13
19,20	32	34.6	38	40.8
23	44	13.32	51	13.62
11,16,24	68	28.7	70	28.9
14,25	82	20.12	106	32.12
26	44	17.82	46	17.42
5,18,21,27-31	635	711.54	643	718.54
32	356	822.38	376	828.68
TOTAL	1511	1902.93	1597	1945.13

TABLE 7-8

HACKENSACK MEADOWLANDS SPECIAL AREA MANAGEMENT PLAN
TRANSPORTATION SCREENING ANALYSIS OF ALTERNATIVES

ALTERNATIVE	NUMBER OF PERSON TRIPS (x1,000)	SPEED (MPH)	VEHICLE MILES OF TRAVEL (x10,000)	VEHICLE HOURS OF TRAVEL (x1,000)	HOURS OF DELAY (x100)	VOLUME TO CAPACITY RATIO	MODAL SPLIT (%)
Growth Centers	137	25.5	318	125	617	.748	11.3
Highway Corridors	138	24.5	323	132	677	.751	7.7
Redevelopment	124	26.4	318	120	571	.738	7.3
Scattered Clusters	134	25.8	317	123	600	.736	10.6
Upland Growth	135	24.2	323	133	691	.750	7.9
No Action	139	25.3	322	127	633	.747	8.0

The Redevelopment Alternative has the highest average highway travel speed for all links while the Upland Growth Alternative has the lowest. The Dispersed Development Areas Alternative has the fewest vehicle miles of travel, followed by the Redevelopment Alternative. The Highway Corridors Alternative has the most vehicle miles of travel and the most vehicle hours of travel. The Upland Growth Alternative has the most hours of delay and the Redevelopment Alternative has the least. The Volume to Capacity Ratio, the measure of traffic congestion most often used to indicate the adequacy of highway capacity, indicates that the Dispersed Development Areas Alternative and the Redevelopment Alternative provide the higher levels of service while the Highway Corridors provides a lower level of service.

Transit. The modal split results from the tests are also instructive. The highest modal split percentages are for alternatives that propose more concentrated growth, the Growth Centers and the Dispersed Development Areas Alternatives. The poorest performances involve growth in areas that are currently developed but have poor transit service. The Growth Centers Alternative provides the best transit access followed closely by the Dispersed Development Areas Alternative.

Because the quantity of land use varies by as much as 10 percent from alternative to alternative, it is difficult to evaluate the absolute effect of the alternative concepts alone on transportation. However, the Dispersed Development Areas Alternative is either first or second best in terms of all measures of travel efficiency, and would probably perform consistently better than the Redevelopment Alternative with an equivalent amount of growth. The Dispersed Development Areas Alternative, compared to the Highway Corridors Alternative, performs considerably better in terms of all the performance measures except transit use.

The Growth Centers and Dispersed Development Areas alternatives are very close in terms of their transportation performance and would be even closer if the total development were exactly the same. Both perform better than the Upland Growth Alternative.

The No Action Alternative results in residential development and local commercial development that generates more trips than the other alternatives, and consistently performs less efficiently than most of the six alternatives except for modal split. Of the alternatives evaluated, it is concluded that the Growth Centers and Dispersed Development Areas Alternatives are better than the other alternatives with respect to their overall transportation performance. There is little difference between them and one cannot be considered better than the other on the basis of the testing conducted. The Highway Corridors and Upland Growth Alternatives are inferior in terms of transportation performance. Although it is not certain, it appears that the Redevelopment Alternative would also perform less efficiently than the Growth Centers or Dispersed Development Areas Alternative with exactly the same quantity of growth.

7.2.3 Localized Analysis Of Transportation System Performance

No further assess 2010 transportation network performance among alternatives, particularly with respect to secondary effects on other environmental impacts such as mobile source air quality emissions, a detailed analysis of link congestion was conducted.

Because air quality impacts are most sensitive to link speed, the relationship among alternatives for secondary impacts on link congestion seemed the most reasonable performance parameter to identify differences between alternatives. Differences in congestion among alternatives would directly affect air quality emissions. If distinctions in congestion patterns could be identified between alternatives, and if those distinctions resulted in a direct correlation to air quality impacts or benefits, then the transportation model could be assumed to be sensitive to traffic operations and resultant air quality emissions as a function of land use.

7.2.4 <u>Correlation Of Link Congestion On Future Air Quality Emissions</u>

The initial tier of investigation consisted of an analysis of congestion for each of the 32 link types defined in the transportation network. Congested links were defined as those links operating at a volume to capacity (v/c) ratio equal to or greater than 1.0. A summary of the total number of congested links by link type is presented for each alternative in Table 7-9. Link types which displayed minimal or no net differences between the number of congested links were primarily representative of those links which were congested by assigned "through traffic" trips.

Link types displaying a minimum net change of 3 links per link type (standard deviation of .9 or more) between alternatives were selected to test the model results for sensitivity to changes in land uses. Of the 32 link types represented in the network, eighteen, or 56 percent of the link types, displayed a measurable variation between the 2010 land use alternatives and the number of congested links per link type. Each alternative was then evaluated for the maximum and minimum numbers of congested link types. Based upon this qualitative comparison, the alternatives were ranked to test the correlation of air quality emissions to land use alternatives.

Results of the link congestion analysis indicate that the Growth Centers alternative has the least impact on congestion, followed closely by Redevelopment and Dispersed Development Areas. Highway Corridors resulted in the most impact on congestion with the No Action and Upland Growth alternatives resulting in intermediate impacts.

A second measure of congestion on air quality emissions would be the number of failed links per link type per alternative. Failed link types were defined as those links for which the v/c ratio was equal to or greater than 1.25, and the link would be unable to facilitate any traffic flow Level of Service (LOS). A summary of the total number of failed links by link type for each alternative is presented in Table 7-10. Of the 32 link types contained in the transportation network, fifteen, or 47% of the link types, displayed a measurable variation between the 2010 land use alternatives and

TABLE 7-9

HACKENSACK MEADOWLANDS SPECIAL AREA MANAGEMENT PLAN/EIS
TRANSPORTATION ALTERNATIVES SCREENING
CONGESTED LINK SUMMARY TABLE

TYPE	LINK DESCRIPTION	TOTAL CONGESTED LINKS (V/C > 1.0)										
		1988	NO ACTION		SAMP ALTS					STATS		
		BL	NA1988	NA2010	GC	HC	DD	UG	RD	MAX	MIN	Std Dev
1	RT 3 MAINLINE	4	16	15	14	14	13	14	12	15	12	0.9
2	RT 3 SERVICE RD	1	2	2	3	2	2	2	2	3	2	0.4
3	MEADOWLAND PKWY	0	3	4	3	6	4	4	3	6	3	1.0
4	N.J. TURNPIKE (E&W)	7	18	15	15	16	14	17	14	17	14	1.1
5	OTHERS	4	4	4	4	4	4	4	4	4	4	0.0
6	RT 20	0	0	0	0	0	0	0	0	0	0	0.0
7	RT 20 (PATTERSON PLANK RD)	5	8	5	3	3	3	3	4	5	3	0.8
8	RT 1&9/RT 1-9&48	5	11	4	2	5	2	2	2	5	2	1.2
9	RT 1/9 SKYWAY	0	1	1	1	1	1	1	1	1	1	0.0
10	RT 1&9/RT 1-9&48	0	0	0	0	0	0	0	0	0	0	0.0
11	RDWYS IN HMD @ 35 MPH	0	2	0	0	0	0	0	0	0	0	0.0
12	RT 17	3	14	11	9	10	9	10	9	11	9	0.7
13	RIDGE RD/KERNY AVE.	3	6	4	2	3	2	3	3	4	2	0.7
14	RDWYS IN HMD @ 30 MPH	2	10	8	5	8	4	5	3	8	3	1.9
15	SCHUYLER AVE/ORIENT WAY	2	8	3	2	4	2	5	2	5	2	1.2
16	RDWYS IN HMD @ 35 MPH	2	1	0	3	1	0	1	3	3	0	1.2
17	RT 7/HARRISON AVE	0	8	5	0	2	1	5	6	6	0	2.3
18	OTHERS	5	12	11	8	10	11	11	10	11	8	1.1
19	RT 46	3	5	5	5	5	5	5	5	5	5	0.0
20	RT 46	3	4	3	4	4	3	3	4	4	3	0.5
21	OTHERS	3	11	12	11	11	9	9	12	12	9	1.2
22	RT 7/HARRISON AVE	0	3	2	0	0	0	0	0	2	0	0.7
23	RDWYS IN HMD @ 25 MPH	4	18	17	16	18	22	18	11	22	11	3.3
24	RDWYS IN HMD @ 35 MPH	8	14	11	13	11	11	16	18	18	11	2.7
25	RDWYS IN HMD @ 30 MPH	4	9	8	10	14	8	9	8	14	8	2.1

CONGSTN1.WK1

TABLE 7-9
(continued)

HACKENSACK MEADOWLANDS SPECIAL AREA MANAGEMENT PLAN/EIS
TRANSPORTATION ALTERNATIVES SCREENING
CONGESTED LINK SUMMARY TABLE

TYPE	LINK DESCRIPTION	TOTAL CONGESTED LINKS (V/C > 1.0)										
		1988	NO ACTION		SAMP ALTS					STATS		
		BL	NA1988	NA2010	GC	HC	DD	UG	RD	MAX	MIN	Std Dev
26	RDWYS IN HMD @ 40 MPH	3	17	13	13	20	15	14	12	20	12	2.6
27	OTHERS	22	51	38	31	39	29	31	30	39	29	4.0
28	OTHERS	6	30	9	8	5	6	8	7	9	5	1.3
29	OTHERS	32	64	47	43	47	47	46	45	47	43	1.5
30	OTHERS	10	26	24	19	26	23	26	20	26	19	2.7
31	OTHERS	0	1	1	1	1	1	1	1	1	1	0.0
32	CENTROID CONNECTORS	0	0	0	0	0	0	0	0	0	0	0.0
NBR CONGESTED LINKS		141	377	282	248	290	251	273	251			
LEAST CONGESTED 2010 LINK TYPES				3	7	2	8	2	9			
MOST CONGESTED 2010 LINK TYPES				6	1	8	3	4	3			

HMDC SAMP Alternatives Screening Legend	
1988BL	Baseline Alternative
NA1988	2010 No Action Land Use w/ 1988 transportation network
NA2010	2010 No Action Land Use w/ 2010 transportation network
GC	SAMP: Growth Centers Alternative
HC	SAMP: Highway Corridor Alternatives
DD	SAMP: Dispersed Development Areas Alternative
UG	SAMP: Upland Growth Alternative
RD	SAMP: Redevelopment Alternative

CONGSTN1.WK1

TABLE 7-10

HACKENSACK MEADOWLANDS DEVELOPMENT COMMISSION SPECIAL AREA MANAGEMENT PLAN/EIS
TRANSPORTATION ALTERNATIVES SCREENING
FAILED LINK SUMMARY TABLE

TYPE	LINK DESCRIPTION	TOTAL FAILED LINKS (V/C > 1.25)										
		1988	NO ACTION		SAMP ALTS					STATS		
		BL	NA1988	NA2010	GC	HC	DD	UG	RD	MAX	MIN	Std Dev
1	RT 3 MAINLINE	0	12	3	3	5	6	4	2	6	2	1.3
2	RT 3 SERVICE RD	0	2	2	2	2	2	2	2	2	2	0.0
3	MEADOWLAND PKWY	0	3	2	3	4	0	2	2	4	0	1.2
4	N.J. TURNPIKE (E&W)	0	3	5	5	6	3	3	4	6	3	1.1
5	OTHERS	2	4	4	4	4	4	4	4	4	4	0.0
6	RT 20	0	0	0	0	0	0	0	0	0	0	0.0
7	RT 20 (PATTERSON PLANK RD)	2	3	0	1	2	2	2	1	2	0	0.7
8	RT 1&9/RT 1-9&48	0	6	2	2	3	2	2	2	3	2	0.4
9	RT 1/9 SKYWAY	0	1	1	0	0	0	0	0	1	0	0.4
10	RT 1&9/RT 1-9&48	0	0	0	0	0	0	0	0	0	0	0.0
11	RDWYS IN HMD @ 35 MPH	0	2	0	0	0	0	0	0	0	0	0.0
12	RT 17	0	1	1	1	4	1	1	4	4	1	1.4
13	RIDGE RD/KERNY AVE.	2	5	2	2	2	2	3	2	3	2	0.4
14	RDWYS IN HMD @ 30 MPH	1	4	3	3	4	0	0	3	4	0	1.6
15	SCHUYLER AVE/ORIENT WAY	1	6	1	2	2	1	1	1	2	1	0.5
16	RDWYS IN HMD @ 35 MPH	1	0	0	1	0	0	1	1	1	0	0.5
17	RT 7/HARRISON AVE	0	4	4	0	0	0	1	6	6	0	2.3
18	OTHERS	0	5	4	2	1	3	3	3	4	1	0.9
19	RT 46	2	3	3	3	3	3	3	3	3	3	0.0
20	RT 46	1	2	1	2	2	1	1	2	2	1	0.5
21	OTHERS	2	4	5	4	4	3	5	5	5	3	0.7
22	RT 7/HARRISON AVE	0	2	2	0	0	0	0	0	2	0	0.7
23	RDWYS IN HMD @ 25 MPH	3	18	12	11	11	14	13	6	14	6	2.5
24	RDWYS IN HMD @ 35 MPH	4	10	9	10	8	6	11	13	13	6	2.2
25	RDWYS IN HMD @ 30 MPH	2	8	3	3	7	4	2	0	7	0	2.1

CONGSTN2.WK1

TABLE 7-10
(continued)

HACKENSACK MEADOWLANDS DEVELOPMENT COMMISSION SPECIAL AREA MANAGEMENT PLAN/EIS
TRANSPORTATION ALTERNATIVES SCREENING
FAILED LINK SUMMARY TABLE

TYPE	LINK DESCRIPTION	TOTAL FAILED LINKS (V/C > 1.25)										
		1988	NO ACTION		SAMP ALTS					STATS		
		BL	NA1988	NA2010	GC	HC	DD	UG	RD	MAX	MIN	Std Dev
26	RDWYS IN HMD @ 40 MPH	2	10	11	8	13	7	10	7	13	7	2.2
27	OTHERS	12	28	20	14	17	14	16	19	20	14	2.3
28	OTHERS	2	14	6	5	2	1	2	3	6	1	1.8
29	OTHERS	18	36	31	29	34	31	33	32	34	29	1.6
30	OTHERS	0	15	13	6	13	10	15	8	15	6	3.1
31	OTHERS	0	0	0	0	0	0	0	1	1	0	0.4
32	CENTROID CONNECTORS	0	0	0	0	0	0	0	0	0	0	0.0
NBR FAILED LINKS		57	211	150	126	153	120	140	136			

HMDC SAMP Alternatives Screening Legend	
1988BL	Baseline Alternative
NA1988	2010 No Action Land Use w/ 1988 transportation network
NA2010	2010 No Action Land Use w/ 2010 transportation network
GC	SAMP: Growth Centers Alternative
HC	SAMP: Highway Corridor Alternatives
DD	SAMP: Dispersed Development Areas Alternative
UG	SAMP: Upland Growth Alternative
RD	SAMP: Redevelopment Alternative

CONGSTN2.WK1

the number of failed links per link type. Each alternative was then evaluated for the maximum and minimum total numbers of failed link types per alternative. The alternatives were ranked to qualitatively assess the correlation of failed links on air quality results for each land use alternative.

Results of the failed link analysis indicate that the Dispersed Development Areas alternative had the least number of failed links followed closely by the Growth Centers alternative. Results of the analysis indicate that the Redevelopment and Uplands Growth alternatives resulted in intermediate impacts for failed links. The most impact on the number of failed links occurred for the No Action and Highway Corridors alternatives.

The effect on air quality of congestion and the number of failed links in the network for each land use alternative is further evaluated in Section 8.0, Air Quality.

(ds/3192)

8.0 AIR QUALITY

8.1 SUMMARY OF METHODS

An air quality screening analysis was conducted to compare the effects of each land use alternative on mobile source emissions from traffic operations within the District. Mobile source emissions were estimated for the A.M. peak hour using results obtained with the Hackensack Meadowlands Transportation Model (HMTM). The reader is referred to Section 7.0, "TRANSPORTATION", for a description of the HMTM.

The EPA MOBILE4.1 Mobile Source Emission Factor Model (revised November 1991) was used to estimate the 1988 and 2010 speed-dependent mobile source emission factors. Coordination was conducted with the New Jersey Department Of Environmental Protection and Energy (NJDEP&E) to obtain the MOBILE4.1 model input assumptions used to estimate baseline and future mobile source emissions. The air quality screening analysis included cold start idle emission factors, which is representative of the A.M. peak hour period, and moving vehicle emission factors for vehicle speeds from 2.5 to 60 mph. Carbon monoxide (CO) emissions were estimated using ambient winter conditions while hydrocarbons (HC) and oxides of nitrogen (NOx) were estimated using ambient summer temperatures.

The methodology used to estimate total mobile source emissions consisted of calculating the speed dependent emissions contribution of each link in the network then summing the component contributions. The composite results of the emissions inventory were obtained in pounds per hour for each land use alternative. The following methodology was used to calculate the emissions totals:

- The MOBILE4.1 emissions estimates were converted from grams/veh mile to pounds/vehicle mile.

- The converted emissions factors were defined in a cross reference table as a function of speed.

- The results of the transportation travel demand forecasting were used as input into the air quality emissions model.

- Average link speed was determined for each link in the transportation network.

  a. If the average link speed was less than 2.5 mph, an idle emissions contribution was calculated for the link by multiplying the average travel time on the link by the idle emissions factor.

  b. If the average speed was equal to or greater than 2.5 mph, a running emissions contribution was calculated for the link by multiplying the vehicle miles traveled (VMT) on the link by the non-idling emissions factor.

A total of 1,511 links were contained in the 1988 Baseline Alternative transportation network and detailed emissions inventory analysis. The 2010 No Action and SAMP Alternatives network contained 1,597 links and included regional transportation and transit network improvements assumed to be completed or in place during the 20 year planning period.

8.2 AIR QUALITY SCREENING RESULTS

8.2.1 Mobile Source Emissions Inventory Analysis

A mobile source emissions inventory of the transportation network within the Hackensack Meadowlands District was prepared for carbon monoxide (CO), hydrocarbons (HC) and oxides of nitrogen (NOx). The emissions inventory included an analysis of the criteria pollutants for the 1988 Baseline and 2010 No Action and SAMP Land Use Alternatives. Results of the analysis were used to comparatively evaluate the estimated mobile source emissions associated with each land use alternative on future air quality conditions within the District.

The air quality emissions inventory analysis and associated transportation performance parameters are presented in Table 8-1. The air quality performance parameters for the 2010 No Action Alternative, using the 1988 baseline transportation network, are presented in Table 7-1 to qualitatively verify the need for the transportation and transit improvements to reduce future mobile source emissions within the District. At the District level, the air quality screening results show an 8.7 percent variation among land use alternatives. The "through trips" component of traffic operations within the District results in an initial utilization of available capacity on the transportation network which is equivalent for each land use alternative analyzed. Therefore, the magnitude of the difference in mobile source emissions among alternatives is a reasonable result since approximately 40 percent of traffic operating in the District is through traffic (Rt 3, Rt 17, NJ Turnpike, etc.), and the number of trips generated was similar for each land use alternative evaluated. (See Section 7.0, TRANSPORTATION.)

Results of the air quality screening analysis indicate that the Redevelopment, Dispersed Development Areas, and Growth Centers alternatives had the least CO impact, with the Dispersed Development Areas alternative contributing only slightly more CO than either the Redevelopment or Growth Centers land use alternatives. The Highway Corridor and Upland Growth land use alternatives consistently resulted in the highest mobile source emissions of the SAMP alternatives evaluated. The No Action land use alternative had higher mobile source emissions than the Redevelopment, Growth Centers or Dispersed Development Areas alternatives. Mobile source emissions for HC and NOx were generally proportional to the CO results. An exception in the trends observed among alternatives was a slight reordering of the NOx impact for the Redevelopment, Dispersed Development Areas and Growth Centers land use alternatives. See Table 8-1.

TABLE 8-1

HACKENSACK MEADOWLANDS SPECIAL AREA MANAGEMENT PLAN/EIS
MOBILE SOURCE EMISSIONS SUMMARY TABLE
A.M. PEAK HOUR EMISSIONS, LBS/HR

PERFORMANCE PARAMETERS	1988 Baseline	2010 NA w/ 1988Network	SAMP Alternatives					
Filename==>	BASELINE	NA_88NET	NO_ACTN	GRTH_CTR	HWY_CORR	REDEVLMT	UPLAND	DISP_DEV
EMISSIONS (LBS/PEAK-HR):								
CO	143,599	71,323	62,616	60,391	65,451	59,764	65,062	60,805
NO(X)	17,925	10,944	10,667	10,506	10,781	10,490	10,758	10,487
HC	16,301	11,218	10,170	9,846	10,579	9,823	10,415	9,864
ASSOCIATED TRANSPORTATION PARAMETERS:								
VMT (1)	2,781,846	3,254,364	3,217,444	3,182,594	3,234,334	3,180,247	3,231,186	3,170,898
CONGESTED LINKS	84	166	132	122	137	115	133	131
FAILED LINKS	57	211	150	126	153	136	140	120

(1) Does not include VMT or air quality impacts associated with centroid connectors

HMDC SAMP Alternatives Screening Legend	
BASELINE	1988 Baseline Alternative
NA_88NET	2010 No Action Land Use w/ 1988 transportation network
NO_ACTN	2010 No Action Land Use w/ 2010 transportation network
GRTH_CTR	SAMP: Growth Centers Alternative
HWY_CORR	SAMP: Highway Corridor Alternatives
DISP_DEV	SAMP: Dispersed Development Areas Alternative
UPLAND	SAMP: Upland Growth Alternative
REDEVLMT	SAMP: Redevelopment Alternative

EMISN_TBL.WK1

8.2.2 Transportation Congestion and the Potential for CO 'Hot Spot' Impacts

The demonstration of conformity with the National Ambient Air Quality Standards (NAAQS) on a project specific basis requires a microscale analysis. For those proposed projects which may contain congested roadways or intersections, the microscale analysis often includes an analysis of potential CO 'hot spots'. Hot spots are created when traffic volumes greatly exceed the capacity of a roadway or intersection, resulting in large numbers of idling vehicles. These conditions often result in localized, short-term, high concentrations of emissions. Roadway, or link-specific hot spots, may occur when free flow roadway segments become grid-locked resulting in the inability of vehicles to enter, exit, or advance. Hot spots at an intersection typically occur when capacity on two or more links feeding the intersection overload the signalization timing sequence.

Specific patterns of link congestion were analyzed to assess the potential for various land use configurations to create CO hot spots within the District. Information on link congestion contained in Section 7.0, "TRANSPORTATION", was used as the basis to qualitatively measure the potential of each alternative to result in hot spot locations.

Congested links are defined as those links with a v/c ratio of 1.0 to 1.24. Congested links in this range may generate hot spots depending upon the actual average speed, total number of idling vehicles, and level of service. However, two or more of these link types common to a node (intersection) would likely result in a critical intersection location. Failed links were defined as those links with a v/c ratio of 1.25 or greater. All links in the "failed link" category would represent potential CO hot spots within the District. A summary of these transportation system parameters associated with potential hot spot development, congested links and failed links, are presented in Table 8-1.

Analysis of the number of congested links per alternative indicates there is a 16 percent variation among the alternatives evaluated. The Growth

Centers and Dispersed Development Areas alternatives had the least number of congested links. The Redevelopment, No Action and Upland Growth alternatives were grouped around the midpoint, with the Highway Corridor alternative having the most congested links.

Analysis of the number of failed links per alternative indicates there is a 21 percent variation among the alternatives evaluated. A slight reordering of alternatives occurred for failed links with the Growth Centers and Redevelopment alternatives having the least number of failed links, with the Upland Growth and Redevelopment alternatives grouped around the midpoint. As in the previous discussion, the Highway Corridor alternative, in conjunction with the No Action alternative, would have the most number of failed links.

8.2.3 Summary of Screening Results for the Mobile Source Emissions Inventory and Hot Spot Analysis

The air quality screening analysis indicates that although total VMT would increase with any 2010 alternative relative to the 1988 Baseline condition, a reduction of Baseline emissions levels would occur within the District for each alternative evaluated. The reductions in mobile source emissions would be due to projected improvements in the vehicle tailpipe emissions control technology by the year 2010.

Based upon the results contained in the matrix, the Growth Centers, Dispersed Development Areas, and the Redevelopment Alternatives generally resulted in the lowest mobile source emissions within the District. The Highway Corridors and Upland Growth alternatives consistently resulted in the highest mobile source emissions of the alternatives evaluated. The No Action Alternative had higher mobile source emissions than the Dispersed Development Areas, Redevelopment or Growth Centers, but had lower mobile source emissions than the Upland Growth or Highway Corridors Alternatives.

(ds/3193)

9.0 SOLID AND HAZARDOUS WASTE

9.1 SCREENING-LEVEL IMPACT ASSESSMENT FOR IN-DISTRICT ALTERNATIVES

9.1.1 Method for Assessing Impacts

Chapter 3 of the SAMP/EIS describes the existing and past landfill practices in the District, as well as potentially hazardous sites in the District. In comparing the different management alternatives, it is important to examine the general way in which growth in planning areas may overlay existing solid and hazardous waste locations. However, the presence of solid waste and hazardous materials does not preclude future development. In fact, as part of an environmentally managed land use plan, such locations may experience accelerated remediation and/or closure, insofar as additional funding sources may be available for site utilization.

To assess the spatial relationship between the six management alternatives and past solid waste and hazardous land uses, maps of the alternatives were superimposed on maps of historic landfills and known hazardous waste locations, as identified in sections 3.16 and 3.17 of the SAMP/EIS. The acreage for areas where development is coincident with past landfills or known hazardous waste sites was calculated. The exact location and areal extent of the Chromate contamination sites in the District are not known, so the impact from these hazardous waste sites were enumerated, but are not included in the impacted acreage values.

9.1.2 Results of Impact Screening

Table 9-1 presents a summary of the screening results for solid and hazardous waste sites for the six management alternatives. The acreage of historic landfills that would wholly or partially underlie the planning areas and secondary office/warehousing areas for each alternative is presented, along with the acreage of known hazardous waste sites (and the number of Chromate contamination sites impacted) that might experience

TABLE 9-1
SOLID AND HAZARDOUS WASTE IMPACTS
ALTERNATIVES COMPARISON

	Solid Waste Acres	Hazardous Waste Acres	Hazardous Waste Chromium Sites
Upland	433.6	100.2	2
Redevelopment	427.0	133.5	3
Highway Corridors	417.4	137.6	2
Dispersed Development	461.0	159.7	3
Growth Centers	396.7	137.6	3
No Action	511.7	137.6	6

development activity in the development areas. Table 9-1 shows that the No Action alternative would involve the most land disturbance near past solid waste locations, and the Growth Centers would involve the least land disturbance near past solid waste locations. A relative comparison of the overlap of the planning and secondary office/warehousing areas for each alternative with known hazardous waste sites shows that the Dispersed Development Areas alternative involves the greatest usage of known hazardous waste site lands, while the No Action alternative overlaps the most Chromate sites. The Upland alternative involves the lowest usage of known hazardous waste site lands, while the Highway Corridors and Upland alternatives overlap the least number of Chromate sites.

Tables 9-2 through 9-7 present the acreages of solid and hazardous waste sites overlapping each component planning area and secondary office/warehousing area of the six alternatives. Also indicated in tables 9-2 through 9-7 are the specific hazardous waste sites overlapping each of the areas.

(ds/1973)

TABLE 9-2
SOLID AND HAZARDOUS WASTE IMPACTS
UPLAND ALTERNATIVE

Planning Area	Solid Waste Acres	Hazardous Waste Acres	Hazardous Waste Chromium Sites
A	20.1	0.0	0
B	48.4	0.0	0
D	14.0	11.0 +	0
F	9.4	0.0	0
G	69.3	0.0	0
H	31.2	0.0	0
K	35.6	0.0	0
L	37.0	0.0	0
M	79.0	0.0	0
N	0.0	2.7 *	0
P	18.5	0.0	0
R	0.0	29.1 #	0
Subtotal	362.5	42.7	0

Secondary Office/Ware-housing Area	Solid Waste Acres	Hazardous Waste Acres	Hazardous Waste Chromium Sites
a	9.0	0.0	0
aa	3.3	0.0	0
ab	0.7	0.0	0
ak	13.2	0.0	0
an	0.0	16.7 @	2
ao	0.0	40.8 #	0
as	19.2	0.0	0
g	0.0	0.0	0
t	16.3	0.0	0
u	9.3	0.0	0
Subtotal	71.0	57.4	2
Total	433.6	100.2	2

Note: *) Scientific Chemical Processing; +) Universal Oil Products;
#) Koppers Coke; @) Diamond Shamrock

TABLE 9-3
SOLID AND HAZARDOUS WASTE IMPACTS
REDEVELOPMENT ALTERNATIVE

Planning Area	Solid Waste Acres	Hazardous Waste Acres	Hazardous Waste Chromium Sites
A	8.9	16.0 +	0
B	16.8	0.0	0
C	17.4	0.0	0
D	26.8	0.0	0
G	25.3	0.0	0
I	104.9	0.0	0
J	0.0	0.0	1
K	8.8	0.0	0
Subtotal	208.9	16.0	1

Secondary Office/Ware-housing Area	Solid Waste Acres	Hazardous Waste Acres	Hazardous Waste Chromium Sites
a	9.0	0.0	0
aa	3.3	0.0	0
ab	0.7	0.0	0
ae	4.2	0.0	0
af	14.5	0.0	0
ag	35.7	0.0	0
aj	25.2	0.0	0
an	0.0	16.7 @	2
ao	0.0	40.8 #	0
ap	0.0	40.7 #	0
as	19.2	0.0	0
g	0.0	0.0	0
j	0.1	19.3 +	0
s	19.5	0.0	0
t	16.3	0.0	0
u	9.3	0.0	0
v	15.2	0.0	0
w	1.0	0.0	0
y	27.8	0.0	0
z	17.0	0.0	0
Subtotal	218.1	117.4	2
Total	427.0	133.5	3

Note: *) Scientific Chemical Processing; +) Universal Oil Products;
#) Koppers Coke; @) Diamond Shamrock

TABLE 9-4
SOLID AND HAZARDOUS WASTE IMPACTS
HIGHWAY CORRIDORS ALTERNATIVE

Planning Area	Solid Waste Acres	Hazardous Waste Acres	Hazardous Waste Chromium Sites
A	0.3	0.0	0
B	0.1	0.0	0
C	48.4	0.0	0
D	17.7	0.0	0
F	3.2	0.0	0
G	17.1	0.0	0
K	73.4	0.0	0
O	3.0	0.0	0
Subtotal	163.2	0.0	0

Secondary Office/Ware-housing Area	Solid Waste Acres	Hazardous Waste Acres	Hazardous Waste Chromium Sites
a	9.0	0.0	0
aa	3.3	0.0	0
ab	0.7	0.0	0
ae	4.2	0.0	0
af	14.5	0.0	0
ag	35.7	0.0	0
ai	8.3	0.0	0
aj	25.2	0.0	0
ak	13.2	0.0	0
an	0.0	16.7 @	2
ao	0.0	40.8 #	0
ap	0.0	40.7 #	0
as	19.2	0.0	0
g	0.0	0.0	0
h	8.5	0.0	0
i	6.1	17.3 +	0
j	0.1	19.3 +	0
n	0.0	2.8 *	0
s	19.5	0.0	0
t	16.3	0.0	0
u	9.3	0.0	0
v	15.2	0.0	0
w	1.0	0.0	0
y	27.8	0.0	0
z	17.0	0.0	0
Subtotal	254.2	137.6	2
Total	417.4	137.6	2

Note: *) Scientific Chemical Processing; +) Universal Oil Products;
#) Koppers Coke; @) Diamond Shamrock

TABLE 9-5
SOLID AND HAZARDOUS WASTE IMPACTS
DISPERSED DEVELOPMENT AREAS ALTERNATIVE

Planning Area	Solid Waste Acres	Hazardous Waste Acres	Hazardous Waste Chromium Sites
E	21.7	0.0	0
F	37.7	0.0	0
G	2.8	0.0	0
I	107.9	0.0	0
J	18.5	0.0	0
K	0.0	62.8 #	0
L	0.0	0.0	1
Subtotal	188.6	62.8	1

Secondary Office/Ware-housing Area	Solid Waste Acres	Hazardous Waste Acres	Hazardous Waste Chromium Sites
a	9.0	0.0	0
aa	3.3	0.0	0
ab	0.7	0.0	0
ad	31.4	0.0	0
ae	4.2	0.0	0
af	14.5	0.0	0
ag	35.7	0.0	0
ai	8.3	0.0	0
aj	25.2	0.0	0
an	0.0	16.7 @	2
ao	0.0	40.8 #	0
as	19.2	0.0	0
g	0.0	0.0	0
h	8.5	0.0	0
i	6.1	17.3 +	0
j	0.1	19.3 +	0
n	0.0	2.8 *	0
s	19.5	0.0	0
t	16.3	0.0	0
u	9.3	0.0	0
v	15.2	0.0	0
w	1.0	0.0	0
y	27.8	0.0	0
z	17.0	0.0	0
Subtotal	272.4	96.9	2
Total	461.0	159.7	3

Note: *) Scientific Chemical Processing; +) Universal Oil Products;
#) Koppers Coke; @) Diamond Shamrock

TABLE 9-6
SOLID AND HAZARDOUS WASTE IMPACTS
GROWTH CENTERS ALTERNATIVE

Planning Area	Solid Waste Acres	Hazardous Waste Acres	Hazardous Waste Chromium Sites
A	10.3	0.0	0
B	91.6	0.0	0
C	40.6	0.0	0
D	0.0	0.0	1
Subtotal	142.5	0.0	1

Secondary Office/Ware-housing Area	Solid Waste Acres	Hazardous Waste Acres	Hazardous Waste Chromium Sites
a	9.0	0.0	0
aa	3.3	0.0	0
ab	0.7	0.0	0
ae	4.2	0.0	0
af	14.5	0.0	0
ag	35.7	0.0	0
ai	8.3	0.0	0
aj	25.2	0.0	0
ak	13.2	0.0	0
an	0.0	16.7 @	2
ao	0.0	40.8 #	0
ap	0.0	40.7 #	0
as	19.2	0.0	0
g	0.0	0.0	0
h	8.5	0.0	0
i	6.1	17.3 +	0
j	0.1	19.3 +	0
n	0.0	2.8 *	0
s	19.5	0.0	0
t	16.3	0.0	0
u	9.3	0.0	0
v	15.2	0.0	0
w	1.0	0.0	0
y	27.8	0.0	0
z	17.0	0.0	0
Subtotal	254.2	137.6	2
Total	396.7	137.6	3

Note: *) Scientific Chemical Processing; +) Universal Oil Products;
#) Koppers Coke; @) Diamond Shamrock

TABLE 9-7
SOLID AND HAZARDOUS WASTE IMPACTS
NO ACTION ALTERNATIVE

Planning Area	Solid Waste Acres	Hazardous Waste Acres	Hazardous Waste Chromium Sites
B	5.0	0.0	0
E	20.5	0.0	0
F	92.4	0.0	0
H	0.0	0.0	1
J	53.6	0.0	0
K	0.0	0.0	3
L	27.8	0.0	0
M	86.0	0.0	0
Subtotal	285.3	0.0	4

Secondary Office/Ware-housing Area	Solid Waste Acres	Hazardous Waste Acres	Hazardous Waste Chromium Sites
a	9.0	0.0	0
aa	3.3	0.0	0
ab	0.7	0.0	0
ae	4.2	0.0	0
af	14.5	0.0	0
ag	35.7	0.0	0
ai	8.3	0.0	0
aj	25.2	0.0	0
ak	13.2	0.0	0
an	0.0	16.7 @	2
ao	0.0	40.8 #	0
ap	0.0	40.7 #	0
as	19.2	0.0	0
g	0.0	0.0	0
h	8.5	0.0	0
i	6.1	17.3 +	0
j	0.1	19.3 +	0
n	0.0	2.8 *	0
s	19.5	0.0	0
t	16.3	0.0	0
u	9.3	0.0	0
v	15.2	0.0	0
w	1.0	0.0	0
z	17.0	0.0	0
Subtotal	226.4	137.6	2
Total	511.7	137.6	6

Note: *) Scientific Chemical Processing; +) Universal Oil Products;
#) Koppers Coke; @) Diamond Shamrock

On the following pages is the alternatives screening for cultural resources conducted by Grossman and Associates, Inc. for this project.

I. Using the Scaled Historic Map Comparisons

A. The Composite Map Overlays:

This cartographic impact analysis represents the second portion of a two part submission for the Stage 1A Cultural Resource Assessment of the Hackensack Meadowlands of New Jersey. The first segment of the draft Stage 1A Cultural Resource Assessment entitled "Sensitivity Evaluation of Prehistoric Archaeological and Historic Settlement Patterns for the Hackensack Meadowlands, New Jersey", consisted of a first cut review and assessment of survey coverage of the region's known and previously identified historic and archaeological resources together with a characterization of the nature and range of variation of both established and potential prehistoric and historic sites within the study area.

Based upon the initial Stage 1A overview of past survey coverage documenting identified and potential resources for the study area, Part 2 of the Stage 1A submission consists of a computer based series of scaled historic and modern map comparisons. This series of maps has been compiled to provide a graphic rendition of the location and environmental contexts of both known historic and prehistoric resources, and areas of potential archaeological sensitivity relative to the scaled map plots of the seven current Hackensack Meadowlands Development Commission (HMDC) development alternative zones. As a planning tool, this scaled series of color coded overlay maps has been configured to address two categories of information: 1) provide a synthesis of known and projected areas of prehistoric and historic archaeological sensitivity from the precontact period through the 17th, 18th, 19th, and 20th centuries; and 2) to provide (through the use of two color coded overlay maps of potential development alternatives) a visual basis for comparing the relative cultural resource sensitivity of each of the seven currently defined impact zones.

Each of the six scaled overlay maps has been plotted in color on translucent Vellum and bound on either side of a clear plastic-backed project base map to permit the comparison between the relative impacts from each of the seven Alternative Actions against the ranges of identified and potential cultural resources from the different periods and environmental zones. The portfolio has been designed to facilitate easy visual comparisons by rendering the base map over a clear rigid lucite backing which can either be placed on a light table or held up to the window or interior light source.

The first series of cultural resource planning maps consists of four scaled color coded overlay sheets, arranged in chronological order as maps A through D, all sequentially bound on the left side of the portfolio. As detailed below, the first three archaeological and historic sensitivity maps combine a range of cartographic, documentary, and environmental sources into color coded Autocad based composite maps. In contrast, the fourth resource map, covering the 20th century, was based on a commercially available USGS digital map file of modern road and settlement conditions within the Hackensack drainage. This digital USGS data was then combined with the HMDC and Camp, Dresser, and McKee (CDM) supplied data on the pre-1970 landfills and post-1970 sanitary landfills to form a graphic composite of current conditions.

The seven Development Alternatives, or Draft Alternative Actions, have been combined as two sets of color coded overlays, and bound on the right margin of the portfolio. The grouping of the first five development alternatives onto one map, with the final two alternatives on the second, was determined on the grounds of visual clarity, and the degree of overlap identified for each of the parcels within each of the development options. Neither the indicated colors nor the graphic subdivision of the alternatives is meant to represent any inherent ranking or priority system. Both Development Alternative maps have identified each set of parcels with a unique color, (i.e. green for all Upland Growth parcels, pink for all Redevelopment Areas, orange for the three Highway Corridors, blue for all Dispersed Development, and purple for all Growth Center parcels). Each parcel for each development alternative is identified by a number-letter code. The number reflects the sequential numerical designation defined by CDM for each development alternative, followed by a letter which identifies each individual parcel (also defined by CDM).

The final overlay map (Map F) combines the two most recently defined development alternatives, the No Action alternative (No. 6), and the Conservation Management Alternative (No. 7), into a single composite overlay, again based on convenience and visual clarity. These last two alternatives reuse the red-orange, and green color codes initially applied in Map E.

B. The Summary Impact Evaluation Tables:

Finally, the third element of the map correlation portfolio consists of a series of tabular "look up" tables highlighting the relative presence and/or absence of identified and projected cultural resources relative to each of the defined development alternatives with the individual parcels listed in alphabetical order by letter designation code. The summary table has been divided into ten descriptive categories or attribute fields. The first four fields are contextual and descriptive. In addition to the letter identification of each parcel in field one, columns two through four itemize the acreage, landfill status, and elevation zone for each parcel. The landfill status category identifies the presence of either the pre-1970 landfill (PSL), or modern post-1970 sanitary land fill (MSL) for each of the parcels. A blank space indicates the lack of any recorded landfill data for any given parcel. However, given the extent of currently undocumented landfill areas within the Meadowland's, the possibility exists that some parcels without a PSL or MSL designation could indeed contain either solid or sanitary landfill components. The fourth field or column, designated elevation zone, has been distinguished based on current map data into two categories, designated "upland" and "lowland". The upland category is all parcels above the water line as depicted on the 19th century Vermeule map, with lowland below. This distinction is not used as a formal, or previously agreed upon, set of categories, but rather as a convenient environmental reference aimed at identifying the physical context of any documented cultural resources.

The primary focus of the look up table is summarized in columns five through nine with the heading of prehistoric, 17th, 18th, 19th, and 20th century resource categories. Based on the graphic overlay or correlations between identified resource areas and currently defined development alternatives, the presence and identity of prehistoric and historic resources has been distinguished with four distinct letter codes. Where defined development parcels overlay areas of projected prehistoric sensitivity based on the environmental arguments presented in the Stage 1A text, the status of the parcel is indicated with the letters PPS for potential prehistoric sensitivity.

Likewise historic resources were divided into four chronological periods each recorded in a separate column or field in the table, and subdivided into two letter codes which distinguish between areas of documented, or map-based historic sensitivity (i.e. areas of early settlement, or industrial activity) versus known historic site localities, and previously recorded or published historic localities such as docks, mills, or transportation facilities. When known and identified, each is described by name or category.

Finally, the tenth and last column gives the map letter reference, lists the appropriate reference map by letter designation (A-F), and where appropriate, the number designation of any specific identified resources or resource areas.

II. Scope and Purpose

The purpose of this scaled series of map comparisons is to provide a viable planning tool which provides the flexibility to evaluate the various cultural resource data sets relative to past and current environmental conditions, zones of fast land and sanitary landfill, and modern road and residential patterns. As discussed in detail in the Stage 1A report, the results of the environmental analysis of past sea level rise and transgression and environmental conditions provided the basis for projecting areas of potential prehistoric sensitivity. The pollen based reconstructions of environmental change and related evidence suggest that over the last two to three thousand years considerable areas of the Hackensack drainage, specifically areas adjacent to stream courses and confluences, represented areas amenable to prehistoric and early historic occupation. Accordingly these zones of former fast land adjacent to primary water courses have been highlighted as ca. 500 foot wide bands in Map A. Taken together the traditional cartographic and documentary sources, when combined with the new lines of evidence from the disciplines of palynology and coastal geomorphology, document the potential for finding surviving prehistoric and historic resources in both upland and lowland areas of the drainage, as well as the potential for finding buried, and now submerged, near surface archaeological resources from the historic and prehistoric periods.

These impact evaluation maps have been divided into three major data sets. Maps A through C document known and potential cultural resource sensitivity areas from the prehistoric through the 17th, 18th, and 19th centuries. Map D represents a compilation of 20th century road and transportation networks, zones of modern development represented as USGS digital line graphs from air photo sources, and areas of currently identifiable landfill. Based on information supplied by CDM, this landfill data has been rendered as two subsets, 1) pre-1970 solid landfill areas, and 2) post-1970 current sanitary landfill areas. This final map overlay thus represents the most recent phase of urban industrial development, and landfill alteration. At the same time, this rendition of contemporary conditions of landfill areas also serves as a planning tool for the evaluation of recent and past impacts to areas of potential archaeological and historical sensitivity.

The final data set of overlay maps divides the most current CDM and HMDC design alternatives into two groups of color coded plots of numbered and lettered development parcels. Map E shows the five initially identified alternatives: 1) Upland; 2) Redevelopment; 3) Highway Corridors; 4) Dispersed Development Areas; and 5)

Growth Centers depicting the absolute location and coverage of each parcel for each of the five development scenarios. Each of the five alternatives is rendered as a discrete color coded boundary line, and each parcel within each of the alternatives is distinguished by a number and letter code, which in turn is cross referenced to the impact look up table of identified cultural resources.

The final overlay consists of the color coded rendition of the last two HMDC design alternatives defined as: 1) No Action; and 2) Conservation Management Areas. This separation between the two sets of development actions was arbitrarily grouped in order to reduce visual conflict resulting from the degree of overlap of the seven design alternatives when rendered together.

III. Cartographic Sources and Limitations

A. Early Historic Map Sources

As a prelude to using these historic sensitivity and modern impact maps as a planning tool, it is pertinent to highlight the strengths and weaknesses of the cartographic and documentary sources used to compile these schematic map depictions of the changing landscape through time. At the outset, it is important to point out that for several of the periods depicted, no accurately scaled, high resolution, baseline map information was available for the study area. It is also important to point out that, with the exception of 19th and 20th century map depictions, most known prehistoric and historic site locations were plotted based on secondary published accounts from the Office of New Jersey Heritage and the New Jersey State Museum records. Although a number of early 17th century map depictions exist with coverage for large sections of the East Coast in general, none show sufficient area specific detail or resolution to serve as, or be scaled as, base line planning maps for the Meadowlands study area. Because of this lack of detailed map coverage for the 17th century and the first half of the 18th century, the earliest available high resolution maps of the land forms and drainage patterns was represented by Vermeule's 1887 map of the Hackensack River basin. This map was selected as the base map because of its depiction of primary and secondary waterways, the location and extent of fast land as of the 19th century, and because of its detailed depiction of the location and extent of known Cedar Swamps recorded in the 19th century. Because of these elements, the 1887 Vermeule map was selected as a project base map to depict the environmental conditions prior to the advent of intensive urbanization and land filling in the 20th century.

Accordingly, Vermeule's 1887 map served as a graphic back drop for the depiction of both known and projected prehistoric resources, as well as for all identified contact period 17th century historic resources. Where identified, each of these were located on the map, based on published or archival descriptions. In no case are either the identified prehistoric resources (shown in triangular symbols), or the historic resources (in circles in Map A), meant to imply absolute, or coordinate specific, locations given the current level of definition, ambiguities in the original accounts, and the paucity of previous site specific survey and testing programs. These depictions have been presented only as generalized approximations, or best guess projections, of the general area. Specifically for the historic resources, indicated site locations have been for the most part based on generalized secondary and often ambiguous accounts for the 17th century, and with the understanding that contact period sites are even more ambiguous and ill defined. Although most fall immediately outside the HMDC boundaries, their precise location could vary by a factor of several thousand feet in any direction. Accordingly, for the earlier period, later 18th, and 19th century site locations, locational control should be viewed as only a best guess projection of location.

B. 18th Century Map Sources

The cartographic synthesis of know 18th century historic resources was compiled based on the combination of the scaled rendition of Erskine's 1776 map of known localities and landscape features (which was originally rendered for General Washington), combined with the addition of identified 18th century sites from the New Jersey Historic Sites Inventory files, Vermeule's 19th century depiction of 18th century resources, and Rutsch's 1978 compilation of known historic site locations for the southeastern portion of the district. In addition, Map A shows the depiction of 17th and 18th century land subdivisions which were compiled by Hammond from Winfield's History of Land Titles, showing lot lines and property owners on land grants to the east of what is now Penhorn Creek. Although predominantly inundated land today, this zone of earlier historic land grants is significant because it indicates that this section of the basin appears to have once constituted arable dry land within the past three hundred years.

As indicated by the limited number of mapped historic resources depicted on the 18th century Erskine map, the level of development and exploitation of the area appears to have been relatively light in the 18th century compared to the subsequent events of the 19th century. It is also pertinent to point out that Erskine's earlier depiction appears to have been either selective in coverage or based on secondary sources versus an actual field survey. Erskine's map illustrated with some detail 18th century roads bordering the Meadowland's, the Belleville Pike crossing the Meadowland's to Schuyler's copper mine, but few other features. In particular the Erskine map appears to have overlooked large areas of Cedar Swamp throughout the basin. Erskine showed only one large area of Cedar Swamp in the southwest portion of the district located on either side of the historic wooden Plank Road. Vermeule's later topographic map of the basin showed extensive areas of Cedar Swamp with the highest concentration north of Secaucus, but with no Cedar Swamp depicted in the southwest section of the district where Erskine had depicted his one stand of cedar. This significant discrepancy suggests strongly that the earlier Erskine map was intended as a schematic depiction of only these elements and features of the landscape which may have been of strategic relevance to General Washington in the 18th century. In terms of environmental history, this disparate map evidence suggests that the cedar stands were much more extensive than they are today, and also that the available 18th century depiction may in fact be of little or no utility for projecting the earlier extent of Cedar Swamps prior to the late 19th century depictions of Vermeule.

C. 19th Century Cartographic Sources

With the advent of the 19th century, the available map coverage became more detailed, accurate, and easier to correlate with contemporary land forms. In contrast to the earlier 17th and 18th century "site locations", both the availability of detailed 19th century cartographic sources, and the ability to correlate identified historic sites with modern road systems resulted in a much higher level of specificity in "pin pointing" the probable locations of identified historic resources. As before, the baseline cartographic data for the identification of roads, the Cedar Swamp, and fast land versus water line demarcations, were again based on Vermeule's 1887 topographic map of the drainage. In addition to a number of unnamed mine activity areas (depicted by crossed pick and shovel symbols), and probable dock and commercial activity areas also shown by Vermeule, a total of 15 discreet historic sites, either on or potentially eligible for the State Register are depicted on the 19th century resource map. With few exceptions, all of the indicated historic sites were derived from secondary sources, predominately unpublished historic cultural resource surveys of the area (Gimigliano 1878, HMI 1978, Rutsch 1978, Artemel 1979, N.J.DOT 1987, RAM 1989).

In addition, two important categories were identified and plotted with numbered site codes from previously unreferenced historic map sources. The first of these consisted of Gordon's 1828 map of New Jersey which indicated the location of two mill sites along the western edge of the basin, one at the end of "Kingsland", or Kirkland Creek, the other at the headwaters of Berry's Creek. Although no symbol for a water wheel was depicted on the map, the designation of Saw Mill Creek on this and later maps in the southwest section of the basin suggests the potential location of former mill related facilities along the stream. The second major source of important and previously unreported site information derived from Hopkins' 1861 map which showed two historic mills, numbers 13 and 14 on Map C, one the same as, and one in addition to Gordon's 1828 depiction, both on the headwaters of Berry's Creek.

In addition, the 1861 Hopkin's map showed the presence of a series of 19th century structures or residences in the Moonachie area which suggests that although not precisely located, any development activities projected for the areas bordering Washington Avenue, Moonachie Avenue, and the Paterson Plank Road should be evaluated on a parcel specific basis through map, deed, and appropriate archival research aimed at identifying the nature and location of historic (specifically mid 19th century Civil War era) structures either as standing buildings or as potential subsurface historic archaeological resources. Although not previously addressed in this area, the historic sensitivity of properties bordering the historic road system was previously highlighted by preliminary Stage 1B testing activity in the vicinity of the Outwater Cemetery by New Jersey Department of Transportation in 1987. No detailed work was done pertaining to the cemetery itself, however its presence serves to underline the historic fabric of 19th century settlement history which once existed in association with this early roadway. The general sensitivity of these roadside tracts of historic structures was highlighted as a stippled band for sections which may contain elements associated with the 19th century settlement history. A similar band of potential 19th century structures designated as No. 11 on Map C was indicated for a half mile stretch of road southeast of Secaucus. Again, no attempt to pin point the precise locations the these structures was attempted, given the current generalized scale and level of definition. Any potential impacts to this area should also be accompanied by parcel specific map, deed, and archival investigation.

IV. Results - Cultural Resource Correlations and Rankings

Despite the limitations in the relative uniformity and level of coverage through time for the available archaeological and historic data, the evidence was tabulated for the entire data set to provide a ranked impact comparison based on the absolute number of identified resources from each of the five defined time periods (prehistoric through 20th century) relative to each of the seven defined development alternatives. The data set has been summarized in Table II and in 3-D bar chart format (See Figure 1) with the following results:

1. As graphically summarized in the 3-D histogram, all alternatives shared the presence of prehistoric, 18th, and 19th century resources. All alternatives, except alternative 5, (Growth Centers) overlapped with potential 17th century resources.

2. The largest number of resources from all periods, were encountered within the Conservation Management Alternative (No. 7). This final alternative was also distinguished by the highest number (26) of identified 19th century resources.

3. With the exception of the above mentioned Conservation Management Alternative (No. 7), all of the other scenarios contained between four and nine parcels with potential Prehistoric resource areas. All except Alternative No. 5 (Growth Centers) contained a uniform distribution of 17th and 18th century resources with an average range of between one and two parcels per development scenario.

4. In contrast to the relatively ill-defined data and survey coverage for the early periods, 19th century historic sensitivity showed the highest counts and range of variation for resources, with a range of between four and twenty-six identified potential resources per alternative.

5. Of the five defined chronological periods addressed, previously identified, or recorded, 20th century cultural resources represented the smallest number and the least sensitivity within the seven Action Alternatives. Consistent with the contemporary focus of modern development and transportation systems, two of these were located in the Upland Growth Alternatives and the Highway Corridors, each of which contains two parcels with potential 20th century historic sensitivity. The third was represented by a single parcel located in the Dispersed Development area.

6. In terms of the relative number of identified resources for each of the alternatives, it is possible to rank the seven defined alternatives in terms of the number of identified or potential resource as follows, from the least to the most archaeologically and historically sensitive. In terms of potential impact areas and cultural resource management issues the Redevelopment Areas alternative had the least number of identified resources, followed by alternatives 5) Growth Centers, and 6) No Action Alternatives. Within the mid-range of the series, three Action Alternatives (Dispersed Development Area (No. 4), Highway Corridors (No. 3), and Upland Growth (No. 1) rank about equal, and contain resources of all periods, including the presence of 20th century resources.

In terms of the relative potential for Cultural Resource Management issues and the need for additional site specific evaluations, the recently defined Conservation Management Alternatives is distinguished by both the diversity and absolute number of resources for all periods in general, and because it includes on the order of three times the number of 19th century historic sites as any other alternative.

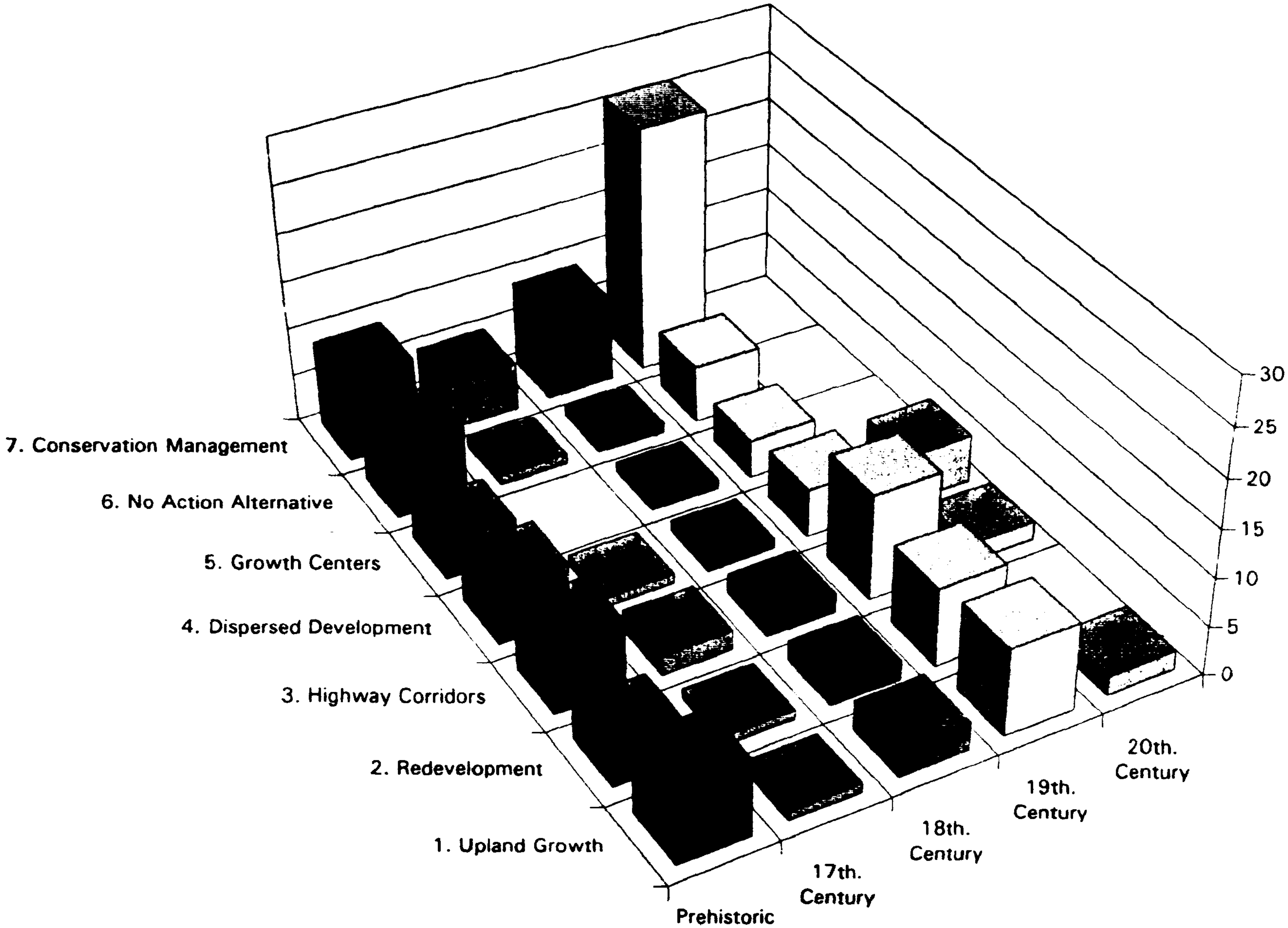


Figure 10-1 Three dimensional histogram showing the relative number of identified resources by time period for each of the seven currently defined Hackensack Meadowlands Development Action Alternatives.

Grossman and Associates, Inc. January 1992

TABLE 10-1

Correlation Table of Identified and Potential Archaeological and Historical Resource Areas within the Hackensack Meadowlands Development Zone

PSL = Pre-1970 Solid Landfill *
MSL = Modern Sanitary Landfill
UL = Upland
LL = Lowland
PPS = Potential Prehistoric Sensitivity
PHS = Potential Historic Sensitivity

Potential Development Area (HMDC 10/17/91)	Dev. Zone ID	Size (Acres)	Landfill Status	Elevation Zone	Identified and Potential Resources: Prehistoric	17th Century	18th Century	19th Century	20th Century	Archaeological and Historical Resource Reference Map
1. UPLAND GROWTH										
Bellman's Creek	A	31	PSL	LL	PPS					
Arena	B	127		LL	PPS			PHS		A,C-5
Sportplex	C	14		LL				PHS	PHS	A,C-5&8
UOP	D	36	PSL	LL	PPS			DIKE		
Red Roof Inn	E	29		LL				DIKE		A,C,D
Tony's Old Mill	F	7		LL	PPS			MILL	PHS	A,C-4
Cromakill Creek	G	85	PSL	LL	PPS					
Standard Tool	H	79	PSL	LL,UL				MILL		C-15
BCC East	J	6		LL						
Enterprice Ave. South	K	38	PSL	LL						
Walsh	L	64	PSL	LL		PHS	PHS			B,C
PR - 2 (II)	M	79	PSL	LL	PPS					A
SCP	N	10		LL	PPS					A
Laurel Hill	O	169		UL	Snake Hill I			Snake Hill		A
Kearny (150)	P	27	PSL	LL						
Kopper Coke	R	28	PSL	LL			Ferry?	Dock?		B-3,C

* Disclaimer: Based on CDM Base Maps. Pre-1970 Solid Landfill Data (known registered Landfills).

TABLE 10-1
(continued)

Potential Development Area (HMDC 10/17/91)	Dev. Zone ID	Size (Acres)	Landfill Status	Elevation Zone	Identified and Potential Resources: Prehistoric	17th Century	18th Century	19th Century	20th Century	Archaeological and Historical Resource Reference Map
2. REDEVELOPMENT AREAS										
UOP Site	A	86	PSL	LL	PPS			DIKE		A,C
Rutherford STP	B	36		LL				R.R.		C
Bellman's Creek	C	117	PSL	LL	PPS					A
North Bergen	D	31	PSL	LL	PPS					A
Wood Ave.	E	8		LL						
Secaucus I - 495	F	38		LL			PHS			
Secaucus Rd.	G	26	PSL	LL	PPS			PHS		A,C
Castle Rd.	H	33		UL				PHS		A,C
Kearny West	I	153	PSL	LL				R.R.		C
Jersey City	J	82		LL		PHS	PHS	PHS		B,C
Little Ferry Waterfront	K	31	PSL	LL,UL				PHS		C
Riverview	N	10		LL				PHS		C
3. HIGHWAY CORRIDORS										
TAZ 92 (south)	A	32		LL						
Sportplex	B	78		LL	PPS			PHS		A,C
Arena	C	140	PSL	LL	PPS			PHS		C
Veterans Blvd.	D	22	PSL	LL	PPS			R.R.		A,C
Berrys Creek Center	E	65		LL	PPS					
East Ruth. B1. 109	F	216		LL				R.R.		C
B1. 219A (Rutherford)	G	72		LL	PPS			R.R.		A,C
Meadowlands Pkwy.	H	57		LL				R.R.	PHS	C
Plaza Center	I	177		UL				PHS	PHS	B,C
Mill Creek	J	10		LL						
Cromakill Creek	K**	93	PSL	LL	PPS					
County Ave	L	32		UL				PHS		A,C
Secaucus I - 495	M**	38		LL		PHS	PHS	PHS		C
Secaucus Pat Plank Rd.	N**	17		LL				PHS		A,C
SU - 2	O**	170		LL	PPS	PHS	PHS	R.R.		A,C

** Boundaries under redefinition

TABLE 10-1
(continued)

Potential Development Area (HMDC 10/17/91)	Dev. Zone ID	Size (Acres)	Landfill Status	Elevation Zone	Identified and Potential Resources: Prehistoric	17th Century	18th Century	19th Century	20th Century	Archaeological and Historical Resource Reference Map
4. DISPERSED DEVELOPMENT AREAS										
TAZ 92 (north)	A	81		LL						A
TAZ 92 (south)	B	32		LL				PHS		A,C
Sportplex	C	58		LL						A
Berrys Creek	D	65		LL	PPS					A
Rutherford B1. 109	E	90	PSL	LL	PPS			R.R.		A
Mill Crek	F	147		LL	PPS					A
SU - 2	G	92		LL	PPS	PHS		R.R.		A,B,C
Laurel Hill	H	169		UL	Snake Hill I			Snake Hill I		A-1,C
PR - 2	I	105	PSL	LL	PPS					A
Kearny West	J**	37	PSL	LL						
Koppers Coke	K**	67	PSL	LL			Ferry?	PHS	RR Lift Bridge	A,B,C-1
5. GROWTH CENTERS										
Empire Blvd. Area	A**	351	PSL	LL	PPS			PHS		A,C
Harmon Meadow Area	B**	227	PSL	LL	PPS		PHS	PHS		C
Berrys Creek Area	C	193	PSL	LL	PPS			R.R.		A,C
Secaucus Transfer Area	D	252	PSL	LL,UL	Snake Hill I			Snake Hill		A-1,C-7
6. NO ACTION ALTERNATIVE										
Teterboro	A	23		LL				PHS		C
IR - 4	B	234	PSL	LL	PPS					
IR - 3	C	147		LL						
IR - 2	D	87		LL	PPS					
Berrys Creek	E	172	PSL	LL	PPS			R.R.		C
PR - 2	F	236		LL				R.R.		C
SU - 2	G	95		LL	PPS	PHS	PHS			B
TC - 3	H	22		LL	PPS					
PR - 3	I	148		UL,LL	PPS			Snake Hill I		C
SU - 1	J	76	PSL	LL						
SU - 3	K	322		LL				PHS		C
RD Park	L	73	PSL	LL	PPS					
HC Secaucus	M	133	PSL	LL	PPS			PHS		C

** Boundaries under redefinition

TABLE 10-1
(continued)

Potential Development Area (HMDC 10/17/91)	Dev. Zone ID	Size (Acres)	Landfill Status	Elevation Zone	Identified and Potential Resources: Prehistoric	17th Century	18th Century	19th Century	20th Century	Archaeological and Historical Resource Reference Map
7. CONSERVATION MANAGEMENT										
	a	10	PSL	LL				PHS		C
	aa	18	PSL	LL			PHS	R.R.		B, C
	ab	9	PSL	LL			PHS	R.R.		B, C
	ac	4		LL		PHS	PHS	R.R.		B, C
	ad	33	PSL	LL						
	ae	38	PSL	LL		PHS	PHS			B, C
	af north	15	PSL	LL		PHS	PHS	PHS		B, C
	af south	79	PSL	LL		PHS	PHS	PHS		B, C
	ag	38	PSL	LL						
	ah	7		UL				R.R.		C
	ai	13	PSL	LL		PHS	PHS	PHS		B, C
	aj	26	PSL	LL,UL				PHS		C
	ak	20	PSL	LL				R.R.		C
	al	22		LL						
	am	5		LL				PHS		C
	an	20		LL				PS, R.R.		C
	ao	47	PSL	LL				R.R.		C
	ap	41	PSL	LL				PHS		C
	aq	5						PHS		C
	b	3		UL						
	c	9		UL				PHS		C
	d	2		UL			PHS	PHS		B, C
	e	14		LL						
	f	13		LL				PHS		C
	g	3		LL				PHS		C
	h	18	PSL	LL	PPS			PHS		C
	i	24	PSL	LL				R.R.		C
	j	48		LL	PPS			R.R.		C
	k	19		LL						
	l	82		LL	PPS					
	m	50		LL						

TABLE 10-1
(continued)

Potential Development Area (HMDC 10/17/91)	Dev. Zone ID	Size (Acres)	Landfill Status	Elevation Zone	Identified and Potential Resources: Prehistoric	17th Century	18th Century	19th Century	20th Century	Archaeological and Historical Resource Reference Map
7. CONSERVATION MANAGEMENT (Cont.)										
	n	7		LL	PPS					
	o	2		UL						
	p	2		UL				PHS		C
	q	3		LL						
	r	10		LL	PPS					
	s	26	PSL	LL	PPS					
	t	26	PSL	LL	PPS			R.R.		C
	u	14	PSL	LL			PHS	R.R.		C
	v	28	PSL	LL						
	w	36	PSL	LL	PPS			R.R.		C
	x	45		LL	PPS					
	y	28	PSL							
	z	22	PSL	LL						

TABLE 10-2

Summary of identified Cultural Resources by time period for each of the seven currently defined Hackensack Meadowlands Development Action Alternatives

Potential Development Areas	Prehistoric	17th. Century	18th. Century	19th. Century	20th. Century
1. Upland Growth	8	1	3	9	2
2. Redevelopment	4	1	2	8	
3. Highway Corridors	7	2	2	11	2
4. Dispersed Development	6	1	1	5	5
5. Growth Centers	4		1	4	
6. No Action Alternative	8	1	1	6	
7. Conservation Management	9	5	9	26	

11.0 ALTERNATIVES SCREENING RESULTS

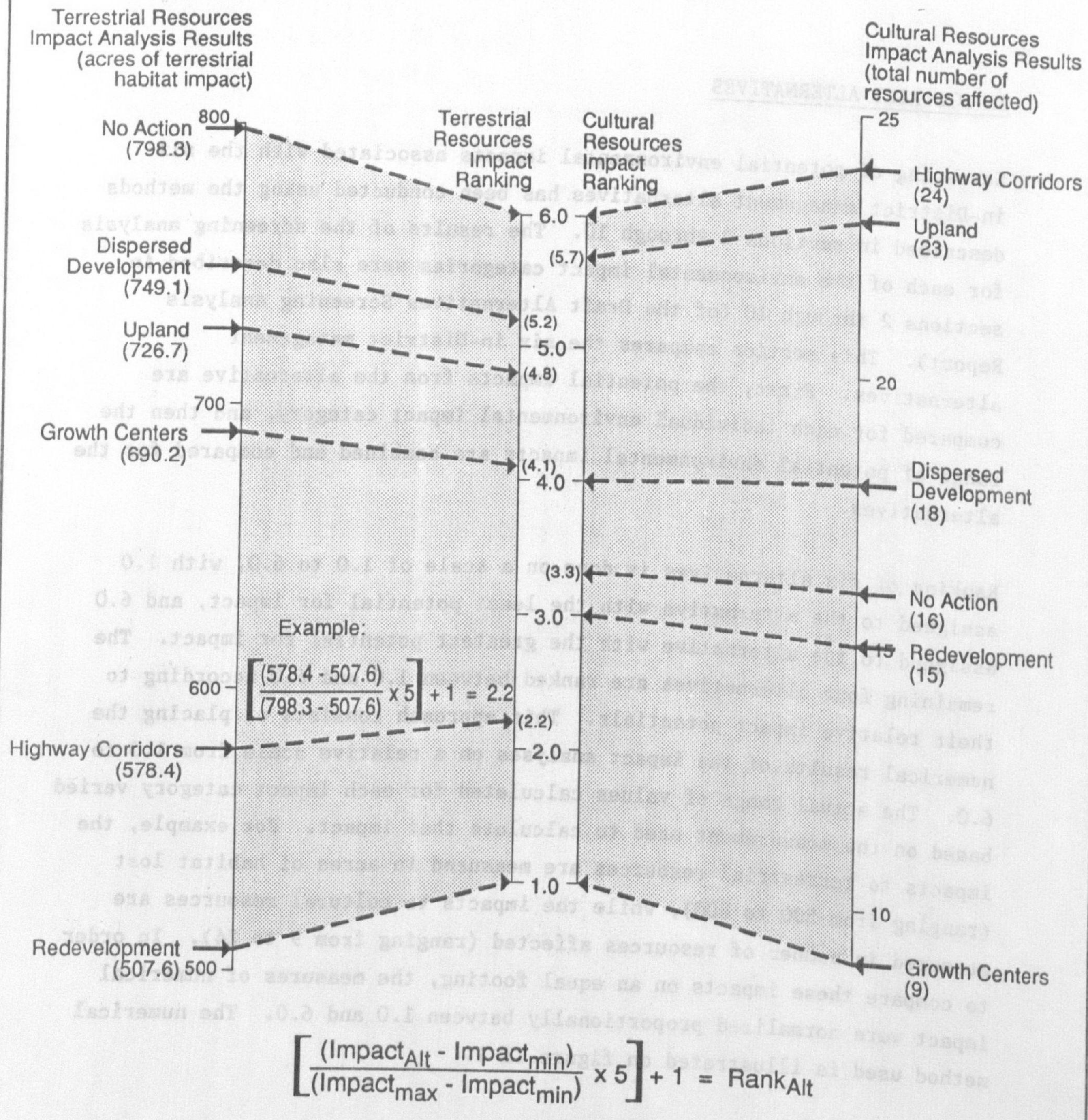
IN-DISTRICT ALTERNATIVES

Screening of potential environmental impacts associated with the six in-District management alternatives has been conducted using the methods described in sections 2 through 10. The results of the screening analysis for each of the environmental impact categories were also described in sections 2 through 10 (of the Draft Alternatives Screening Analysis Report). This section compares the six in-District management alternatives. First, the potential impacts from the alternative are compared for each individual environmental impact category, and then the range of potential environmental impacts are combined and compared for the alternatives.

Ranking of six alternatives is done on a scale of 1.0 to 6.0, with 1.0 assigned to the alternative with the least potential for impact, and 6.0 assigned to the alternative with the greatest potential for impact. The remaining four alternatives are ranked between 1.0 and 6.0 according to their relative impact potentials. This approach consists of placing the numerical results of the impact analyses on a relative scale from 1.0 to 6.0. The actual range of values calculated for each impact category varied based on the measurement used to calculate that impact. For example, the impacts to terrestrial resources are measured in acres of habitat lost (ranging from 500 to 800), while the impacts to cultural resources are measured in number of resources affected (ranging from 9 to 24). In order to compare these impacts on an equal footing, the measures of numerical impact were normalized proportionally between 1.0 and 6.0. The numerical method used is illustrated on figure 11-1.

11.1 METHODS FOR RANKING ALTERNATIVES

Alternatives have been ranked based on their relative potential for environmental impacts as reported in sections 2 through 10. In most cases, a numerical measure of impact has been used. Using a numerical measure of



CDM

environmental engineers, scientists, planners & management consultants

Figure 11-1

Example of Alternatives Ranking Procedure

Hackensack Meadowlands SAMP/EIS

impact allows a direct comparison of impacts of one alternative relative to another. From the comparisons of impact the alternatives have been ranked, within each impact category (i.e., wetlands, water quality, transportation, etc.). For all impact categories, the rankings have been calculated such that the alternative with the least potential for impact receives a rank of 1.0, and the alternative with the greatest potential for impact receives a rank of 6.0 (because there are six alternatives). The remaining alternatives receive ranks between 1.0 and 6.0 which reflect how their potential impacts compare to the minimum and maximum potential impacts. This provides for scoring separation between alternatives that have very different levels of impact, and yields similar ranks for alternatives that have similar levels of impact. It should be noted that the impact assessment methodologies were selected, and the impact assessments were conducted at a screening level-of-analysis, designed primarily to reveal differences among alternatives.

11.1.1 Environmental Impact Categories

Wetland Resources. To assess the potential for impacts to wetland resources, the attribute impact scores for the water quality improvement (WQ), wildlife habitat (WH), and social significance (SS) attributes (as discussed in section 2.1) were combined. At this level of screening, the impact values for the three attributes were added equally because the EIS Subcommittee felt that insufficient information was available at this stage in the project to assign other than equal weights to the three attributes.

The important habitat (IH) attribute was not included as part of the assessment of potential impact to wetland resources, because it is presented as a separate environmental impact category. These issues are addressed in the following subsection, entitled Threatened/Endangered Species and Remnant/Unique (TERU) Habitats.

The attribute impact scores were calculated using the wetland indexing system (described in more detail in Chapter 3: Description of the Affected Environment, and in Appendix B to that chapter). The wetland indexing system operates by assigning a numerical importance rank to wetland characteristics as they relate to three general wetland attributes. Each assessment area (AA) in the District is indexed on the basis of the presence or absence of these wetland characteristics, on a scale of 0 to 100. The final attribute score is obtained by multiplying the attribute index by the area of the wetland (in acres).

Potential for impacts to the wetland resources are measured by predicting changes in wetland characteristics to each AA in the District, and rescoring the AAs based on the revised set of wetland characteristics. The potential impact is then identifiable as the difference between the post-impact score and the baseline score.

The results of the wetland impact ranking are presented in table 11-1. The alternatives rank as follows, from highest to lowest potential for impacts to wetland resources: the greatest potential for impact results from No Action (6.0), followed by Dispersed Development (3.9), Growth Centers (3.9), Highway Corridors (3.8), Redevelopment (2.7), and the lowest potential for impact results from Upland (1.0).

Threatened/Endangered Species and Remnant/Unique (TERU) Habitats. To assess the potential impacts to this environmental impact category, the attribute impact score was determined for TERU habitats using the index approach used for wetland impacts (discussed in section 3.1). The results of the TERU habitat impact ranking are presented in table 11-2. The alternatives rank as follows, from highest to lowest potential for impacts to TERU habitats: the greatest potential for impact results from No Action (6.0), followed by Dispersed Development (3.2), Highway Corridors (2.7), Growth Centers (2.7), Upland (1.7), and the lowest potential for impact results from Redevelopment (1.0).

Water Quality. As described in section 4.1.2, modeling results for two of the several pollutants evaluated for stormwater runoff impacts indicated potential stormwater concentrations greater than ambient surface water quality concentrations in the District: suspended solids (SS) and copper. The measurement selected to describe potential SS impacts was the mean SS

TABLE 11-1

WETLAND RESOURCES IMPACTS

Alternative	Impact WQ+WH+SS Attributes	Relative Rank
Upland	55265	1.0
Redevelopment	168055	2.7
Highway Corridors	241476	3.8
Dispersed Development	248866	3.9
Growth Centers	248489	3.9
No Action	385516	6.0

TABLE 11-2

THREATENED/ENDANGERED AND REMNANT/UNIQUE HABITATS IMPACTS

Alternative	Impact IH Attribute	Relative Rank
Upland	54886	1.7
Redevelopment	41436	1.0
Highway Corridors	73076	2.7
Dispersed Development	82650	3.2
Growth Centers	73002	2.7
No Action	133041	6.0

concentration (in mg/l) in runoff (the "end of pipe" concentration before dilution) estimated for each alternative. The measurement selected to describe potential copper impacts was the acreage of the planning areas which resulted in projected higher relative stormwater quality concentrations (greater than 5 times the EPA acute toxic water quality criterion, see section 4.1.2). Because the impacts from copper are measured in acres contributing runoff with levels of copper estimated to have "significant impact potential", while the potential impacts from SS are less significant, and because of the numerical relationship between the two sets of scores, the copper ranks were given twice the weight of the SS ranks. The measures of SS and copper impact potential were used to rank the six alternative from 1.0 to 6.0, providing the water quality ranking. The results of this ranking are presented in table 11-3. The alternatives rank as follows, from highest to lowest potential for impact to water quality: the greatest potential for impact results from Highway Corridors (6.0), followed by Redevelopment (4.8), No Action (3.7), Dispersed Development (2.3) Growth Centers (2.2), and the lowest potential for impact result from Upland (1.0).

Other Aquatic Resources. Principal impacts to aquatic resources, as caused by loss of wetland and reductions in water quality, have already been incorporated in the screening analysis as part of the impacts identified for those environmental categories. Potential for additional impacts to aquatic resources were calculated by measuring the acreage loss of estuarine wetlands, which provide a source of primary productivity to the surface water ecosystems (see section 5.1.2). Loss of primary productivity is an indirect effect on aquatic ecosystems resulting from the reduction of export of biomass to downslope waters that occurs when estuarine wetland are lost. This biomass (organic matter) serves as a food source for aquatic organisms and supports the aquatic food chain. Thus, this category of impact measures indirect and cumulative potential impacts on the aquatic ecosystem, in addition to those aquatic impacts calculated separately as part of the wetland and water quality impact assessments. The results of the "other aquatic resources" impact ranking are presented in table 11-4. The alternatives rank as follows, from highest to lowest potential for impact to other aquatic resources: the greatest potential for impact

TABLE 11-3

WATER QUALITY IMPACTS

Alternative	SS Mean Concentration Measure	SS Mean Concentration Rel. Rank	Copper Acres of Higher Impact Potential Measure	Copper Acres of Higher Impact Potential Rel. Rank	Summed Rank from SS and Copper	Relative Rank
Weight =	1		2			
Upland	53	4.7	125	1.0	6.7	1.0
Redevelopment	57	6.0	150	4.0	14.0	4.8
Highway Corridors	52	4.3	167	6.0	16.3	6.0
Dispersed Development	52	4.3	137	2.4	9.2	2.3
Growth Centers	48	3.0	142	3.0	9.0	2.2
No Action	42	1.0	162	5.4	11.8	3.7

TABLE 11-4

OTHER AQUATIC RESOURCES IMPACTS

Alternative	Estuarine Wetland Acres Lost	Relative Rank
Upland	0.0	1.0
Redevelopment	187.9	1.9
Highway Corridors	402.0	2.9
Dispersed Development	416.6	3.0
Growth Centers	422.3	3.0
No Action	1041.2	6.0

TABLE 11-5

TERRESTRIAL RESOURCES IMPACTS

Alternative	Vacant Upland Acres Lost	Relative Rank
Upland	726.7	4.8
Redevelopment	507.6	1.0
Highway Corridors	578.4	2.2
Dispersed Development	749.1	5.2
Growth Centers	690.2	4.1
No Action	798.3	6.0

results from No Action (6.0), followed by Growth Centers (3.0), Dispersed Development (3.0), Highway Corridors (2.9), Redevelopment (1.9), and the lowest potential for impact results from Upland (1.0).

Terrestrial Resources. Potential impacts to terrestrial resources were determined by calculating the loss of vacant upland area from the six management alternatives, measured in acres (see section 6.1.1). The results of this ranking are presented in table 11-5. The alternatives rank, from highest to lowest potential for impacts to terrestrial resources, as follows: the greatest potential for impact results from No Action (6.0), followed by Dispersed Development (5.2), Upland (4.8), Growth Centers (4.1), Highway Corridors (2.2), and the lowest potential for impact results from Redevelopment (1.0).

Transportation. The potential impacts to transportation were measured by combining the effect of three different transportation system measures (see section 7.1):

1. the sum total length of roadway "links" (unidirectional sections of road in the transportation model) projected to encounter peak hour congestion, based on the ratio of traffic volume to roadway capacity (V/C ratio) for each alternative;
2. the hours of delay from roadway congestion resulting from development of each alternative; and
3. the modal split for each alternative.

These indicators of transportation system performance best characterized the range of relative transportation impacts.

In order to obtain a single set of ranks for impacts to the transportation system, the three general measures of transportation system impacts listed above were combined. The weights assigned to transportation system impact measures are shown in table 11-6. The three general measures of transportation impacts groups were assigned equal weights. The measure of length of roadway congestion has been broken down into 2 measurements: (1) the sum total length of roadway links that were projected to "fail" in the peak hour (i.e., the links with a V/C ratio above 1.25; and (2) the

TABLE 11-6

TRANSPORTATION IMPACTS

Alternative	Congested Link Miles Measure	Congested Link Miles Rel. Rank	Failed Link Miles Measure	Failed Link Miles Rel. Rank	Hours of Delay Measure	Hours of Delay Rel. Rank	(100 - Modal Split) Measure	(100 - Modal Split) Rel. Rank	Sum of Weighted Ranks	Relative Rank
Weight =	1		2		3		3			
Upland	95.8	5.0	95.5	5.4	691	6.0	92.1	5.3	49.5	6.0
Redevelopment	88.8	1.0	89.6	3.8	571	1.0	92.7	6.0	29.6	2.8
Highway Corridors	95.3	4.7	97.3	5.8	677	5.4	92.3	5.5	49.1	5.9
Dispersed Development	97.0	5.7	82.4	1.8	600	2.2	89.4	1.9	21.6	1.5
Growth Centers	94.9	4.5	79.2	1.0	617	2.9	88.7	1.0	18.2	1.0
No Action	97.5	6.0	97.9	6.0	633	3.6	92.0	5.1	44.1	5.1

TABLE 11-7

AIR QUALITY IMPACTS

Alternative	Emissions, lb/hr CO	Emissions, lb/hr NO(x)	Emissions, lb/hr HC	Sum of Emissions	Relative Rank
Weight =	1	1	1		
Upland	65062	10758	10415	86235	5.6
Redevelopment	59764	10490	9823	80077	1.0
Highway Corridors	65451	10781	10579	86811	6.0
Dispersed Development	60805	10487	9864	81156	1.8
Growth Centers	60391	10506	9846	80743	1.5
No Action	62616	10667	10170	83453	3.5

remaining length of roadway links that were projected to encounter "congested" (i.e., with a V/C ratio above 1.0) peak hour conditions. Thus, the links that were predicted to encounter peak hour V/C ratios above 1.0 were divided into two groups--those with V/C ratios above 1.25 were termed "failed" links, and those with V/C ratios above 1.0 but below 1.25 were termed "congested" links. Furthermore, because a "failed" link is worse than one that is congested, the miles of failed links were weighted twice as high as the miles of congested links. Presenting two indicators of congestion (failed links and congested links) leads to the weighting presented in table 11-6, where the measure of congested links receives a weight of "1", the measure of failed links receives a weight of "2", and the remaining two measures receive weights of "3". (Thus, each of the three general measures of transportation impacts are weighted equally, since the sum of the weights of the congested and failed link measures equals "3"). Also, because alternatives exhibiting higher modal splits (as indicated by the transportation model) should be associated with a more favorable (i.e., lower) ranking, the measure used to rank the alternatives was 100 minus the modal split percentage (in reality, because the modal split is the percentage of trips in the District using public transportation, 100 minus the modal split is the percentage of trips in the District using personal automobiles). This adjustment results in a higher impact measure leading to a higher impact rank.

The results of this ranking are presented in table 11-6. The alternatives rank as follows, from highest to lowest potential for impacts to transportation: the greatest potential for impact results from Upland (6.0), followed by Highway Corridors (5.9), No Action (5.1), Redevelopment (2.8), Dispersed Development (1.5), and the lowest potential for impact result from Growth Centers (1.0).

Air Quality. The air quality screening analysis, based on the vehicle emissions as calculated from the projected traffic volumes and speeds under each alternative, resulted in peak hour emission rates for carbon monoxide (CO), nitrogen oxides (NO_X), and hydrocarbons (HC), in pounds per hour (see section 8.1). These emissions were combined to indicate the relative potential for impacts to the air quality from each alternative. The results of this ranking are presented in table 11-7. The alternatives rank as follows, from highest to lowest projected impacts to air quality: the greatest potential for impact results from Highway Corridors (6.0), followed by Upland (5.6), No Action (3.5), Dispersed Development (1.8), Growth Centers (1.5), and the lowest potential for impact results from Redevelopment (1.0).

Solid and Hazardous Waste. The presence of solid waste and hazardous materials is important in assessing the potential developability of a site. However, the level of information available for solid and hazardous waste sites varies widely, from virtually no information regarding the types and levels of contamination for many sites, to detailed remedial investigations for a few sites. Consistent information of sufficient detail was not available to support alternatives screening. More detailed information is necessary to assess impacts or benefits from proximity to solid or hazardous waste site locations. The effect of proximity to solid and hazardous waste sites will be evaluated in the development of the preferred alternative. Thus, the discussion of solid and hazardous waste has been presented for informational, not alternatives screening, purposes.

Cultural Resources. Section 10.0 enumerates the identified cultural resources by time period for each of the six management alternatives. To estimate the relative potential for impacts to the cultural resources of the District for each alternative, the total number of identified cultural resources that might be affected by an alternative for all time periods was used. The results of this ranking are presented in table 11-8. The alternatives rank as follows, from highest to lowest potential potential for impacts to cultural resources: the greatest potential for impact results from Highway Corridors (6.0), followed by Upland (5.7), Dispersed Development (4.0), No Action (3.3), Redevelopment (3.0), and the lowest potential for impact results from Growth Centers (1.0).

TABLE 11-8

CULTURAL RESOURCES IMPACTS

Alternative	Pre-historic	17th Century	18th Century	19th Century	20th Century	Total Resources Affected	Relative Rank
Weight =	1	1	1	1	1		
Upland	8	1	3	9	2	23	5.7
Redevelopment	4	1	2	8	0	15	3.0
Highway Corridors	7	2	2	11	2	24	6.0
Dispersed Development	6	1	1	5	5	18	4.0
Growth Centers	4	0	1	4	0	9	1.0
No Action	8	1	1	6	0	16	3.3

TABLE 11-9

COMPOSITE ALTERNATIVES RANKING

Alternative	Wetland Resource	TERU Habitats	Water Quality	Aquatic Resources	Terrestrial Resources	Transpor-tation	Air Quality	Cultural Resources	Sum of Weighted Ranks	Composite Relative Rank
Weight =	8	16	4	2	4	4	4	2		
Upland	1.0	1.7	1.0	1.0	4.8	6.0	5.6	5.7	118.4	2.1
Redevelopment	2.7	1.0	4.8	1.9	1.0	2.8	1.0	3.0	85.8	1.0
Highway Corridors	3.8	2.7	6.0	2.9	2.2	5.9	6.0	6.0	172.7	3.9
Dispersed Development	3.9	3.2	2.3	3.0	5.2	1.5	1.8	4.0	140.7	2.8
Growth Centers	3.9	2.7	2.2	3.0	4.1	1.0	1.5	1.0	118.5	2.1
No Action	6.0	6.0	3.7	6.0	6.0	5.1	3.5	3.3	235.9	6.0

11.1.2 OVERALL ENVIRONMENTAL IMPACTS

In order to identify the alternatives exhibiting relatively lower overall potential environmental impacts, it was necessary to combine the relative ranks for the eight assessed environmental impact categories discussed above. (Locations of solid and hazardous waste were not assessed as an impact category for the reasons stated in section 11.1.) A relative importance weight was assigned to each impact category, to take into account the importance of each environmental impact category in relation to the other impact categories. The weights assigned to each of the assessed environmental impact categories are presented in table 11-9. The weights are the consensus of the professional staff of each of the SAMP partner agencies.

Impacts to threatened or endangered species and remnant or unique (TERU) habitats receive the highest weight (a weighting factor of "16") because such habitats are very important in the ecosystem, and impacts can be very difficult to mitigate.

Impacts to wetland resources receive the next highest weight (a weighting factor of "8") because wetlands are a very important natural resource in the District. Moreover, they provide habitat for a wide range of both aquatic and terrestrial organisms, as well as providing many valuable social and ecological functions, such as nutrient transformation, sediment stabilization, and retention of toxic materials. Furthermore, the location of the wetlands, within an urban complex, makes them valuable as a refuge for many native species that have been displaced by development.

Impacts to the transportation system and air quality in the District have been assigned weighting factors of "4", due to the significance of existing transportation and air quality problems in the District.

Impacts to terrestrial resources have been assigned a weighting factor of "4". Terrestrial resources are important because only limited areas of upland open space remain in the District to provide habitat for terrestrial species.

Impacts to water quality have also been assigned a weighting factor of "4". Water quality is important to the wildlife and the ecosystems of the District; however, the additional stormwater runoff resulting from the six in-District alternatives does not have the potential to substantially degrade the existing water quality in the District. The additional stormwater runoff would comprise only a very small fraction of existing point and non-point source discharges in the District. Existing loadings of point-source pollutants are relatively high, and the additional stormwater discharges will not substantially increase these loadings.

Impacts to other aquatic resources and to cultural resources have each been assigned a weighting factor of "2". Because impacts to aquatic resources are primarily measured as part of the impacts to wetlands and to water quality, the "other aquatic resources" category measures only indirect impacts on the aquatic ecosystems, and thus the significance **as measured for the screening assessment** (i.e., the loss of primary productivity from estuarine wetlands) represents this category's status as only one of several measures to aquatic resources. Other impacts to this category--wetland and water quality--are considered under separate impact categories. Cultural resources may be an administrative impediment to the implementation of the SAMP, but typically do not preclude the use of land if cultural resources are logged during disturbance or construction.

The combined environmental impacts were ranked on a relative basis for each alternative by multiplying the weight for each impact category by the relative rank for that category. The results for all eight impact categories were then summed. This resulted in a single "impact score" for each alternative. Using these total impact scores, the alternatives were then ranked on a scale of 1.0 to 6.0, as discussed in section 11.1 above. This resulted in a composite rank for each alternative.

11.2 COMPARISON OF MANAGEMENT ALTERNATIVES

Tables 11-1 through 11-8 presented the relative impact ranking for the six management alternatives for each of the eight environmental impact categories assessed in the alternatives screening. Table 11-9 presents the composite rank for each alternative. The composite rank combines the relative ranking determined for each of the eight impact categories, using a weighting formula (described above). Please note that the discussion of level of impact is comparative only. Thus, where a moderately high impact is described, it must be interpreted within the range of impacts determined for the alternatives. These impacts are relative impacts, not absolute impacts.

The alternatives rank as follows, from highest to lowest composite estimated impacts (for all eight environmental impact categories): the greatest composite impacts result from No Action (6.0), followed by Highway Corridors (3.9), Dispersed Development (2.8), Growth Centers (2.1), Upland (2.1), and the lowest composite impacts result from Redevelopment (1.0). The following sections discuss each alternative, its composite rank, and its relative ranks for the various impact categories assessed during the screening process. The alternatives are presented in order of composite rank, from lowest impact potential to highest.

11.2.1 Redevelopment Alternative

The Redevelopment alternative involves the least amount of land disturbance, because of the finite supply of land available for redevelopment. This alternative relies primarily on lands already developed. Thus, it has lower impacts to many of the impact categories that are dependent on land area, such as terrestrial resources, wetland resources, and other aquatic resources. The Redevelopment alternative has the lowest impacts to terrestrial resources, due to the fact that most of the land is already developed. It also has the lowest impacts to threatened or endangered species and remnant or unique (TERU) habitats, low impacts to other aquatic resources (1.9 ranking) and moderate impacts to wetland resources (2.7 ranking), due to the comparatively lower amount of wetland acreage involved.

Impacts to water quality from the Redevelopment alternative are moderately high (4.8 ranking), due to a higher number of smaller parcels of land, which tend to increase the concentration of pollutants discharged directly into the receiving waters, instead of being attenuated by infiltration and overland flow. The impacts from the Redevelopment alternative to the transportation system are moderate (2.8 ranking), and the air quality impact is the lowest of the six alternatives. The cultural resources impacts from the Redevelopment alternative are moderate, compared to the other alternatives.

The Redevelopment alternative exhibits relatively lower impacts than the other alternatives. This is due to the low impacts to wetland resources, terrestrial resources, TERU habitats, other aquatic resources, air quality, and cultural resources. The greatest relative impact for the Redevelopment occurs in the water quality impact category, because the small size of the Planning Areas does not effectively retain on-site stormwater-borne contaminants.

11.2.2 Upland Alternative

The Upland alternative, by definition, involves no fill of wetlands. Thus it follows that the Upland alternative has the lowest impacts to wetlands of the six management alternatives. (There are, however, indirect impacts to wetlands for this alternative.) Also, due to the absence of wetland fill, the other aquatic resources impact (as measured by the amount of estuarine wetland fill) for the Upland alternative is the lowest among the alternatives. The Upland alternative exhibits the lowest potential to degrade water quality, although the range of impacts to water quality among all six alternatives is not substantial. Impacts to TERU habitats are comparatively low (2.1 ranking) for the Upland alternative. Impacts to TERU habitats are not the lowest as a result of the impacts caused by development on upland T/E habitats, and the indirect impacts caused by the proximity of some of the Upland alternative locations to wetland T/E habitats.

The Upland alternative, by definitionally containing no fill in wetlands, must use a large amount of vacant upland, and thus the impact to terrestrial resources is moderately high (4.8). Impacts to the transportation system from the Upland alternative are the highest among the six alternatives--the spatial locations of the Planning Areas under this alternative cause relatively greater increases in vehicle mile traveled and congestion. High levels of vehicle miles traveled results in the Upland alternative having high air quality impacts (5.6). The Upland alternative also has a high effect on cultural resources (5.7), compared to the other alternatives.

The relatively low overall impact ranking for the Upland alternative (2.1) is due to the low impacts to wetland, water quality, and other aquatic resources, as a result of no wetland fill. However, the impact ranking is not the lowest because of the higher impacts to transportation, air quality, terrestrial resources, and cultural resources, which results primarily from the limited availability of upland property, and the scattered spatial arrangement that results from using only upland sites.

11.2.3 Growth Centers Alternative

The Growth Centers alternative is based on the planning principle that larger mixed-use centers of development are a more efficient way of managing growth. However, focusing growth in the District into centers involves wetland fill, because the available uplands in the District are not grouped so as to allow development of mixed-use centers.

The relatively lower increase in vehicle miles traveled and congestion under the Growth Centers alternative results in relatively low impacts to transportation (1.0 ranking) and air quality (1.5). The Growth Centers alternative has the lowest impact to transportation, and the second lowest impact to air quality. The centralized locations, located in areas with fewer cultural resources, results in the lowest impacts to cultural resources (1.0). Cultural resources in the District are primarily found in areas along the Hackensack River that are not proposed for inclusion in the Growth Centers alternative. The large size of the planning areas in the Growth Centers alternative is responsible for moderately low impacts to water quality (2.2)--large areas allow more chance for pollutant attenuation by infiltration and sediment trapping.

The terrestrial resources impacts from the Growth Centers alternative are moderately high (4.1). The terrestrial resources impacts are due to the amount of vacant upland that is included in this alternative.

Wetland (3.9) and other aquatic resources (3.0) impacts from the Growth Centers alternative are both ranked moderate. Impacts to TERU habitats are ranked comparatively low (2.1). These moderate rankings result from the relatively intermediate amount of wetlands disturbed as part of this alternative, compared to the other alternatives.

The moderately low overall impacts exhibited by the Growth Centers alternative (2.1) is due to the relatively low impacts to transportation, air quality, and cultural resources, along with the relatively moderate impacts to wetland, terrestrial, other aquatic resources, water quality, and TERU habitats.

11.2.4 Dispersed Development Areas Alternative

The Dispersed Development Areas alternative is comprised of somewhat large areas of development (between 30 and 170 acres in size) distributed throughout the District. The dispersed nature of this alternative, with planning areas that are, for the most part, readily accessible, leads to a relatively low impact to transportation (1.5 ranking) and air quality (1.8). The relatively large size of the planning areas is responsible for the moderately low impacts to water quality (2.3)--larger areas allow more chance for pollutant attenuation by infiltration and sediment trapping.

Impacts to wetland (3.9) and other aquatic resources (3.0), as well as to TERU habitats (3.2) are moderate, and are slightly higher than impacts from the Highway Corridors alternative, and similar to the impacts from the Growth Centers alternative. Impacts to terrestrial resources (5.2) and to cultural resources (4.0) are moderately high.

The Dispersed Development Areas alternative exhibits moderate overall impacts (2.8), higher than the Growth Centers alternative, but significantly lower than the Highway Corridors alternative. The relatively moderate impacts (when compared to the other alternatives) for this alternative result from the spatial arrangement of this alternative. While development is somewhat clustered under this alternative, there is still a substantial amount of dispersion of the planning areas. It is this combination of both clustering and dispersion that contributes to the moderate level of environmental impacts for the Dispersed Development Areas alternative.

11.2.5 Highway Corridors Alternative

The Highway Corridors alternative is typified by development around the Route 3 corridor. It is this spatial arrangement and the higher vehicle miles traveled under this alternative that lead to the high impacts to transportation (5.9 ranking, only slightly lower the No Action alternative), air quality (6.0), and cultural resources (6.0). The high transportation impact reveals that development around the already congested Route 3 corridor leads to a worsening of already heavily congested traffic conditions. This, plus the increase in vehicle miles traveled, is estimated to cause relatively high air emissions. The Route 3/Paterson Plank Road area has been a historic location for activity in the District since the 19th century, thus there is a substantial potential for cultural resources from this time period to be encountered.

The spatial arrangement of this alternative results in moderate impacts to wetland resources (3.8), other aquatic resources (2.9), and TERU habitats (3.9), when compared to the other alternatives. The amount of direct wetland fill involved in this alternative is the second largest among the alternatives. The wetland resources impacts are similar to (and only slightly lower than) the wetland impacts from the Dispersed Development Area and Growth Centers alternatives. This is because most of the wetlands around the Route 3 corridor (except for the wetlands surrounding Berrys Creek and Berrys Creek Canal) are already disturbed, are smaller and isolated, and are thus of lower quality relative to other wetlands affected under other alternatives. The Highway Corridors alternative also has moderate impacts to aquatic resources and TERU habitats, with only slightly lower impacts than the Dispersed Development Areas and Growth Centers alternatives, for much the same reasons.

The impacts to terrestrial resources are moderately low (2.2), because the Route 3 corridor area is already highly developed and has little vacant upland suitable for terrestrial habitats. Impacts to water quality from the Highway Corridors alternative are the highest among the alternatives, due to the number of smaller parcels involved in this alternative. Smaller parcels tend to increase the concentration of pollutants discharged directly into the receiving waters, instead of being attenuated by infiltration and sediment trapping.

The Highway Corridor alternative exhibits relatively high impacts to transportation, air quality, cultural resources, and water quality, along with the moderate impacts to wetland, other aquatic, TERU, and terrestrial resources. The spatial arrangement of planning areas for this alternative (centrally located around the Route 3 corridor) is directly responsible for the moderately high overall impact ranking for this alternative (3.9).

11.2.6 No Action (No SAMP) Alternative

The No Action alternative was developed using existing HMDC zoning, and is a projection of possible development patterns in the absence of a SAMP. The use of existing HMDC zoning means that much larger areas must be used to accommodate the HMDC-identified development needs, because the existing zoning uses lower development densities than is assumed for other future management alternatives. In fact, the No Action alternative requires over 65 percent more land area than that involved in the Highway Corridors alternative to meet similar needs. The comparatively large amount of land area for the No Action alternative required to meet HMDC-identified needs under existing zoning, along with the spatial arrangement of these parcels, results in comparatively higher environmental impacts.

The No Action alternative has the highest projected impact for four of the eight environmental impact categories: wetland resources, TERU habitats, other aquatic resources, and terrestrial resources. Impacts to the transportation system are also high (5.1 ranking), resulting from the relatively high vehicle miles traveled and the congestion projected to occur under this alternative. Impacts to air quality (3.5), water quality (3.7), and cultural resources (3.3) are all moderate.

The relatively high overall environmental impacts of the No Action alternative (6.0) are due to the extensive impacts to wetland resources, terrestrial resources, other aquatic resources, TERU habitats, and transportation impact categories.

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Appendix L

APPENDIX L

HYBRID ANALYSIS

HACKENSACK MEADOWLANDS DISTRICT SAMP/EIS

Appendix Prepared by:

THE HACKENSACK MEADOWLANDS DEVELOPMENT COMMISSION

MAY 1995

<u>Note</u>: *The information presented in this Appendix was used in the development of the Environmental Impact Statement (EIS). However, after work on the Appendix was completed, modifications and improvements in the discussion of this subject were applied during the preparation of the EIS. As a result, the presentation of policy, planning, and regulatory issues contained herein may not be as current as the information in the EIS. Please note, however, that the presentation of quantitative information regarding environmental impacts (e.g., wetlands, water quality, air quality, transportation) contained within the Appendix is current. If any differences exist between this Appendix and the EIS, the discussion in the EIS supersedes the discussion in the Appendix.*

HACKENSACK MEADOWLANDS DEVELOPMENT COMMISSION

SPECIAL AREA MANAGEMENT PLAN

HYBRID ANALYSIS

May 23, 1995

TABLE OF CONTENTS

HYBRID ANALYSIS

I INTRODUCTION TO PLANNING ANALYSIS AND METHODOLOGY FOR THE DOCUMENTATION OF THE HYBRID PLAN

This document presents a methodology to be used by Hackensack Meadowlands Development Commission (HMDC) planners in conjunction with a Master Plan revision, and the ongoing preparation of an Environmental Impact Statement (EIS) for the Hackensack Meadowlands Special Area Management Plan (SAMP). The planning analysis utilized in this document represents generally accepted planning practices concerning spatial and locational land use diversions. The planning analysis establishes and applies criteria intended to address the cost, logistics and technology parameters of the Clean Water Act Section 404(b)(1) Guidelines.

The Planning Analysis reviews the Planning Areas associated with each of the Land Management Alternatives and recommends their inclusion or exclusion in the Hybrid Plan. The Land Management Alternatives are described in the Alternatives Screening Report which assessed the environmental impacts of the individual alternatives at the screening level. The planning analysis for the documentation of the Hybrid Plan considers each of the Land Management Alternatives in a comprehensive and objective manner. Although the planning analysis includes certain environmental factors, as does the current Master Planning process, it is not intended to subrogate the full environmental analysis performed in the EIS.

Each of the Land Management Alternatives contain two distinct types of planning units - "Planning Areas", which are locations where the principal land use classifications (office, commercial and residential) are planned, and "Satellite Areas" which are locations where the secondary office and warehouse/industrial uses are planned. The Satellite Areas are dispersed throughout the HMD, are vacant parcels located in proximity to the Planning Areas, and remain essentially constant in each of the Land Management Alternatives. Planning Areas not considered suitable for primary land uses will also become Satellite Areas.

The purpose of this Planning Analysis is to document the process utilized to determine the suitability of Planning Areas to comprise the principal land use classifications in the context of a comprehensive plan for the HMD. This determination will be based on the application of the exclusionary and planning criteria described in Section II.

Each Land Management Alternative will be analyzed in the order in which it was ranked in the EIS Screening Analysis as shown;

REDEVELOPMENT
UPLAND GROWTH
GROWTH CENTERS
DISPERSED DEVELOPMENT AREAS
HIGHWAY CORRIDORS

The Planning Areas are analyzed separately; however, the ability to merge Planning Areas within close proximity to each other is important in the analysis. The principal object of the analysis is to fulfill developmental needs and comprehensive planning objectives for the HMD by consolidating selected Planning Areas from the several Land Management Alternatives, and to address concurrently the Clean Water Act Section 404(b)(1) Guidelines. This may include using selected parcels in each of the alternatives in order to make any necessary adjustments that can ensure a balanced distribution of needs. Planning Areas that ultimately are included in the Hybrid Plan will result from the analysis contained in this document.

The Planning Analysis section applies the exclusionary and limiting planning criteria to the Planning Areas in the Land Management Alternatives to determine their suitability in the Hybrid Plan. (See Section II for a complete description of the Planning Criteria).

Three Tiers of planning criteria are applied[1]:

Tier I Exclusionary Criteria are factors or circumstances which are of such significance that they would eliminate the Planning Area from any further consideration as a Planning Area or as a Satellite Area. Specifically, Tier I Criteria relate to site availability, contamination, and ownership or jurisdictional issues.

Tier II Potential Cost, Logistics and Technology Exclusionary and Planning Criteria are factors, which when applied, may transfer a Planning Area to a Satellite Area category. Tier II criteria also are intended to address the Section 404(b)(1) Guidelines with regard to the disposition of wetlands.

Tier III Limiting Planning Criteria are factors that demonstrate the ability of the Planning Area to be responsive to comprehensive planning principles and HMDC developmental needs. Tier III criteria also help to define the specific land use types, either primary or secondary to be implemented in the Planning Area.

[1]Tier I and Tier II criteria were developed to address the Costs, Logistics, and Technology parameters of the Clean Water Act Section 404(b)(1) Guidelines.

The presence of a Tier I criteria could result in the elimination of the Planning Area from further consideration. The presence of Tier II criteria in a Planning Area may change the status of the Planning Area to a Satellite Area or result in the elimination of the Planning Area from further consideration based on accepted planning principles and professional judgement. Tier III criteria alone will not result in the elimination of a Planning Area; rather the Tier III criteria are used to refine the responsiveness of the Planning Area to meet HMDC developmental needs. Other factors described in the existing conditions section may also help define the presence of exclusionary and planning criteria.

Based on the Planning Analysis, a recommendation is made with regard to the feasibility of including the Planning Area into the Hybrid Plan in the context of comprehensive planning. The planning recommendations could include:

(1) Retaining the Planning Area;
(2) Changing the Planning Area status to Satellite Area;
(3) Merging the Planning Areas with other Planning Areas;
(4) Eliminating the Planning Area from any further consideration; or
(5) A determination of land use in the Planning Area.

Planning Areas that are changed to the Satellite Area category may be utilized to satisfy the secondary office/warehouse/industrial needs. Certain Planning Areas can also be assigned to non-development status such as open space, if appropriate.

The format of the analysis shown below is typical of land use planning techniques. Each Planning Area will be analyzed in accordance with the following format:

- Existing Conditions
- Projected Land Use
- Planning Analysis
  - Tier I Criteria
  - Tier II Criteria
  - Tier III Criteria
- Planning Recommendation

The Existing Conditions section describes the boundaries of the Planning Area and its physical and man-made features. Also identified, are the land uses surrounding the area and any specific feature which may have an affect on the feasibility of the selected area to be included in a Hybrid Plan. Access to the Planning Area will also be identified from both roadway and mass transit modes. The presence of any water and sewerage infrastructure is also discussed.

The Projected Land Use section indicates the land use type proposed for development within the Planning Area in each Land Management Alternative. This section may also indicate any factors that would assist in understanding why the specific land use was selected for the Planning Area.

II PLANNING AREA ANALYSIS LAND USE MANAGEMENT ALTERNATIVES EXCLUSIONARY CRITERIA

TIER I EXCLUSIONARY CRITERIA (concerning environmental conditions and site availability)

I-1. Severe Land Contamination: Identified locations within the Planning Area where reasonable certainty exists of hazardous material contamination, where no public program for remediation exists and the extent of contamination is suspected to preclude development within the 20 year planning period.

I-2. Ownership Difficulties/HMDC Jurisdictional Issues: Land parcels within the Planning Area that are publicly or quasi-publicly owned and where land development may be institutionally precluded (e.g. Teterboro Airport is under the jurisdiction of the Port Authority of N.Y. N.J.). Similarly, land owned by certain entities (e.g. N.J. Sports and Exposition Authority), where the HMDC regulatory jurisdiction is limited, would be included in this criteria as well as any land that is deed restricted from development.

I-3. Current Land Development: Land uses projected for the subject Planning Area under this Land Management Alternative are no longer available either because incompatible development is underway or is imminent (i.e. received all government approvals) or existing development in the Planning Area is viable and would not meet redevelopment criteria.

TIER II POTENTIAL COSTS, LOGISTICS AND TECHNOLOGY EXCLUSIONARY AND LIMITING CRITERIA

II-1. Poor Accessibility:

a). Highway Capacity: The road and highway system within or adjacent to the Planning Area cannot reasonably be improved to accommodate the extent of traffic projected from the Planning Area. New roadway access and rights-of-way are not available or sufficient.

b). Direct Highway Impact: The Planning Area must utilize the regional highway system as its primary means of access without existing or future alternative secondary access opportunities that can reasonably be expected to be built.

c). Maximum Direct Impact To Local Road System: The Planning Area must utilize the local roadway network exclusively without any existing or future direct access to collector or arterial systems that can reasonably be expected to be built.

d). Poor Mass Transportation Opportunities: The Planning Area cannot provide effective access to mass transportation facilities, either existing or proposed.

II-2. Lack of Efficient Public Services: Insufficient infrastructure capacity (sewerage or water) and the inability to support new infrastructure development within the projected 20 year planning period.

II-3. Incompatible Land Uses: The established pattern of land uses in or surrounding the Planning Area relate poorly to the projected land uses proposed for this Planning Area under this Land Management Alternative. Accordingly, implementation of the primary land uses would be impractical or seriously limited by market demand.

II-4. Insufficient Scale: The Planning Area and surrounding areas cannot achieve sufficient population density to maximize district-wide land use efficiencies, such as viable mixed-use or employment centers. Office/ residential mixed-use projects (in general), require a minimum of 1 million sq. ft. and 3,000 dwelling units in order to achieve sufficient scale.

II-5. Lack Of Synergistic Effects:

a). Community Of Place: The inability of land uses within and surrounding the subject Planning Area to interact such that together they can achieve a total effect of which each is separately incapable. Where such synergism cannot be achieved, "community of place" attributes are absent.

b). Disproportionate Densities: The Planning Area exhibits extraordinarily low or high Floor Area Ratios (FAR) or densities which will be adversely impacted by market and physical constraints.

c). Poor Jobs to Housing Linkage: The Planning Area is either isolated or there are insufficient linkages between housing and employment land uses.

II-6. Engineering/Financial Constraints: Constraints to development in the Planning Area that result from the projected costs of land preparation and building construction would render development impractical.

TIER III LIMITING PLANNING CRITERIA

III-1. Lack of Transportation Demand Management (TDM)/Transportation Control Measures (TCM) Implementation: The Planning Area is not of sufficient mass and scale to contribute effectively to TDM or TCM programs, (e.g., carpool and parking restrictions).

III-2 Poor Relationship to Open Space/Recreation: The Planning Area cannot be physically oriented to take advantage of open space/recreation areas.

III-3 Capacity to Foster Cultural Facilities: The size and types of uses proposed in the

Planning Area are insufficient to achieve cultural facility implementation (e.g. theaters, art and design exhibitions, galleries, concert areas, etc.).

III-4. Lack of Visual Cohesiveness: The projected land uses in the Planning Area will have a negative impact on overall HMD viewsheds including views from in-District locations to areas outside the District and from areas outside the District to locations in this Planning Area; and views across the HMD.

III PLANNING ANALYSIS OF LAND MANAGEMENT ALTERNATIVES

INTRODUCTION

It was determined during the EIS Screening Analysis Phase that each Land Management Alternative to be tested in the EIS, to the maximum extent possible, must fulfill the same and equal District-wide development needs established by HMDC. The above requirement is based on an interpretation of NEPA requirements by the federal co-lead agencies in order to facilitate equivalent examination of EIS Land Management Alternatives.

This requirement imposed certain constraints on the Upland Growth and Redevelopment Alternatives. In order to fulfill the same and equal development needs under the Upland Growth and Redevelopment Land Use Management Alternatives it was necessary to apply unusually high densities that are, at least at the present time, inconsistent with generally accepted land use planning practices as well as present and projected market conditions in the Meadowlands.[2] In addition, the limited number of available Planning Areas under the Upland Growth and Redevelopment Land Management Alternatives required the designation of primary land uses in certain Planning Areas which are inappropriate but which, nevertheless represent an attempt to apply the best possible primary land use choices to the Upland and Redevelopment Alternatives.

Throughout the Planning Analysis of Land Management Alternatives in this section, there are Planning Areas that do not exhibit Tier II Potential Cost, Logistics, and Technology Exclusionary and Limiting Criteria, and/or Tier III Exclusionary and Limiting Criteria. The following is a generalized description of these instances:

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[2]Residential densities applied in the Upland Growth and Redevelopment Land Management Alternatives are 110 dwelling units/acre and 50 dwelling units/acre, respectively. In all other Land Management Alternatives, the range of residential densities applied is 20 to 40 dwelling units/acre. Densities in the 20-40 dwelling units/ac. range are consistent with existing HMDC zoning regulations.

Office Floor Area Ratio (FAR) in the Upland Growth and Redevelopment Land Management Alternatives are 1.5 FAR and 1.0 - 2.5 FAR, respectively. All other Land Management Alternatives, in general, utilize a 1.0 FAR.

TIER II POTENTIAL COST, LOGISTICS, AND TECHNOLOGY EXCLUSIONARY AND LIMITING CRITERIA

II-1 Poor Accessibility

a). Highway Capacity: The road and highway capacity within or adjacent to the Planning Area is adequate or can reasonably be improved to accommodate traffic projected from the Planning Area. Rights-of-way and existing development characteristics do not appear to inhibit roadway improvements.

b). Direct Highway Impact: The Planning Area is not limited to access from regional highway systems, and secondary access opportunities either exist or can reasonably be expected to be built.

c) Maximum Direct Impact To Local Road System: The Planning Area does not exclusively rely on the local roadway system. Alternate accessibility is available to other local or regional road systems.

d). Poor Mass Transportation Opportunities: The Planning Area can effectively access existing or proposed mass transportation facilities. Rail access is provided through proximity to existing or proposed rail stations. Bus service can be directed to the Planning Area from existing routes.

II-2 Lack of Efficient Public Services: The size and scale of the Planning Area can facilitate growth management controls in an environmentally sensitive manner that is calibrated to the availability of public facilities, and sufficient capacity exists by public service providers to support development.

II-3 Incompatible Land Uses: Projected land uses in the Planning Area generally are compatible with surrounding land uses. The market demand for the projected development in the Planning Area would not be affected substantially by the surrounding land use pattern.

II-4 Insufficient Scale: The Planning Area is of sufficient size and scale to maximize District-wide land use efficiencies such as mixed use projects and employment centers.

II-5 Lack of Synergistic Effects:

a). Community Of Place: The diversity of proposed uses in the Planning Area can support community of place attributes which contribute to overall synergy. Examples of such attributes include: a variety of lifestyles; job opportunities; cultural and recreational opportunities; shopping conveniences; diverse housing opportunities where reasonably priced housing choices are available; close relationship of employment, residential, shopping, and recreational opportunities, nearby public transportation, and environs that define the community; opportunities to provide natural and built landmarks that foster a sense of place and orientation at a human scale.

b). Disproportionate Densities: The proposed Floor Area Ratios and housing densities are consistent with present and projected market conditions and generally accepted planning principles.

c). Poor Jobs to Housing Linkage: The relationship between office, commercial, and housing uses within the Planning Area can support acceptable jobs to housing linkages by creating attractive communities in which people live and work.

II-6 Engineering/Financial Constraints: Excessive land preparation and construction costs are not anticipated that would render development impractical.

TIER III LIMITING PLANNING CRITERIA

III-1 Lack Of Transportation Demand Management (TDM)\Transportation Control Measures (TCM) Implementation: The size and scale of the mixed uses proposed in the Planning Area can facilitate effective TDM and TCM Programs. Examples of such programs are ride sharing, van pooling, alternate transportation modes, mass transit, staggered work hours, parking restrictions, high occupancy lanes, parking fee structure variations, etc.

III-2 Poor Relationship to Open Space/Recreation: The location of the Planning Area is within proximity to existing parks and recreation areas tracts. There is the potential to preserve open space through local land use regulations.

III-3 Capacity to Foster Cultural Facilities: The scale of the Planning Area can facilitate a range of cultural and recreational facilities consistent with community of place attributes.

III-4 Lack of Visual Cohesiveness: Land Uses projected in the Planning Area will not have a negative impact on HMD viewsheds including views from in-District locations to areas outside the District and from areas outside the District to locations within the Planning Area; and views across the HMD.

REDEVELOPMENT

1. Planning Area A

A. Existing Conditions

Planning Area A is located in the municipalities of Carlstadt and East Rutherford and is 86 acres in size. It generally is bounded by Berry's Creek on the east; unimproved vacant land and wetland on the south; Broad Street to the north; and the Pascack Valley Rail Line on the west. The Planning Area is currently a mix of existing commercial and industrial uses, and unimproved vacant upland.

Surrounding land uses include out-of-district commercial uses along Route 17 to the west; the NJ Sports and Exposition Authority (NJSEA) Sports Complex to the east; and existing industrial uses to the south and north.

Access to the Planning Area is available from Paterson Plank Road, which connects with Route 17 and Route 120. Secondary access is from Murray Hill Parkway to Route 17 via Union Avenue. There is no existing or proposed rail mass transportation services available to Area. However, the Pascack Valley Branch of the NJ Transit Commuter Railroad passes within 1/4 mile of the western boundary of the Planning Area and provides both freight and passenger service in the general area. No existing rail station is in proximity to this Area. Bus service is available on Paterson Plank Road serving surrounding communities and the region.

A portion of the Planning Area, known as Universal Oil Products, is contaminated with a variety of chemical contaminants. Remediation activities under the Federal Superfund Program are currently underway but questions remain concerning the suitability of the site for development within the 20 year planning period. In addition, the Area is within the NJDEP Berry's Creek Mercury Contamination Study Area.

Water and sewer facilities are available to the Area from the Hackensack Water Company and the Bergen County Utilities Authority (BCUA), respectively.

B. Projected Land Uses

The screening document analysis proposed 3,267,000 sq. ft. of primary office space and 784,080 sq. ft. of commercial space for this Planning Area.

C. Planning Analysis

The subject Planning Area is characterized by the following exclusionary criteria:

TIER I CRITERIA

I-1 Severe Land Contamination: There are 31 acres within this Planning Area currently part of on-going Superfund activities. Approximately 27 acres are being addressed through approved remediation plans. There is no finalized plan for the remaining 4 acres.

I-3 Current Land Development: A 15 acre portion of this Planning Area currently has existing viable development that would not meet the criteria necessary for redevelopment.

TIER II CRITERIA

II-5 Lack of Synergistic Effects:

a) Community Of Place: The Planning Area does not provide the opportunity to achieve community of place attributes because it is isolated from other Planning Areas.

b) Disproportionate Densities: Although office space is appropriate for this Planning Area, the Floor Area Ratio (1.5) should be adjusted to more accurately reflect existing development patterns in the HMD and projected market conditions.

c) Poor Jobs To Housing Linkage: There is a lack of possible linkages between the subject Area with other Planning Areas. Opportunities to achieve meaningful jobs to housing linkages are limited.

II-6 Engineering/Financial Constraints: The cost associated with the development of contaminated sites are not predictable at this time. Potential mercury contamination as well as the viability of development on the Universal Oil Products Superfund site raise the possibility of excessive land preparation costs.

TIER III CRITERIA

III-2 Poor Relationship To Open Space/Recreation: The Area has an ineffective relationship to open space/recreation areas both within the HMD and in adjacent jurisdictions.

D. Planning Recommendations

As described above, Planning area A is 86 acres in size and includes portions of contaminated sites totaling 31 acres. Given the existing physical conditions described above and the exclusionary criteria identified, it is not deemed appropriate or feasible to assign any other primary (commercial, residential) uses to this Planning Area under the Redevelopment Land Management Alternative. Of the remaining acreage (55 acres) of Planning Area A 15 acres cannot meet the various criteria necessary for redevelopment and are therefore excluded from further analysis. Therefore, 40 acres are retained as a Planning Area and 31 acres are retained as a Satellite Area for further EIS evaluation as part of the Hybrid Plan.

2. Planning Area B

A. Existing Conditions

The Planning Area is located in the municipality of Rutherford and is 36 acres in size. It generally is bounded by the NJ Transit Bergen Rail Line on the east and north; existing development on the south; and Veterans Boulevard on the west. The Planning Area currently contains the structural remains of the Tri-Boro Joint Meeting Sewerage Treatment Plant which ceased operations in 1988. A pumping station owned and operated by the BCUA is now in place. The Area also contains a compost facility owned and operated by the Town of Rutherford.

Surrounding land uses include office and industrial development to the west; industrial uses to the east and north in East Rutherford; and secondary office and warehouse distribution uses to the south.

Access to the Planning Area is from Route 17 onto Highland Cross Road and Veterans Boulevard. Currently, there are no existing or proposed bus or rail mass transit facilities. The proximity to Route 17 provides potential for bus service.

Water and sewer facilities are available to the Area from the Hackensack Water Company and the BCUA, respectively.

B. Projected Land Uses

The screening document analysis proposed 2,352,240 sq. ft. of primary office space for this Planning Area.

C. Planning Analysis

The subject Planning Area is characterized by the following exclusionary criteria:

TIER I CRITERIA

I-2 Ownership Difficulties/HMDC Jurisdictional Issues: Planning Area B is owned by the Tri-Boro Joint Meeting Utilities Authority and contains a pumping station owned and operated by the BCUA. Development Plans would require the approval of East Rutherford, Rutherford and Carlstadt and may require dissolution of the Utilities Authority. A further question exists concerning HMDC zoning jurisdiction and redevelopment power over this site because of the ownership status.

TIER II CRITERIA

II-1 Poor Accessibility:

a) Highway Capacity: The road and highway system within or adjacent to the Planning Area cannot reasonably be improved to accommodate the extent of traffic projected from the Planning Area. New roadway access and rights-of-way are not available or sufficient.

c) Maximum Direct Impact To Local Road System: The projected office uses would severely impact the local road system, without opportunity for roadway widening or improvements.

d) Poor Mass Transportation Opportunities: The Planning Area does not provide effective access to mass transportation facilities. Although the NJ Transit Bergen Rail Line is adjacent to the site, it is improbable that a station would be available since an existing station in Rutherford is located 1/2 mile to the north.

II-3 Incompatible Land Use: The established pattern of land uses in and around the Planning Area relate poorly to the proposed land use under the Redevelopment Land Management Alternative. Implementation of this primary land use would be impractical or severely limited by market demand.

II-5 Lack of Synergistic Effects:

a) Community Of Place: The Planning Area does not provide the opportunity to achieve community of place attributes because it is isolated from other Planning Areas.

b) Disproportionate Densities: The Floor Area Ratio (1.5) should be adjusted to more accurately reflect existing development patterns in the HMD and projected market conditions.

c) Poor Jobs To Housing Linkage: There is a lack of possible linkages between the subject Area with other Planning Areas. Opportunities to achieve meaningful jobs to housing linkages are limited.

TIER III CRITERIA

III-2 Poor Relationship To Open Space/Recreation: The Area has an ineffective relationship to open space/recreation areas within the HMD and adjacent jurisdictions.

D. Planning Recommendations

Planning Area B should be eliminated as a Planning Area. Given the existing physical conditions described above and the exclusionary criteria identified, it is not deemed appropriate or feasible to assign any other primary (commercial, residential) or secondary office\warehouse uses to this Planning Area under the Redevelopment Land Management Alternative. In addition this Area is being utilized for composting, recycling and Dept. of Public Works activities for the Town of Rutherford. Therefore, this Area is eliminated from further EIS evaluation.

3. Planning Area C

A. Existing Conditions

The Planning Area is located in the municipality of North Bergen and is 17 acres in size. It generally is bounded by the West Shore Freight Rail Line on the east; a freight spur line on the south; Bellman's Creek to the north; and unimproved vacant upland on the west. The Planning Area currently consists of an existing warehouse distribution building, a cement factory, a junkyard, and other secondary office/warehouse industrial uses consistent with current zoning.

Surrounding land uses include vacant unimproved upland and the Bellman's Creek wetlands to the west; existing out-of-district industrial uses to the east; and existing industrial development to the north and south.

Access to the Planning Area is from Fairview Avenue, which intersects with Route 1 & 9, and is mainly outside the HMD. Currently, there are no existing or proposed rail or bus mass transportation services available to the Planning Area.

Water and sewer facilities are available to the Area from the Hackensack Water Company and the North Bergen Municipal Utilities Authority (MUA), respectively.

B. Projected Land Uses

The screening document proposed 1,870 residential units for this Planning Area. This designation is made in the absence of more suitable sites under this Land Management Alternative for residential development. In order to meet HMDC needs, a density of 110 dwelling units\acre was required.

C. Planning Analysis

The subject Planning Area is characterized by the following exclusionary criteria:

TIER I CRITERIA

I-3 Current Land Development: This Planning Area currently has existing viable development that would not meet the criteria necessary for redevelopment.

TIER II CRITERIA

II-1 Poor Accessibility:

a) Highway Capacity: Access to Planning Area C is severely restricted by a local two lane road which lies mainly outside of the jurisdiction of the HMDC. The opportunities available to improve this road are remote due to jurisdictional, engineering, and physical planning factors.

d) Poor Mass Transportation Opportunities: There are no available mass transportation facilities, either existing or proposed.

II-3 Incompatible Land Uses: The existing land uses in this Planning Area are dominated by heavy industrial and warehouse uses which would most likely preclude the development and marketability of residential uses in this Area.

II-4 Insufficient Scale: The size, and housing density of this Planning Area cannot provide sufficient population density to maximize District-wide land use efficiencies.

II-5 Lack Of Synergistic Effects:

a) Community Of Place: The Planning Area does not provide the opportunity to achieve community of place attributes because it is isolated from other Planning Areas.

b) Disproportionate Densities: The Planning Area exhibits extraordinarily high densities (110 dwelling units/acre) that would be adversely impacted by physical and market constraints.

TIER III CRITERIA

III-1 Lack Of TDM/TCM Opportunities: The opportunity to institute Transportation Demand Management (TDM) programs would be highly problematic given the scale that can be assigned to the area and the limited access.

III-2 Poor Relationship To Open Space/Recreation: The Area has an ineffective relationship to open space/recreation areas both within the HMD and in adjacent jurisdictions.

III-3 Capacity To Foster Cultural Facilities: The potential to foster the development of cultural facilities is not available. The Area is remote and virtually isolated and thus cannot encourage the development of cultural facilities.

III-4 Lack Of Visual Cohesiveness: The projected land uses in the Planning Area will have a negative impact on overall HMD viewsheds.

D. Planning Recommendations

As described above, 1,870 residential units were projected for this Area. Given the existing physical conditions described above and the exclusionary criteria identified, it is not deemed appropriate or feasible to assign any other primary (office, commercial) or secondary office/warehouse land uses to this Planning Area under the Redevelopment Land Management Alternative. Also, the existing uses are consistent with current zoning and would not meet the various criteria necessary for redevelopment. Therefore, this Area is eliminated from further EIS evaluation.

4. Planning Area D

A. Existing Conditions

The Planning Area is located in the municipality of North Bergen and is 31 acres in size. It generally is bounded by West Side Avenue on the east; wetlands on the south; existing industrial development and Bellman's Creek to the north; and the NJ Turnpike eastern spur on the west. The current use of the subject property is an industrial building that was constructed in the early part of the 20th century and appears to be in fair condition with multiple industrial tenants and is consistent with current zoning.

Surrounding land uses include the Bellman's Creek wetlands and the Hackensack River to the west; wetlands and out-of-district industrial uses to the east; and wetlands and existing warehouse/industrial development to the south and north.

Access to the Planning Area is from West Side Avenue on the east side of the tract. There currently is no rail mass transit available to the Planning Area although, bus service to the site may be available from nearby locations.

The proposed NJ Transit's Light Rail Transit System waterfront connection from Weehawkin to the Meadowlands includes a potential alignment along the Conrail tracks east of the Planning Area. The proposed alignment would terminate at the Vince Lombardi Park & Ride Facility in Ridgefield. A passenger station is proposed in the vicinity of the Planning Area.

Water and sewer facilities are available to the Area from the Hackensack Water Company and the North Bergen MUA, respectively.

B. Projected Land Uses

The screening document proposed 2,025,540 sq. ft. of primary office space for this Planning Area.

C. Planning Analysis

The subject Planning Area is characterized by the following exclusionary criteria:

TIER I CRITERIA

I-3 Current Land Development: The existing building contains many small businesses and has undergone renovations at the initiative of the owner and, as such, would not now meet the various criteria necessary for redevelopment.

TIER II CRITERIA

II-1 Poor Accessibility:

a) Highway Capacity: The road system adjacent to the Planning Area cannot be reasonably improved to accommodate the extent of traffic projected from the Area. Specifically, 83rd Street which is a local two lane road, cannot be improved because of the railroad bridge which runs above it just east of the site. This road is also outside the jurisdiction of the HMDC for a majority of its length between the Planning Area and Route 1 & 9.

II-3 Incompatible Land Uses: The existing land uses in this Planning Area are dominated by heavy industrial and warehouse uses. The CSX intermodal facility to the north generates substantial truck volumes on West Side Avenue which is not conducive to large scale office development.

II-5 Lack of Synergistic Effects:

a) Community Of Place: The Planning Area does not provide the opportunity to achieve community of place attributes because it is isolated from other Planning Areas.

b) Disproportionate Densities: The Planning Area exhibits an extraordinarily high Floor Area Ratio (1.5) that would be adversely impacted by physical and market constraints.

c) Poor Jobs To Housing Linkage: There is a lack of possible linkages between the subject Area and other Planning Areas. Opportunities to achieve meaningful jobs to housing linkages are limited.

TIER III CRITERIA

III-2 Poor Relationship To Open Space/Recreation: The Area has an ineffective relationship to open space/recreation areas both within the HMD and in adjacent jurisdictions.

D. Planning Recommendations

As described above, 2,025,540 sq. ft. of primary office space was projected for this Planning Area. Based on the existing physical conditions and the exclusionary criteria identified above, it is not deemed appropriate or feasible to utilize this Area for residential or any other primary (office, commercial) land uses under the Redevelopment Land Management Alternative. Also, since the existing uses are consistent with current zoning and the property owner has initiated redevelopment of the building on his own the site would no longer meet the various criteria necessary for redevelopment. Therefore, this Area is eliminated from further EIS analysis.

5. Planning Area E

A. Existing Conditions

The Planning Area is located in the municipality of Secaucus and is 8 acres in size. It generally is bounded by Route 3 on the east; Route 3 and existing development on the south; Route 3 and existing development to the north; and Meadowlands Parkway on the west. The Planning Area currently contains existing warehouse development and vacant structures.

Surrounding land uses include the Hess oil tanks and a Department of Public Works yard to the west; Route 3 and Downtown Secaucus to the east; and existing residential development to the north and south.

Access to the Planning Area is from Meadowlands Parkway on the west side of the tract. There currently is no rail mass transit service to the site and none is feasible because there are no rail lines nearby. Bus service does not currently directly serve the Planning Area. However, buses that currently operate on Meadowlands Parkway, south of the Planning Area, presumably could be available.

Water and sewer facilities are available to the Area from the Hackensack Water Company and the Secaucus MUA, respectively.

B. Projected Land Uses

The screening document proposed 880 residential units for this Planning Area. This designation is made in the absence of more suitable sites under the Redevelopment Land Management Alternative for residential development. In order to meet HMDC needs, a density of 110 dwelling units\acre was required.

C. Planning Analysis

The subject Planning Area is characterized by the following exclusionary criteria:

TIER I CRITERIA

I-3 Current Land Development: An existing building on five acres has undergone renovations at the initiative of the owner and, as such, would not now meet the various criteria necessary for redevelopment.

TIER II CRITERIA

II-3 Incompatible Land Use: The established pattern of land uses in and around the Planning Area relate poorly to the proposed land use under the Redevelopment Land Management Alternative. Implementation of this primary land use would be impractical and severely limited by market demand.

II-4 Insufficient Scale: The size, and housing density of this Planning Area cannot provide sufficient population density to maximize District-wide land use efficiencies.

II-5 Lack of Synergistic Effects:

a) Community Of Place: The Planning Area does not provide the opportunity to achieve community of place attributes because it is isolated from other Planning Areas.

b) Disproportionate Densities: The Planning Area exhibits extraordinarily high densities (110 dwelling units/acre) that would be adversely impacted by physical and market constraints.

c) Poor Jobs To Housing Linkage: There is a lack of possible linkages between the subject Area with other Planning Areas. Opportunities to achieve meaningful jobs to housing linkages are limited.

TIER III CRITERIA

III-1 Lack Of TDM/TCM Opportunities: The opportunity to institute Transportation Demand Management (TDM) programs would be highly problematic given the scale of the single land use that can be assigned to the Area.

III-3 Capacity To Foster Cultural Facilities: The potential to foster the development of cultural facilities is not available due to the small size and location of the Area.

III-4 Lack Of Visual Cohesiveness: The projected land use in the Planning Area will have a negative impact on overall HMD viewsheds particularly considering its proximity to Route 3 which borders it on three sides.

D. Planning Recommendations

As Described above, 880 residential units were projected for this Area. However, based on the exclusionary criteria identified above, this Area is more suitable for inclusion in the Satellite Area category for the secondary/office warehouse component. Given the existing physical conditions described above and the exclusionary criteria identified, it is not deemed appropriate or feasible to assign any other primary (office, commercial) land uses to this Planning Area under the Redevelopment Land Management Alternative. Also, 5 of the 8 acres consist of existing uses that would not meet the various criteria necessary for redevelopment since the owner upgraded the building. Therefore, the 5 acres are eliminated and the remaining 3 acres are retained as a Satellite Area for further EIS analysis as part of the Hybrid Plan.

6. Planning Area F

A. Existing Conditions

The Planning Area is located in the municipalities of Secaucus and North Bergen and is 37 acres in size. It generally is bounded by Route 3 on the east; I-495 on the south; Paterson Plank Road on the north; and the NJ Turnpike eastern spur on the west. The Planning Area currently contains vacant structures and existing commercial and warehouse uses.

Surrounding land uses include existing industrial development to the west; retail and warehouse uses to the east; Harmon Meadow Mall to the north; and wetlands to the south.

Access to the Planning Area is from Paterson Plank Road while secondary access could be provided from Route 3 and the NJ Turnpike. There currently are no existing or proposed rail mass transit services available to the site. Bus service may be available because of the location of the Planning Area relative to Route 3 and Paterson Plank Road.

Water and sewer facilities are available to the Area from the Hackensack Water Company and the Secaucus MUA, respectively.

B. Projected Land Uses

The screening document proposed 1,089,000 sq. ft. of primary office space and 3080 residential units for this Planning Area. The residential designation is made in the absence of more suitable sites in the Redevelopment Land Management Alternative. In order to meet HMDC needs, a density of 110 dwelling units/acre was required.

C. Planning Analysis

The subject Planning Area is characterized by the following exclusionary criteria:

TIER I CRITERIA

I-3 Current Land Development: The development of a retail/commercial use has been approved by the HMDC on seven acres of the Planning Area and construction is imminent for this project.

TIER II CRITERIA

II-1 Poor Accessibility:

a) Highway Capacity: The road and highway system within or adjacent to the Planning Area cannot reasonably be improved to accommodate or provide reasonable access to the extent of traffic projected from the Planning Area. New roadway access and rights-of-way are not available or sufficient.

II-3 Incompatible Land Use: The established pattern of land uses in and around the Planning Area relate poorly to the proposed residential land use under the Redevelopment Land Management Alternative. Implementation of this primary land use would be impractical and severely limited by market demand.

II-5 Lack Of Synergistic Effects:

b) Disproportionate Densities: The Floor Area Ratio (2.5 FAR) is incompatible with current development patterns in the HMD. The residential component required a density of 110 dwelling units/acre.

TIER III CRITERIA

III-2 Poor Relationship To Open Space/Recreation: The Area has an ineffective relationship to open space/recreation areas both within the HMD and in adjacent jurisdictions.

D. Planning Recommendations

Planning Area F should be eliminated as a Planning Area. As described above, 3080 residential units and 1,089,000 sq. ft. of office space were projected for this Area. However, based on the exclusionary criteria identified above, this Area is more suitable for inclusion in the Satellite Area category for the secondary office\warehouse component. Given the existing physical conditions described above and the exclusionary criteria identified it is not deemed appropriate or feasible to assign any other primary (commercial) land uses to this Planning Area under the Redevelopment Land Management Alternative. Therefore, the 7 acres under current development are eliminated and the remaining 30 acres are retained as a Satellite Area for further EIS evaluation as part of the Hybrid Plan.

7. Planning Area G

A. Existing Conditions

The Planning Area is located in the municipality of Secaucus and is 26 acres in size. It generally is bounded by Penhorn Creek on the east; the NJ Turnpike eastern spur on the north; and Secaucus Road on the south and west. The Planning Area currently contains a mix of uses that include; vacant upland; vacant industrial structures in poor condition; two occupied single family homes; and existing heavy industrial uses. In addition, the site contains a currently rehabilitated recycling facility.

Surrounding land uses include commercial and warehousing uses across the NJ Turnpike to the west; wetlands and existing trucking terminals to the east; wetlands to the north; and existing warehouse development to the south.

Access to the Planning Area is from Secaucus Road adjacent to the southeast portion of the tract. There currently are no rail mass transit or bus services either existing or proposed, available to the Planning Area.

Water and sewer facilities are available to the Area from the Hackensack Water Company and the Secaucus MUA, respectively.

B. Projected Land Uses

The screening document proposed 2,860 residential units for this Planning Area. This designation is made in the absence of more suitable sites under the Redevelopment Land Management Alternative for residential development. In order to meet HMDC needs, a density of 110 dwelling units\acre was required.

C. Planning Analysis

The subject Planning Area is characterized by the following exclusionary criteria:

TIER I CRITERIA

No Tier I criteria appear to be present.

TIER II CRITERIA

II-3 Incompatible Land Uses: The established pattern of land uses in and adjacent to the Planning Area relate poorly to the proposed residential land use under the Redevelopment Land Management Alternative. Implementation of this primary land use would be impractical and severely limited by market demand.

II-5 Lack of Synergistic Effects:

a) Community Of Place: The Planning Area does not provide the opportunity to achieve community of place attributes because it is isolated from other Planning Areas.

b) Disproportionate Densities: The Planning Area exhibits extraordinarily high densities (110 dwelling units/acre) that would be adversely impacted by physical and market constraints.

c) Poor Jobs To Housing Linkage: There is a lack of possible linkages between the subject Area with other Planning Areas. Opportunities to achieve meaningful jobs to housing linkages are limited.

TIER III CRITERIA

III-2 Poor Relationship To Open Space/Recreation: The Area has an ineffective relationship to open space/recreation areas both within the HMD and in adjacent jurisdictions.

III-3 Capacity To Foster Cultural Facilities: The potential to foster the development of cultural facilities is not available because of the nature of the projected land use and surrounding land use patterns.

III-4 Lack Of Visual Cohesiveness: The projected land uses in the Planning Area will have a negative impact on overall HMD viewsheds based on the projected density of housing in relationship to the surrounding area.

D. Planning Recommendations

Planning Area G should be eliminated as a Planning Area. It would best be developed in conformity with the already established pattern of industrial development adjacent to it. As described above, 2,860 residential units were projected for this Area. However, based on the exclusionary criteria identified above, this Area is more suitable for inclusion in the Satellite Area category for the secondary office\warehouse component. Given the existing physical conditions described above and the exclusionary criteria identified, it is not deemed appropriate or feasible to assign any other primary (office, commercial) land uses to this Planning Area under the Redevelopment Land Management Alternative. Therefore, this Area is retained as a Satellite Area for further EIS evaluation as part of the Hybrid Plan.

8. Planning Area H

A. Existing Conditions

The Planning Area is located in the municipality of Secaucus and is 33 acres in size. It generally is bounded by the NJ Turnpike western spur on the east; the NJ Transit Main Rail Line on the south; the NJ Transit Bergen Rail Line on the north; and existing development on the west. The Planning Area currently consists of existing industrial development.

Surrounding land uses include the Castle Road Outlet Center and existing warehouse uses to the west; wetlands and an inactive landfill across the NJ Turnpike to the east; commercial and industrial uses to the north; and vacant upland to the south.

Access to the Planning Area is from Castle Road which bisects the Planning Area in an east/west direction and from New County Road which bisects the tract in a north/south direction. Currently, there are no existing rail or bus mass transportation services to the Area however, both are proposed.

Water and sewer facilities are available to the Area from the Hackensack Water Company and the Secaucus MUA, respectively.

B. Projected Land Uses

The screening document proposed 2,156,220 sq. ft. of primary office space for this Planning Area. This is based on implementation of the proposed Secaucus Transfer Station and the NJ Turnpike interchange adjacent to the Planning Area.

C. Planning Analysis

The subject Planning Area is characterized by the following exclusionary criteria:

TIER I CRITERIA

No Tier I criteria appear to be present.

TIER II CRITERIA

II-5 Lack of Synergistic Effects:

b) Disproportionate Densities: Although office space is appropriate for this Planning Area, the Floor Area Ratio (1.5) should be adjusted to more accurately reflect existing development patterns in the HMD and projected market conditions.

c) Poor Jobs To Housing Linkage: There is a lack of possible linkages between the subject Area with other Planning Areas. Opportunities to achieve meaningful jobs to housing linkages.

TIER III CRITERIA

III-2 Poor Relationship To Open Space/Recreation: The Area has an ineffective relationship to open space/recreation areas both within the HMD and in adjacent jurisdictions.

D. Planning Recommendations

Planning Area H should be retained as a Planning Area. It seems prudent to combine the Area with Planning Areas from the other Land Management Alternatives. The selected land use for this Area appears to be appropriate in light of the adjacent non-residential uses although consideration should be given for market conditions to adjust the Floor Area Ratio. Therefore, this Area is retained as a Planning Area for further EIS evaluation as part of the Hybrid Plan.

9. Planning Area I

A. Existing Conditions

The Planning Area is located in the municipality of Kearny and is 153 acres in size. It generally is bounded by Route 280 and the NJ Turnpike 15W interchange on the east; Route 280 on the south; a Conrail Rail Line on the north; and the Kingsland Freight Rail Line on the west. The Planning Area currently contains existing warehouse and industrial facilities; and unimproved vacant land that previously was part of the 1-D landfill.

Surrounding land uses include out-of-district existing industrial development to the west; other landfill areas that have not been properly closed in accordance with State Regulations to the east; the Kearny freshwater marsh and another landfill area not properly closed in accordance with State Regulations to the north; and Route 280 and NJ Transit Rail Lines to the south.

It should be noted that the HMDC has proposed and approved a non-processible landfill on a parcel north of the Planning Area.

Access to the Planning Area is from the Newark-Harrison Turnpike which bisects the tract in an east/west direction. Access to the Newark-Harrison Turnpike is available from Route 280 and the NJ Turnpike western spur. Currently, there are no existing or proposed rail or bus mass transportation services to the Area, however bus service is presumably available from nearby regional routes.

Water and sewer facilities are available to the Area from the Passaic Valley Water Commission and the Passaic Valley Sewerage Commission, respectively.

B. Projected Land Uses

The screening document proposed 4,835,160 sq. ft. of primary office space and 914,760 sq. ft. of regional commercial space for this Planning Area.

C. Planning Analysis

The subject Planning Area is characterized by the following exclusionary criteria:

TIER I CRITERIA

I-1 Severe Land Contamination: A portion of the eastern section of this Planning Area is contaminated with petroleum-related substances. Adjacent areas that were previously part of the 1-D landfill may also be contaminated. There are 59 acres affected by this criteria.

I-2 Ownership Difficulties/HMDC Jurisdictional Issues: A 40 acre portion of the Planning Area adjacent to the NJ Turnpike 15W interchange is owned by the Town Of Kearny and was also previously part of the 1-D landfill.

I-3 Current Land Development: A 22 acre portion of this Planning Area currently has existing viable development that would not meet the criteria necessary for redevelopment.

TIER II CRITERIA

II-1 Poor Accessibility:

a) Highway Capacity: The road and highway system west of the Planning Area, which is outside the HMD, cannot reasonably be improved to accommodate the extent of traffic projected from the Planning Area.

c) Maximum Direct Impact To Local Road System: Given the existing traffic volumes in proximity to the Area, the impact of the projected land uses would be significant on the local road system west of the Planning Area.

d) Poor Mass Transportation Opportunities: Bus service may be available from nearby regional bus routes. There is no opportunity to access rail mass transit facilities.

II-6 Engineering/Financial Constraints: Constraints to development in the Planning Area could result from excessive land preparation and building construction costs related to the development of contaminated areas within the Planning Area.

TIER III CRITERIA

III-2 Poor Relationship To Open Space/Recreation: The Area has an ineffective relationship to open space/recreation areas both within the HMD and in adjacent jurisdictions.

D. Planning Recommendations

As described above, 4,835,160 sq. ft. of primary office space and 914,760 sq. ft. of commercial space was projected for this Area. However, based on the exclusionary criteria identified above, those properties not affected by the Tier I Criteria are more suitable for inclusion in the Satellite Area category for secondary office\warehouse uses. Given the existing physical conditions described above and the exclusionary criteria identified, it is not deemed appropriate or feasible to assign any other primary (residential) land uses to this Planning Area under the Redevelopment Land Management Alternative. In addition, 22 acres of existing development would not meet the various criteria necessary for redevelopment and are therefore excluded from further analysis. Based on the contamination and ownership criteria 99 acres are also excluded from further analysis. Therefore, the remaining 32 acres are retained as a Satellite Area for further EIS evaluation as part of the Hybrid Plan.

10. <u>Planning Area J</u>

A. <u>Existing Conditions</u>

The Planning Area is located in the City of Jersey City and is 82 acres in size. It generally is bounded by Route 1 & 9 on the east and south; existing development to the north; and the Hackensack River on the west. The current uses in this Planning Area are trucking terminals, heavy industrial sites, and Public Service Electric & Gas Company Facilities to the north.

Surrounding land uses include the Hackensack River and vacant land to the west in Kearny; existing out-of-district industrial development to the east and south; and the Public Service Electric & Gas Company facilities (Jersey City Generating Station; coal storage; oil tanks; and other ancillary uses), and the Conrail Croxton Rail Yards to the north.

Access to the Planning Area is from Route 1 & 9 via a local road system from the south and east. There currently are no existing or proposed rail or bus mass transportation services available to the Planning Area.

Water and sewer facilities are available to the Area from the City of Jersey City.

B. <u>Projected Land Uses</u>

The screening document proposed 1,437,480 sq. ft. of primary office space and 217,800 sq. ft. of commercial space for this Planning Area. Also proposed are 5,500 dwelling units since there is an absence of more suitable sites for residential uses under the Redevelopment Land Management Alternative. In order to meet HMDC needs, a density of 110 dwelling units\acre was required.

C. <u>Planning Analysis</u>

The subject Planning Area is characterized by the following exclusionary criteria:

TIER I CRITERIA

I-2 <u>Ownership Difficulties/HMDC Jurisdictional Issues:</u> Approximately 33 acres of this Planning Area are owned by Public Service Electric & Gas Company and, 5 acres are publicly owned and may not be available for development.

TIER II CRITERIA

II-1 Poor Accessibility:

a) Highway Capacity: The road and highway system within and adjacent to the Planning Area cannot reasonably be improved to accommodate the impact of traffic projected from the Planning Area. Narrow local roads with limited potential for expansion preclude road improvements required to accommodate the projected growth.

c) Maximum Direct Impact To Local Road System: The highly restrictive vehicular access and the related impact from the projected development of the Planning Area would result in severe impacts to the local road system.

d) Poor Mass Transportation Opportunities: Currently there is no bus service to the Area, although service may be available from nearby regional bus routes. There is no opportunity to access rail mass transit facilities.

II-3 Incompatible Land Use: The established pattern of land uses consisting of trucking terminals, oil storage tanks, junkyards and in particular, the expansive Public Service Electric & Gas Company Facilities in and around the Planning Area relate poorly to the proposed land uses projected for the Area.

II-5 Lack Of Synergistic Effects:

b) Disproportionate Densities: The Planning Area exhibits extraordinarily high densities (110 dwelling units/acre) that would be adversely impacted by physical and market constraints.

TIER III CRITERIA

III-2 Poor Relationship To Open Space/Recreation: The Area has an ineffective relationship to open space/recreation areas both within the HMD and in adjacent jurisdictions.

III-4 Lack Of Visual Cohesiveness: The projected land uses in the Planning Area will have a negative impact on overall HMD viewsheds.

D. Planning Recommendations

As described above, 1,437,480 sq. ft. of primary office space, 217,800 sq. ft. of commercial space, and 5500 residential units were proposed for this Area. The portion of the Planning Area that contains existing residential development and the immediate surrounding area (11 acres) should be retained for residential use. That portion of the Area affected by Criteria I-2 (38 acres) should be eliminated from further consideration. The balance of the Area (33 acres) is not deemed appropriate or feasible to assign any other primary land uses to under the Redevelopment Land Management Alternative. Therefore, the 11 acres are retained as a Planning Area for residential uses and the 33 acres are retained as a Satellite Area for secondary office/ warehouse uses in the Hybrid Plan.

11. Planning Area K

A. Existing Conditions

The Planning Area is located in the municipality of Little Ferry and is 31 acres in size. It generally is bounded by the Hackensack River on the east; existing development on the south and west; and Route 46 to the north. The Planning Area currently is a mix of single family residential dwellings, warehousing, marina related boat repair, maintenance, and storage facilities and industrial uses.

The Planning Area is a narrow strip of land along the Hackensack River. Although frontage along the river is extensive, the width of the inland area restricts development.

Surrounding land uses include warehousing and residential uses to the west; the CSX Freight Rail Yard and the Public Service Electric & Gas Company Ridgefield Generating Facility across the Hackensack River to the east; existing commercial/retail out-of-district development to the north; and residential, industrial development, and the BCUA facilities to the south. Immediately to the west and south are heavy industrial uses and marina-related uses which reflect a more industrial environment.

Access to the Planning Area is from Washington Avenue and Industrial Avenue to the north and west of the tract, respectively, via a local road system into the Planning Area. Currently, there are no existing or proposed rail or bus mass transportation services available to the Area.

Water and sewer facilities are available to the Area from the Hackensack Water Company and the BCUA, respectively.

B. Projected Land Uses

The screening document proposed 3,410 residential units for this Planning Area. The designation is made in the absence of more suitable sites in the Redevelopment Land Management Alternative for residential development. In order to meet HMDC needs, a density of 110 dwelling units\acre was required.

C. Planning Analysis

The subject Planning Area is characterized by the following exclusionary criteria:

TIER I CRITERIA

I-3 Current Land Development: This Planning Area currently has existing viable development that would not meet the criteria necessary for redevelopment.

TIER II CRITERIA

II-1 Poor Accessibility:

a) Highway Capacity: The road and highway system within and adjacent to the Planning Area cannot reasonably be improved to accommodate the extent of traffic projected from the Planning Area. The extent of roadway improvements required from the north would negatively affect the development of the site for the projected uses.

c) Maximum Impact Impact To Local Road System: The highly restrictive vehicular access and the related impact from the projected development of the Planning Area would severely impact the local road system.

d) Poor Mass Transportation Opportunities: Currently there are no bus facilities or rail mass transit services available to the Area and none are proposed.

II-3 Incompatible Land Use: The established pattern of land uses in and around the Planning Area relates poorly to the proposed land use. Implementation of this primary land use would be impractical and severely limited by market conditions.

II-5 Lack of Synergistic Effects:

a) Community Of Place: The Planning Area does not provide the opportunity to achieve community of place attributes because it is isolated from other Planning Areas.

b) Disproportionate Densities: The Planning Area exhibits extraordinarily high densities (110 dwelling units/acre) that would be adversely impacted by physical and market constraints.

c) Poor Jobs To Housing Linkage: The lack of possible linkages of the subject Area with other Planning Areas further limit opportunities to achieve meaningful jobs to housing linkages.

II-6 Engineering/Financial Constraints: The Planning Area is extremely long and narrow in configuration between the Hackensack River Waterfront in the east and the existing industrial uses in the west. Proper access into the Planning Area would result in the absence of sufficient land area in order to design and implement a typical residential development project. Therefore the engineering and financial difficulties would result in the Planning Area thus meeting this exclusionary criteria.

TIER III CRITERIA

III-4 Lack of Visual Cohesiveness: The projected land uses in the Planning Area will have a negative affect on overall HMD viewsheds given the permitted density in waterfront development zones, and the existing residential development in the surrounding area.

D. Planning Recommendations

Planning Area K should be eliminated as a Planning Area. Given the existing physical conditions described above, the shape of the Area, and the exclusionary criteria identified, Planning Area K should be eliminated as a Planning Area. It is not deemed appropriate or feasible to assign any other primary (office, commercial) or secondary office/warehouse land uses to this Planning Area under the Redevelopment Land Management Alternative. Since the existing marina and other uses are the most appropriate use of the Planning Area and would not meet the various criteria necessary for redevelopment this Area is eliminated from further EIS evaluation.

12. Planning Area N

A. Existing Conditions

The Planning Area is located in the municipality of Secaucus and is 10 acres in size. It generally is bounded by existing development on the east, north and south; and the Hackensack River on the west. The Planning Area currently contains existing industrial development and unimproved vacant upland.

The Planning Area currently contains a cement and concrete plant with material storage areas and a waterfront docking facility for delivery of extractive resources.

Surrounding land uses include the Golf Driving Range and Marina across the Hackensack River to the west; existing residential development to the east and north; and existing residential development and unimproved vacant upland to the south.

Access to the Planning Area is from Paterson Plank Road which bisects the site in a northwest/southeast direction. Currently, there are no existing or proposed rail or bus mass transportation services available to the Area.

Water and sewer facilities are available to the Area from the Hackensack Water Company and the Secaucus MUA, respectively.

B. Projected Land Uses

The screening document proposed 1,100 residential units for this Planning Area. This designation is made in the absence of more suitable sites in the Redevelopment Land Management Alternative for residential development. In order to meet HMDC needs, a density of 110 dwelling units\acre was required.

C. Planning Analysis

The subject Planning Area is characterized by the following exclusionary criteria:

TIER I CRITERIA

I-3 Current Land Development: The proposed extension of Meadowlands Parkway north into Planning Area N, a road improvement deemed essential for the HMD, would bisect the Area rendering if infeasible for higher density residential development. The extension of Meadowlands Parkway is identified in the "HMDC Transportation Study" which was adopted by the Commission as part of the ongoing Master Plan Revision process. The Meadowlands Parkway extension and the proposed crossing of the Hackensack River at Paterson Plank Road are a component of the future transportation improvements identified in this EIS.

TIER II CRITERIA

II-3 Incompatible Land Use: The established pattern of land uses in and around the Planning Area relate poorly to the proposed land use. Implementation of this primary land use would be impractical and severely limited by market conditions.

II-4 Insufficient Scale: The isolation and remoteness of this Planning Area from other Planning Areas in the Redevelopment Land Management Alternative, cannot provide the opportunity to achieve sufficient population densities to maximize District-wide land use efficiencies.

II-5 Lack of Synergistic Effects:

a) Community Of Place: The Planning Area does not provide the opportunity to achieve community of place attributes because it is isolated from other Planning Areas.

b) Disproportionate Densities: The Planning Area exhibits extraordinarily high densities (110 dwelling units/acre) that would be adversely impacted by physical and market constraints.

c) Poor Jobs To Housing Linkage: The lack of possible linkages of the subject Area with other Planning Areas further limit opportunities to achieve meaningful jobs to housing linkages.

II-6 Engineering\Financial Constraints: The extension of Meadowlands Parkway into and through the Planning Area would severely diminish density and development potential.

TIER III CRITERIA

III-1 Lack Of TDM/TCM Opportunities: The opportunity to institute Transportation Demand Management (TDM) programs would be highly problematical given the scale of the single land use that can be assigned to the Area.

III-3 Capacity To Foster Cultural Facilities: The potential to foster the development of cultural facilities is not available. The Area is remote and virtually isolated and thus cannot be linked to other Areas in this Land Management Alternative.

III-4 Lack of Visual Cohesiveness: The projected land uses in the Planning Area will have a negative affect on overall HMD viewsheds.

D. Planning Recommendations

Planning Area N should be eliminated as a Planning Area given the factors cited above - principally the difficulties relating to the extension of Meadowlands Parkway and future highway improvements. Given the existing physical conditions described above and the exclusionary criteria identified, it is not deemed appropriate or feasible to assign any other primary (office, commercial) or secondary office\warehouse land uses to this Planning Area under the Redevelopment Land Management Alternative. Therefore, this Area is eliminated from further EIS evaluation.

REDEVELOPMENT LAND MANAGEMENT ALTERNATIVE

6\15\94

PLANNING AREAS	A	B	C	D	E	F	G	H	I	J	K	N
EXCLUSIONARY CRITERIA												
TIER I												
I-1 Contaminated Land	x								x			
I-2 Ownership/Jurisdictional		x							x	x		
I-3 Current Development	x		x	x	x	x			x		x	x
TIER II												
II-1 Poor Accessibility												
a. Highway Capacity		x	x	x		x			x	x	x	
b. Direct Highway Impact												
c. Impact to Local Road		x							x	x	x	
d. Poor Mass Transportation		x	x						x	x	x	
II-2 Lack Of Public Services												
II-3 Incompatible Land Uses		x	x	x	x	x	x			x	x	x
II-4 Insufficient Scale			x		x							x
II-5 Lack Of Synergistic Effects												
a. Community of Place	x	x	x	x	x		x				x	x
b. Disproportionate Densities	x	x	x	x	x	x	x	x		x	x	x
c. Poor Jobs/Housing Linkage	x	x		x	x		x	x			x	x
II-6 Engineering/Financial Constraints	x								x		x	x
TIER III												
III-1 Lack of TDM/TCM Implementation			x		x							x
III-2 Poor Relationship to Open Space/Recreation	x	x	x	x		x	x	x	x	x		
III-3 Capacity to Foster Cultural Facilities			x		x		x					x
III-4 Lack of Visual Cohesiveness			x		x		x			x	x	x
RECOMMENDATION *												
Retain as a Primary Planning Area	x							x				
Review as a Satellite Area												
Secondary Office/Warehouse	x				x	x	x		x	x		
Eliminate from Further EIS Evaluation	x	x	x	x	x	x			x	x	x	x

* may include only a portion of a planning area

UPLAND GROWTH

1. Planning Area A

A. Existing Conditions

Planning Area A is located in the municipality of North Bergen and is generally bounded by Bellman's Creek in the north and west; and two active Freight Rail lines in the south and east. The Area consists of approximately 31 acres and is unimproved vacant upland.

The Area is surrounded by warehouse and heavy industrial uses both within the jurisdiction of HMDC and outside of HMDC's jurisdiction in the municipality of North Bergen.

Access to the Planning Area is via Fairview Avenue, a two lane local road which begins at Route 1 & 9 and runs in a westerly direction. It should also be noted that access from Route 1 & 9 is from a point outside the HMD. There currently are no existing or proposed rail or bus mass transportation facilities available to the Planning Area. The existing rail facilities are exclusively freight oriented and are currently active.

Water and sewer facilities are available to the Area from the Hackensack Water Company and the North Bergen MUA, respectively.

B. Projected Land Uses

The screening document proposed 1,550 residential units for this Planning Area. This designation is made in the absence of more suitable upland sites in the Upland Growth Land Management Alternative. In order to meet HMDC needs, a density of 50 dwelling units\acre was required.

C. Planning Analysis

The subject Planning Area is characterized by the following exclusionary criteria:

TIER I CRITERIA

No Tier I criteria appear to be present.

TIER II CRITERIA

II-1. Poor Accessibility:

a) Highway Capacity: Access to Planning Area A is severely restricted by a local two lane road which lies outside of the jurisdiction of the HMDC. The opportunities available to improve this road are remote due to jurisdictional, engineering, and physical planning factors.

d) Poor Mass Transportation Opportunities: There are no available rail and bus mass transportation facilities either existing or proposed.

II-3. Incompatible Land Uses: The character of land uses adjacent to Planning Area A is dominated by heavy industrial and warehouse uses. The development of housing in this area would be subject to difficult marketing constraints.

II-4 Insufficient Scale: The Planning Area and surrounding areas cannot achieve sufficient population density to maximize district-wide land use efficiencies.

II-5 Lack Of Synergistic Effects:

a) Community Of Place: The opportunity to achieve synergism at this Planning Area is extremely remote given the character of the surrounding land uses and the fact that only residential uses can be projected for the Area. The Area is remote and virtually isolated and thus cannot be linked to other Planning Areas in the Upland Growth Alternative.

TIER III CRITERIA

III-1 Lack Of TDM/TCM Opportunities: The opportunity to institute Transportation Demand Management (TDM) programs would be highly problematic given the scale of the single land use that can be assigned to the Area and the Area's isolation.

III-2 Poor Relationship To Open Space/Recreation: The Area has an ineffective relationship to open space/recreation areas both within the HMD and in adjacent jurisdictions.

III-3 Capacity To Foster Cultural Facilities: The potential to foster the development of cultural facilities is not available. The Area is remote and virtually isolated and thus cannot be linked to other Planning Areas in the Upland Growth Alternative.

D. Planning Recommendation

As described above, 1,550 residential units were projected for this Area. However, based on the exclusionary criteria identified above, this upland area is more suitable for an expansion of warehouse and secondary office uses under the Satellite Area category. Given the existing physical conditions described above and the exclusionary criteria identified, it is not deemed appropriate or feasible to assign any other primary (office, commercial) land uses to this Planning Area under the Upland Growth Land Management Alternative. Therefore, this 31 acre Area is retained for further EIS evaluation as a Satellite Area in the Hybrid Plan.

2. Planning Area B

A. Existing Conditions

The Area is located in the municipality of East Rutherford and is the site of the New Jersey Sports and Exposition Authority (NJSEA) Arena. The Area generally is bounded on the north by Paterson Plank Road; on the south by Route 3; on the east by the New Jersey Turnpike western spur; and on the west by Route 120. The Area consists of 127 acres which includes the building envelope for the Brendan Byrne Arena and its parking facilities. The NJSEA previously has proposed commercial development on a 12 acre portion of the 127 acre site.

Surrounding land uses consist of warehousing facilities and vacant wetland to the north; the existing Giants Stadium and the Meadowlands Race Track to the west; radio towers and Route 3 to the south; and vacant wetland east of the NJ Turnpike.

Access to the site consists of excellent regional roadways. Presently, no regularly scheduled daily mass transportation facilities serve the site. Public bus transportation serves the site only on days that events take place at NJSEA facilities. There currently are no existing or proposed rail mass transportation facilities available to the Area.

Water and sewer facilities are available from the Hackensack Water Company and the BCUA, respectively.

B. Projected Land Uses

The screening document land uses projected for this Planning Area reflect a proposal of the NJSEA to construct approximately 800,000 sq. ft. of primary office space and ancillary facilities on a 12 acre parcel within the Planning Area.

C. Planning Analysis

The subject Planning Area is characterized by the following exclusionary criteria:

TIER I CRITERIA

I-2 Ownership Difficulties/HMDC Jurisdictional Issues: HMDC has limited jurisdiction over NJSEA lands. Also, the NJSEA has withdrawn a proposal to develop a 12 acre parcel for primary office use at this time. It is anticipated that a new development plan for this Area will be proposed in the near future which will incorporate the 12 acres of land at the Arena site.

TIER II CRITERIA

II-5 Lack of Synergistic Effects:

b) Disproportionate Densities: Although office space is appropriate for this Planning Area, the Floor Area Ratio (1.5) should be adjusted to more accurately reflect existing development patterns in the HMD and projected market conditions.

TIER III CRITERIA

No Tier III Criteria appear to be present.

D. Planning Recommendation

Although this Planning Area meets the Tier I, criteria I-2 it is reasonable to retain this Planning Area as it may reflect future NJSEA activities. Such uses could be linked to the sports complex surrounding the Planning Area. Also, an adjustment to the Floor Area Ratio is deemed appropriate in order to be consistent with existing and projected office development patterns and market conditions in the District. Therefore, it is recommended that the 12 acres within this Area that the NJSEA proposed to utilize should be retained as a Planning Area for further EIS evaluation as part of the Hybrid Plan

3. Planning Area C

A. Existing Conditions

Planning Area C is located at the eastern terminus of Paterson Plank Road along the Hackensack River in East Rutherford and Carlstadt. The Area consists of 14 acres of predominately unimproved upland. In addition to "LT's Golf and Marina Center," which is a temporary use, there are low intensity waterfront marina-related uses. Planning Area C is surrounded by wetlands to the north, west, and south; and the Hackensack River in the east.

The sole access to Planning Area C is via Paterson Plank Road, a two-lane local road which intersects with Washington Avenue approximately one-half mile west of the Area. Currently, there are no existing rail or bus mass transportation services available to the Area however, bus service may be available from nearby regional routes.

Water and sewer facilities are available to the Area from the Hackensack Water Company and the BCUA, respectively.

B. Projected Land Use

The screening document proposed 700 residential units for this Planning Area. In order to meet HMDC needs, a density of 50 dwelling units\acre was required.

C. Planning Analysis

The subject Planning Area is characterized by the following exclusionary criteria:

TIER I CRITERIA

No Tier I criteria appear to be present.

TIER II CRITERIA

II-1 Poor Accessibility:

d) Poor Mass Transportation Opportunities: The opportunity to access public mass transportation facilities is poor given the size of the Planning Area and the low intensitv of land use that reasonably can be applied.

II-4 Insufficient Scale: The Planning Area and surrounding areas cannot achieve sufficient population density to maximize district-wide land use efficiencies.

II-5 Lack Of Synergistic Effects:

a) Community Of Place: This Planning Area does not provide the opportunity to achieve synergism and community of place attributes because it is isolated from other Planning Areas.

b) Disproportionate Densities: The projected land use in this Planning Area (50 dwelling units/ac) is inappropriate given the existing zoning designation of 15 dwelling units/ac and the existing residential densities in proximity to waterfront development areas.

TIER III CRITERIA

III-1 Lack Of TDM/TCM Opportunities: The opportunity to institute Transportation Demand Management (TDM) programs would be highly problematic given the scale of the single land use that can be assigned to the Area and the Area's isolation.

III-4 Lack Of Visual Cohesiveness: The projected land use density (50 dwelling units/ac) in the Planning Area will have a negative impact on overall HMD viewsheds.

D. Planning Recommendation

Although it is affected by Tier II criteria, it is not being recommended for elimination. Rather, it seems prudent to combine the Area with other Planning Areas under other Land Management Alternatives given its small size and isolation, if possible. In addition, the projected densities should reflect existing residential development patterns in proximity to waterfront development areas. Given the existing physical conditions described above and the exclusionary criteria identified, it is not deemed appropriate or feasible to assign any other primary (office, commercial) or secondary office/warehouse land uses to this Planning Area under the Upland Growth Land Management Alternative. Therefore, this Area is retained as a Planning Area for further EIS evaluation as part of the Hybrid Plan.

4. Planning Area D

A. Existing Conditions

The Area is located in East Rutherford and is generally bounded on the north by a commercial strip along Paterson Plank Road; on the east by Berry's Creek; and on the west and south by unimproved, vacant upland. The Planning Area is bisected by Murray Hill Parkway. The Area consists of approximately 36 acres of vacant, unimproved upland.

The Area is surrounded by vacant, unimproved upland and wetland on the west and south; the NJSEA Sports Complex to the east; and older industrial buildings in the north.

Access to the Planning Area is available from Paterson Plank Road, which connects with Route 17 and Route 120. Secondary access is from Murray Hill Parkway to Route 17 via Union Avenue. There is no existing or proposed rail mass transit service in the vicinity of the Area. However, the Pascack Valley Branch of the NJ Transit Commuter Railroad passes within one-quarter mile of the western boundary of the Planning Area. No existing rail station is in proximity to this Planning Area. Passenger bus service is available on Paterson Plank Road serving urban areas in the region and the surrounding communities.

A portion of the Planning Area, known as Universal Oil Products (UOP), is contaminated with a variety of chemical contaminants. Remediation activities under the Federal Superfund Program are currently underway but questions remain concerning development suitability of the site within the 20 year planning period. Approximately 17 acres are under a remediation program.

Water and sewer facilities are available to the Area from the Hackensack Water Company and the BCUA, respectively.

B. Projected Land Uses

The screening document proposed 2,352,240 sq. ft. of primary office space for this Planning Area.

C. Planning Analysis

The subject Planning Area is characterized by the following exclusionary criteria:

TIER I CRITERIA

I-1 Severe Land Contamination: A portion of the Planning Area is part of the UOP Superfund site which is currently being remediated under an approved clean-up plan. In addition, the remainder of this Area is within the NJDEP Berry's Creek Mercury Contamination Study Area for which there is no approved remediation program.

TIER II CRITERIA

II-5 Lack Of Synergistic Effects:

a) Community Of Place: This Planning Area does not provide the opportunity to achieve synergism and community of place attributes because it is isolated from other Planning Areas.

c) Poor Jobs To Housing Linkage: The lack of possible linkages of the subject Area with other Planning Areas further limit opportunities to achieve meaningful jobs to housing linkage.

TIER III CRITERIA

III-2 Poor Relationship To Open Space/Recreation: The Area has an ineffective relationship to open space/recreation areas both within the HMD and in adjacent jurisdictions.

D. Planning Recommendation

Planning Area D includes a portion of the Universal Oil Products Superfund site and, in addition, is part of the NJDEP Berry's Creek Mercury Contamination Study area. Given the existing physical conditions described above and the exclusionary criteria identified, it is not deemed appropriate or feasible to assign any other primary (commercial, residential) land use to this Area. Therefore, this Area is retained as a Satellite Area for further EIS evaluation as part of the Hybrid Plan.

5. Planning Area E

A. Existing Conditions

The Area consists of 29 acres of vacant, unimproved upland and is located in Secaucus. It generally is bounded on the west by the Hackensack River; on the east by existing residential development; on the north by existing industrial uses in the vicinity of Paterson Plank Road; and in the south by commercial uses in the vicinity of Meadowlands Parkway.

Surrounding land uses include existing residential and commercial uses to the east; existing industrial and residential uses to the north; wetland to the west across the Hackensack River; and existing commercial, office and residential uses to the south. The Planning Area currently consists of unimproved vacant land.

Access to Planning Area E is available from Meadowlands Parkway and Paterson Plank Road. Currently, there are no existing or proposed rail or bus mass transportation facilities serving the Area. Bus service presumably would be available from nearby regional routes.

Water and sewer facilities are available to the Area from the Hackensack Water Company and the Secaucus MUA, respectively.

B. Projected Land Use

The screening document proposed 1,450 residential units for this Planning Area. This designation is made in the absence of more suitable sites in the Upland Growth Land Management Alternative. In order to meet HMDC needs, a density of 50 dwelling units\acre was required.

C. Planning Analysis

The subject Planning Area is characterized by the following exclusionary criteria:

TIER I CRITERIA

I-3 Current Land Development: The proposed extension of Meadowlands Parkway north into Planning Area E, a road improvement deemed essential for the HMD, would bisect the Area rendering if infeasible for residential development. The extension of Meadowlands Parkway is identified in the "HMDC Transportation Study" which was adopted by the Commission as part of the ongoing Master Plan Revision process. The Meadowlands Parkway extension and the proposed crossing of the Hackensack River at Paterson Plank Road are a component of the future transportation improvements identified in this EIS.

TIER II CRITERIA

II-4 Insufficient Scale: The Planning Area and surrounding areas cannot achieve sufficient population density to maximize district-wide land use efficiencies.

II-5 Lack Of Synergistic Effects:

a) Community Of Place: This Planning Area does not provide the opportunity to achieve synergism and community of place attributes because it is isolated from other Planning Areas.

b) Disproportionate Densities: The projected land use in this Planning Area (50 dwelling units/ac) is inappropriate given the existing zoning designation of 15 dwelling units/ac and the existing residential densities in proximity to waterfront development areas.

II-6 Engineering\Financial Constraints: The extension of Meadowlands Parkway into and through the Planning Area would severely diminish density and development potential.

TIER III CRITERIA

III-1 Lack Of TDM/TCM Opportunities: The opportunity to institute Transportation Demand Management (TDM) programs would be highly unlikely given the scale of the single land use that can be assigned to the Area.

III-4 Lack Of Visual Cohesiveness: The projected land use in the Planning Area will have a negative impact on overall HMD viewsheds through high density development along the Hackensack Riverfront.

D. Planning Recommendation

Planning Area E should be eliminated as a Planning Area given the factors cited above - principally the difficulties relating to the extension of Meadowlands Parkway and future highway improvements. Given the existing physical conditions described above and the exclusionary criteria identified, it is not deemed appropriate or feasible to assign any other primary (office, commercial) or secondary office\warehouse land uses to this Planning Area under the Upland Growth Land Management Alternative. Therefore, this Area is eliminated from further EIS evaluation.

6. Planning Area F

A. Existing Conditions

Planning Area F consists of 7 acres and is located in the municipality of Secaucus. It is generally bounded by the Hackensack River on the north; Mill Creek on the east; and wetland in the south and west. A portion of the Area presently is being used as a minimal marina/boat launching facility.

The Area is surrounded principally by wetlands. Approximately one-half mile south of the Area are low density residential uses. The Area is located at the northern terminus of Mill Ridge Road which is the sole access to the Area. Mass transportation facilities currently do not serve the Area or areas in proximity to the Planning Area, nor are any proposed.

Water and sewer facilities are available to the Area from the Hackensack Water Company and the Secaucus MUA, respectively.

B. Projected Land Uses

The small size of the Area and its poor access to mass transportation facilities render the Area most suitable for residential development. The screening document proposed 350 dwelling units for this Planning Area. In order to meet HMDC needs, a density of 50 dwelling units\acre was required.

C. Planning Analysis

The subject Planning Area is characterized by the following exclusionary criteria:

TIER I CRITERIA

No Tier I criteria appear to be present.

TIER II CRITERIA

II-1 Poor Accessibility:

a) Highway Capacity: The road system cannot provide effective access to the site because of the presence of wetlands on both sides of the existing roadway alignment. In addition, the access to the site traverses an existing low density residential neighborhood with little potential for roadway improvements.

II-4 Insufficient Scale: The limited size of the subject Area and the assignment of high densities to this Area do not meet sufficient scale or mass requirements.

II-5 Lack Of Synergistic Effects:

a) Community Of Place: The opportunity to achieve synergism at this Planning Area is remote given the size of the area and its relative isolation.

b) Disproportionate Densities: The projected land use in this Planning Area (50 dwelling units/ac) is inappropriate given the existing zoning designation of 15 dwelling units/ac and the existing residential densities in proximity to waterfront development areas.

c) Poor Jobs To Housing Linkage: The lack of possible linkages of the subject Area with other Planning Areas further limit opportunities to achieve meaningful jobs to housing linkage.

TIER III CRITERIA

III-1 Lack Of TDM/TCM Opportunities: The opportunity to institute Transportation Demand Management (TDM) programs would be highly problematic given the scale of the single land use that can be assigned to the Area and the Area's isolation.

III-3 Capacity To Foster Cultural Facilities: The lack of possible linkages of the subject Area with other Planning Areas further limit opportunities to foster the development of cultural facilities.

III-4 Lack Of Visual Cohesiveness: The projected land uses in the Planning Area will have a negative impact on overall HMD viewsheds since it will be an isolated development area surrounded by wetland and the Hackensack River.

D. Planning Recommendation

There is a basis to reject the Planning Area under the Upland Growth Alternative for the reasons cited above. However, given the limited number of available upland sites for residential development, Planning Area F should be retained as a lower density residential site that more reasonably reflects both market demand and the physical constraints that prevail in the Area. Given the existing physical conditions described above and the exclusionary criteria identified, it is not deemed appropriate or feasible to assign any other primary (office, commercial) or secondary office\warehouse land uses to this Planning Area under the Upland Growth Land Management Alternative. Therefore, this Area is retained as a Planning Area for further EIS evaluation as part of the Hybrid Plan.

7. Planning Area G (WEST)

A. Existing Conditions

Planning Area G (West) is 30 acres in size and is located in the municipality of Secaucus. The Area generally is bounded by the New Jersey Turnpike eastern spur on the west; Chromakill Creek on the east; Harmon Meadow Access Road on the south; and extensive unimproved wetland areas on the north.

Surrounding land uses are the Harmon Meadow and Mill Creek developments of offices and commercial uses in the south; and unimproved wetlands in the north, east, and west.

Access to Planning Area G (West) is from Harmon Meadow Boulevard and Plaza Drive. Bus service presently is available at the Harmon Meadow and Mill Creek complexes. There are no existing rail mass transit opportunities however, proposals have been made.

Water and sewer facilities are available to the Area from the Hackensack Water Company and the Secaucus MUA, respectively.

B. Projected Land Uses

The screening document proposed 1,500 residential units for this Planning Area. This designation is made in the absence of more suitable upland sites available for residential use. In order to meet HMDC needs, a density of 50 dwelling units\acre was required.

C. Planning Analysis

The subject Planning Area is characterized by the following exclusionary criteria:

TIER I CRITERIA

No Tier I criteria appear to be present.

TIER II CRITERIA

II-4 Insufficient Scale: The Planning Area and surrounding areas cannot achieve sufficient population density to maximize district-wide land use efficiencies.

TIER III CRITERIA

III-2 Poor Relationship To Open Space/Recreation: The Area has an ineffective relationship to open space/recreation areas both within the HMD and in adjacent jurisdictions.

D. Planning Recommendation

Planning Area G (West) should be retained as a Planning Area. The subject Area would be appropriate for the projected 1,500 residential units described above only in the absence of other residential sites under the Upland Growth Alternative. Planning Area G (West) would best be developed in conformity with the already established pattern of commercial and office development to the south, but in this development area. Therefore, this Area is retained as a Planning Area for further EIS evaluation as part of the Hybrid Plan.

8. Planning Area G (East)

A. Existing Conditions

The Area consists of 55 acres and is located in the municipality of Secaucus. It generally is bounded by Paterson Plank Road to the south; Chromakill Creek in the east and north; and Harmon Meadow in the west.

The Area is surrounded by existing commercial and industrial development to the south and east; office and commercial development to the west (Harmon Meadow); and wetlands in the north.

Access to Planning Area G (East) is via Paterson Plank Road and the Harmon Meadow Access Road. Bus service is available along Paterson Plank Road. There are no existing rail mass transit rail facilities serving the Area however, proposals have been made.

Water and sewer facilities are available to the Area from the Hackensack Water Company and the Secaucus MUA, respectively.

B. Projected Land Uses

The screening document proposed 1,750 residential units and 435,600 sq. ft. of commercial uses for this Planning Area.

C. Planning Analysis

The subject Planning Area is characterized by the following exclusionary criteria:

TIER I CRITERIA

No Tier I criteria appear to be present.

TIER II CRITERIA

II-1 Poor Accessibility:

c) Maximum Direct Impact To Local Road System: Given the existing traffic volumes in proximity to the Area, the impact of the projected land uses would be significant on Paterson Plank Road and on the local road system.

TIER III CRITERIA

III-2 Poor Relationship To Open Space/Recreation: The Area has an ineffective relationship to open space/recreation areas both within the HMD and in adjacent jurisdictions.

D. Planning Recommendation

Planning Area G (East) should be retained and would be most suitable if developed in conformity with the already established pattern of commercial and office development surrounding this Area. Therefore, this Area is retained as a Planning Area for further EIS evaluation as part of the Hybrid Plan.

9. Planning Area H

A. Existing Conditions

Planning Area H is located in the municipality of Lyndhurst and consists of 79 acres. It generally is bounded by the NJ Transit Rail Line to the north and east; the Kingsland Freight Rail Line to the west; and the connecting rail spur to the south.

The Area is surrounded by warehouse and residential uses to the north; heavy industrial uses to the west (outside the HMD); and inactive landfill areas to the east and south. This site contains some small buildings and outdoor storage areas for an adjacent heavy industrial use consistent with current zoning.

The sole access to the Planning Area is via Schuyler Avenue, a two lane collector roadway which is outside the HMD. This access is available only through an adjacent developed site (Standard Tool). No other right-of-way exists which allows access to the subject Planning Area. Currently, there are no existing or proposed rail or bus mass transit facilities available to the site. Bus service may be available from nearby regional routes.

Water and sewer facilities are available to the Area from the local distribution system and the BCUA, respectively.

B. Projected Land Use

The screening document proposed 5,161,860 sq. ft. of primary office space for this Planning Area. This site was designated for office use because of the lack of available upland sites within the District for this use category.

C. Planning Analysis

The subject Planning Area is characterized by the following exclusionary criteria:

TIER I CRITERIA

I-3 Current Land Development: Land development in this Planning Area is compatible with existing industrial development in and outside of the District on the subject premises. This existing development in the Planning Area is viable and would not meet redevelopment criteria.

TIER II CRITERIA

II-1 Poor Accessibility:

c) Maximum Direct Impact To Local Road System: Highly restricted vehicular access and maximum impact on the local roadway system. Potential access is restricted because of existing development on the adjacent site and the lack of alternative routes.

d) Poor Mass Transit Opportunities: The Kingsland and spur Rail Lines are Freight facilities; no passenger service is present. The Main Line Rail access is not feasible due to the presence of an existing passenger station (Kingsland Station) approximately 1/2 mile to the north.

II-3 Incompatible Land Uses: The Area is surrounded by warehouse, heavy industrial uses and is negatively affected by the substantial inactive landfill areas in the immediate proximity of the site.

II-5 Lack of Synergistic Effects:

a) Community Of Place: The inability to interact with other uses in the immediate area does not provide the opportunity for the Planning Area to achieve community of place attributes.

c) Poor Jobs To Housing Linkage: The lack of possible linkages of the subject Area with other Planning Areas further limit opportunities to achieve meaningful jobs to housing linkage.

TIER III CRITERIA

III-4 Lack of Visual Cohesiveness: The projected land uses in the Planning Area will have a negative impact on overall HMD viewsheds.

D. Planning Recommendation

Planning Area H should be eliminated as a Planning Area. As described above 5,161,860 sq. ft. of primary office space is projected for this Planning Area. However, based on the exclusionary criteria identified above, this Area is more suitable for an expansion of secondary office/warehouse uses under the Satellite Area category. Given the existing physical conditions described above and the exclusionary criteria identified, it is not deemed appropriate or feasible to assign any other primary (commercial, residential) land uses to this Planning Area under the Upland Growth Land Management Alternative. The ability to utilize the entire site and effect a land use change from the existing industrial use to a primary land use is only applicable under this Alternative and in the absence of other potential development sites. Therefore, the 24 acres currently not utilized are retained as a Satellite Area for further EIS evaluation as part of the Hybrid Plan and the remaining 55 acres consistent with current zoning are eliminated.

10. Planning Area J

A. Existing Conditions

The Area is located in the municipality of East Rutherford and is 6 acres in size. It generally is bounded by the NJ Turnpike 16W interchange on the south and east; Route 3 on the north; and existing hotel and office uses on the west.

Surrounding land uses include wetland on the south and east; the Sports Authority Complex to the north; and the above mentioned development to the west.

Access to the Planning Area is from the Route 3 Service Road to the north of the site. Currently, there are no existing or proposed rail mass transit services available to the Area. Bus services are currently available to the Area.

Water and sewer facilities are available to the Area from the Hackensack Water Company and the BCUA, respectively.

B. Projected Land Uses

The screening document proposed 300 residential units for this Planning Area. This designation is made in the absence of more suitable upland sites available for residential development in the Upland Growth Land Management Alternative. In order to meet HMDC needs, a density of 50 dwelling units\acre was required.

C. Planning Analysis

The subject Planning Area is characterized by the following exclusionary criteria:

TIER I CRITERIA

No Tier I criteria appear to be present.

TIER II CRITERIA

II-3 Incompatible Land Uses: As indicated above, this Planning Area is unsuitable for residential development. Its relatively small size, its proximity to a major regional highway system, and the incompatible existing land uses that surround the site would negatively effect the marketability of residential development.

II-4 Insufficient Scale: The Planning Area and surrounding areas cannot achieve sufficient population density to maximize district-wide land use efficiencies.

II-5 Lack Of Synergistic Effects:

a) Community Of Place: The Planning Area does not provide the opportunity to achieve community of place attributes because it is isolated from other Planning Areas.

TIER III CRITERIA

III-1 Lack Of TDM\TCM Opportunities: The opportunity to institute Transportation Demand Management (TDM) programs would be highly problematic given the single land use that can be designated for the Area and the generally low intensity of use.

III-2 Poor Relationship To Open Space/Recreation: The Area has an ineffective relationship to open space/recreation areas, both within the HMD and in adjacent jurisdictions.

III-3 Capacity To Foster Cultural Facilities: The potential to foster the development of cultural facilities is not available given the size and isolation of the Area.

D. Planning Recommendation

Planning Area J should be retained for inclusion in the hybrid plan. Given the existing physical conditions and the exclusionary criteria identified above, it should not be considered as a residential site. However, given the limited number of available upland sites, Planning Area J should be considered for alternate non-residential uses that more reasonably reflect both market demand in the area, and the existing adjacent non-residential uses. Therefore, this Area is retained as a Planning Area for further EIS evaluation as part of the Hybrid Plan.

11. Planning Area K

A. Existing Conditions

The Area is located in the municipality of Secaucus and is 37 acres in size. It generally is bounded by Secaucus Road to the north and existing warehousing/outlet uses to the east, west, and south.

The Area is in the heart of the warehouse/outlet center in Secaucus which is the dominant use category in areas that are in proximity to Planning Area K.

Access to the Planning Area is available from Secaucus Road which is a heavily travelled four lane collector road and through a local roadway along the southern portion of the Planning Area.

There currently are no existing or proposed rail mass transportation facilities available to the Area. Bus services are available from nearby locations.

Water and sewer facilities are available to the Area from the Hackensack Water Company and the Secaucus MUA, respectively.

B. Projected Land Uses

The screening document proposed 2,482,920 sq. ft. of primary office space for this Planning Area.

C. Planning Analysis

The subject Planning Area is characterized by the following exclusionary criteria:

TIER I CRITERIA

No Tier I criteria appear to be present.

TIER II CRITERIA

II-1 Poor Accessibility:

a) Highway Capacity: Secaucus Road is heavily travelled and is predominately used to serve the expansive warehouse uses in the immediate area. The local road to the south (Aquarium Drive) is inadequate in design to accommodate the anticipated traffic loadings from the office complex.

d) Poor Mass Transportation Opportunities: There are no mass transit facilities available, either existing or proposed that could accommodate the projected development.

II-3 Incompatible Land Uses: The dominance of warehouse uses would have negative market impacts on the projected land use for this area.

II-5 Lack of Synergistic Effects:

a) Community Of Place: The Planning Area does not provide the opportunity to achieve community of place attributes because it is isolated from other Planning Areas.

TIER III CRITERIA

No Tier III criteria appear to be present.

D. Planning Recommendations

As described above, 2,482,920 sq. ft. of primary office space was projected for this Area. However, based on the exclusionary criteria identified above, this Area is more suitable for an expansion of secondary office\warehouse uses under the Satellite Area category. Given the existing physical conditions described above and the exclusionary criteria identified, it is not deemed appropriate or feasible to assign any other primary (commercial, residential) land uses to this Planning Area under the Upland Growth Land Management Alternative. Therefore, this Area is retained as a Satellite Area for further EIS evaluation as part of the Hybrid Plan.

12. Planning Area L

A. Existing Conditions

Planning Area L is located in the municipality of North Bergen and consists of 64 acres. It generally is bounded by the Public Service Electric & Gas transmission towers on the east; Secaucus Road on the south; the Amtrak Northeast Corridor Rail Line to the north; and existing trucking uses on the west.

Surrounding land uses include trucking uses immediately to the west; an intermodal rail terminal to the east; vacant land to the north; and wetland and the U.S. Postal Facilities to the south.

Access to the Planning Area is from Secaucus Road via private access into the site from the north side of Secaucus Road. There are currently no existing or proposed rail mass transportation facilities available to the Area. Bus service may be available from nearby locations.

Water and sewer facilities are available to the Area from the Hackensack Water Company and the North Bergen MUA, respectively.

B. Projected Land uses

The screening document proposed 4,181,760 sq. ft. of primary office space for this Planning Area.

C. Planning Analysis

The subject Planning Area is characterized by the following exclusionary criteria:

TIER I CRITERIA

No Tier I criteria appear to be present.

TIER II CRITERIA

II-1 Poor Accessibility:

a) Highway Capacity: Secaucus Road is heavily travelled and is predominately used to serve the expansive industrial uses in the immediately area. The private access road is inadequate in design to accommodate the anticipated traffic loadings from the office complex.

d) Poor Mass Transportation Opportunities: No potential exists to provide rail transportation to the site despite the location of the Northeast Corridor Rail Line to the north.

II-3 Incompatible Land Uses: The dominance of industrial uses would have negative market impacts on the projected land use of this Area.

II-5 Lack of Synergistic Effects:

a) Community Of Place: The Planning Area does not provide the opportunity to achieve community of place attributes because it is isolated from other Planning Areas.

TIER III CRITERIA

III-2 Poor Relationship To Open Space/Recreation: The Area has an ineffective relationship to open space/recreation areas both within the HMD and in adjacent jurisdictions.

D. Planning Recommendations

As described above 4,181,760 sq. ft. of primary office space was projected for this Area. However, based on the exclusionary criteria identified above, this Area is more suitable for an expansion of secondary office\warehouse uses under the Satellite Area category. Given the existing physical conditions described above and the exclusionary criteria identified, it is not deemed appropriate or feasible to assign any other primary (commercial, residential) land uses to this Planning Area under the Upland Growth Land Management Alternative. Therefore, this Area is retained as a Satellite Area for further EIS evaluation as part of the Hybrid Plan.

12. Planning Area M

A. Existing Conditions

The Planning Area is located in the municipality of Lyndhurst and consist of 79 acres. It generally is bounded Berry's Creek on the east and north; vacant land on the south; and existing warehouse development on west.

Surrounding land uses include the Bellemead Office and Warehouse Park to the west; radio towers and wetlands to the east; Berry's Creek wetlands and the inactive Town of Rutherford Landfill to the north; and the inactive Avon landfill to the south. As indicated below, the Planning Area consists largely of the inactive Town of Lyndhurst landfill.

Access to the Planning Area is from Valley Brook Avenue which traverses the center of Planning Area M. There currently are no existing or proposed rail mass transportation facilities available to the Area. Bus service may be available from nearby locations.

Water and sewer facilities are available to the Area from the City of Jersey City and the BCUA, respectively.

B. Projected Land Uses

The screening document proposed 3,950 residential units for this Planning Area. This designation is made in the absence of more suitable sites under the Upland Growth Land Management Alternative. In order to meet HMDC needs, a density of 50 dwelling units\acre was required.

C. Planning Analysis

The subject Planning Area is characterized by the following exclusionary criteria:

TIER I CRITERIA

I-1 Severe Land Contamination: This old landfill has not been studied to determine the extent of possible hazardous material contamination. There currently is no program for closure or clean-up activities.

TIER II CRITERIA

II-1 Poor Accessibility:

d) Poor Mass Transportation Opportunities: There are no existing or proposed rail mass transit facilities. Nearby bus routes along Valley Brook Avenue could be made available to the Area.

II-3 Incompatible Land Uses: As stated above, the Area is an inactive landfill surrounded by contiguous landfill areas and warehousing uses.

II-5 Lack Of Synergistic Effects:

a) Community Of Place: The Planning Area does not provide the opportunity to achieve community of place attributes because it is isolated from other Planning Areas.

c) Poor Jobs To Housing Linkage: The lack of possible linkages of the subject Area with other Planning Areas further limit opportunities to achieve meaningful jobs to housing linkage.

II-6 Engineering/Financial Constraints: The development of landfills, assuming the absence of health hazards, require extraordinary site preparation and costs.

TIER III CRITERIA

III-1 Lack Of TDM/TCM Opportunities: The opportunity to institute Transportation Demand Management (TDM) programs would be highly problematic given the scale of the single land use that can be assigned to the Area and the Area's isolation.

III-2 Poor Relationship To Open Space/Recreation: The Area has an ineffective relationship to open space/recreation areas both within the HMD and in adjacent jurisdictions.

III-3 Capacity To Foster Cultural Facilities: The lack of possible linkages of the subject Area with other Planning Areas further limit opportunities to foster the development of cultural facilities.

III-4 Lack Of Visual Cohesiveness: The projected land uses in the Planning Area will have a negative impact on overall HMD viewsheds.

D. Planning Recommendations

Planning Area M should be removed from further consideration as a Planning Area. This Area is unsuitable for development uses at this time and until such time that it can be demonstrated that no adverse effects would result from landfill development. Given the existing physical conditions described above and the exclusionary criteria identified, it is not deemed appropriate or feasible to assign any other primary (office, commercial) or secondary office\warehouse land uses to this Planning Area under the Upland Growth Land Management Alternative. Therefore, this Area is eliminated from further EIS evaluation.

14. Planning Area N

A. Existing Conditions

Planning Area N is located in the municipality of Carlstadt and consists of 10 acres. It generally is bounded by Gotham Parkway on the east; Paterson Plank Road on the south; existing warehousing and secondary office development to the north; and existing industrial and commercial development on the west.

Surrounding land uses include the NJSEA Sports Complex (racetrack) to the south; and adjoining uses similar to those indicated above.

Access to the Planning Area is from Paterson Plank Road. There currently are no existing or proposed rail mass transportation services to the Area. Bus service is available from nearby locations.

The Planning Area, also known as Scientific Chemical Processing, is contaminated with a variety of chemical contaminants. Remediation activities under the Federal Superfund Program are currently underway but questions remain concerning development suitability of the site within the 20 year planning period.

Water and sewer facilities are available to the Area from the Hackensack Water Company and the BCUA, respectively.

B. Projected Land Uses

The screening document proposed 217,800 sq. ft. of commercial space for this Planning Area.

C. Planning Analysis

The subject Planning Area is characterized by the following exclusionary criteria:

TIER I CRITERIA

I-1 Severe Land Contamination: Remediation of ground water contamination, which has migrated to surrounding land areas, is expected to be completed within 5 years. However, this is only an interim measure and does not address the long term problems associated with remediating severe soil and groundwater contamination. The ability to fully "clean" the site will be determined in the future and based upon available technologies at that time.

TIER II CRITERIA

II-4 Insufficient Scale: The Planning Area and surrounding areas cannot achieve sufficient population density to maximize district-wide land use efficiencies.

II-5 Lack Of Synergistic Effects:

a) Community Of Place: The Planning Area does not provide the opportunity to achieve community of place attributes because it is isolated from other Planning Areas.

TIER III CRITERIA

III-2 Poor Relationship To Open Space/Recreation: The Area has an ineffective relationship to open space/recreation areas both within the HMD and in adjacent jurisdictions.

III-3 Capacity To Foster Cultural Facilities: The potential to foster the development of cultural facilities is not available. The area is remote and virtually isolated and thus cannot be linked to other Planning Areas in the Upland Growth Alternative.

D. Planning Recommendations

As described above, 217,800 sq. ft. of commercial space was projected for Planning Area N, which is the Scientific Chemical Processing Superfund site and, in addition, is part of the NJDEP Berry's Creek Mercury Contamination Study area. Given the existing physical conditions described above and the exclusionary criteria identified, it is not deemed appropriate or feasible to assign any other primary (office, residential) land uses to this Planning Area under the Upland Growth Land Management Alternative. Although the site is contaminated, remediation activities are underway due to an approved clean-up plan. Therefore, the site is retained as a Satellite Area for further EIS evaluation as part of the Hybrid Plan.

15. Planning Area O

A. Existing Conditions

The Planning Area is located in the municipality of Secaucus and consists of 169 acres. It generally is bounded by the NJ Turnpike eastern spur on the east and south; New County Road extension in the north; and the Hackensack River in the west.

Surrounding land uses include an inactive landfill and vacant wetlands to the east and south; the Hackensack River to the west; and the Outlet Center and warehouse/distribution uses to the north.

Access to the Planning Area is from New County Road and Castle Road from the north of the tract. There currently are no existing rail or bus mass transportation services to the Area however, proposals for both have been made.
Water and sewer facilities are available to the area from the Hackensack Water Company and the Secaucus MUA, respectively.

B. Projected Land Uses

The screening document proposed 7,200 residential units and 544,500 sq. ft. of commercial space for this Planning Area. In order to meet HMDC needs, a density of 50 dwelling units\acre was required.

C. Planning Analysis

The subject Planning Area is characterized by the following exclusionary criteria:

TIER I CRITERIA

No Tier I criteria appear to be present.

TIER II CRITERIA

II-1 Poor Accessibility:

a) Highway Capacity: Existing access currently is insufficient to accommodate projected uses under this alternative (See Planning Recommendation below).

TIER III CRITERIA

No Tier III criteria appear to be present.

D. Planning Recommendations

Planning Area O should be retained as a Planning Area. The residential land use for this Area appears to be appropriate, although consideration should be given to market conditions as a basis for reduction of the housing density. With the lack of premium residential upland sites, the commercial component could be located off the site in the nearby commercial\industrial area. Accordingly, the 7,200 residential units projected above should be adjusted to more accurately reflect the HMD market conditions. The implementation of rail mass transit projects such as the Secaucus Transfer Station and the proposed NJ Turnpike interchange will provide adequate rail and roadway mass transportation improvements which will relieve the poor accessibility problems. It is not deemed appropriate or feasible to assign any other primary (office) or secondary office\warehouse land uses to this Planning Area under the Upland Growth Land Management Alternative. In addition, the site contains the 17 acre rock outcrop known as Laurel Hill which is eliminated from further EIS evaluation. Therefore, this Area is retained as a Planning Area for further EIS evaluation as part of the Hybrid Plan

16. Planning Area P

A. Existing Conditions

This Planning Area is located in the municipality of Kearny and consists of 27 acres. It generally is bounded by existing warehouse buildings on the east; the Boonton Rail Line on the south; Belleville Turnpike to the north; and the Kingsland Freight Rail Line on the west.

Surrounding land uses include existing out-of-district industrial development to the west; an existing trucking terminal to the east; the HMDC 1E landfill and baler facility to the north; and Kearny marsh to the south.

Access to the Planning Area is from Belleville Turnpike along the northern boundary of the tract. There currently are no existing or proposed rail or bus mass transportation facilities available to the Area.

There are no municipal sewer facilities available to this Planning Area. Water is supplied by the Passaic Valley Water Commission.

B. Projected Land Uses

The screening document proposed 1,764,180 sq. ft. of primary office space for this Planning Area.

C. Planning Analysis

The subject Planning Area is characterized by the following exclusionary criteria:

TIER I CRITERIA

No Tier I Criteria appear to be present.

TIER II CRITERIA

II-1 Poor Accessibility:

c) Poor Mass Transportation Opportunities: There presently are no passenger rail facilities in the Area and no future opportunities to make rail service available to the Area. Bus service may be available along Belleville Turnpike.

II-2 Lack of Efficient Public Services: No sewage facilities are currently available to service the Planning Area.

II-3 Incompatible Land Uses: The site as a primary office area would be surrounded by marginal industrial uses. The presence of the HMDC 1E landfill would negatively affect any primary land use proposed for this Area.

II-5 Lack of Synergistic Effects:

a) Community Of Place: The Planning Area does not provide the opportunity to achieve community of place attributes because it is isolated from other Planning Areas.

c) Poor Jobs To Housing Linkage: The lack of possible linkages of the subject area with other Planning Areas further limit opportunities to achieve meaningful jobs to housing linkage.

TIER III CRITERIA

No Tier III criteria appear to be present.

D. Planning Recommendations

Planning Area P should be eliminated as a Planning Area. As described above 1,764,180 sq. ft. of primary office space was projected for this Area. However, based on the exclusionary criteria identified above, this Area is more suitable for an expansion of secondary office\warehouse uses under the Satellite Area category. Given the existing physical conditions described above and the exclusionary criteria identified, it is not deemed appropriate or feasible to assign any other primary (commercial, residential) land uses to this Planning Area under the Upland Growth Land Management Alternative. Therefore, this Area is retained as a Satellite Area for further EIS evaluation as part of the Hybrid Plan.

17. Planning Area R

A. Existing Conditions

This Planning Area is located in the municipality of Kearny and consists of 28 acres. It generally is bounded by the Hackensack River on the east and north; Conrail freight lines on the south; and unimproved land, portions of which are wetlands, on the west.

Surrounding land uses include remnants of a heavily industrialized area to the west; the Public Service Electric & Gas Jersey City Generating Station power plant across the Hackensack River to the east; an inactive landfill across the River to the north; and existing heavy industrial uses to the south.

Access to the Planning Area is from Fishhouse Road from the south of the tract and through Route 7 between Harrison and Jersey City. There currently are no existing or proposed rail or bus mass transportation facilities available to the Area.

Water and sewer facilities are presently not available to the Area.

B. Projected Land Uses

The screening document proposed 609,840 sq. ft. of commercial space for this Planning Area.

C. Planning Analysis

The subject Planning Area is characterized by the following exclusionary criteria:

TIER I CRITERIA

I-1 Severe Land Contamination: The Planning Area is known to be contaminated with a variety of coking and processing chemical residues. There are no current plans for remediation and clean-up activities.

I-2 Ownership Difficulties/HMDC Jurisdictional Issues: The subject Planning Area is owned by the Hudson County Improvement Authority and was at one time proposed for the Hudson County Solid Waste Material Recovery facility.

TIER II CRITERIA

II-1 Poor Accessibility:

a) Highway Capacity: Access to Planning Area R is restricted by only one access point through an elevated rail line traversing the southern portion of the site, impairing the ability to support the planned growth for this Area.

d) Poor Mass Transportation Facilities: As indicated above there are insufficient opportunities for rail and mass transportation facilities to serve the Area. Access to the Area by bus would also be difficult because of physical constraints (railroad bridge height, etc.).

II-2 Lack of Efficient Public Services: Sewer and water facilities do not directly serve the Area.

II-3 Incompatible Land Uses: Since regional shopping facilities are projected for this Area, the surrounding heavy industrial and railroad uses and the poor accessibility create market impediments.

II-5 Lack of Synergistic Effects:

c) Poor Jobs To Housing Linkage: The lack of possible linkages of the subject Area with other Planning Areas further limit opportunities to achieve meaningful jobs to housing linkage.

II-6 Engineering/Financial Constraints: The development of contaminated land assuming the absence of health hazards require extraordinary site preparation and engineering costs.

TIER III CRITERIA

No Tier III criteria appear to be present.

D. Planning Recommendations

Planning Area R should be eliminated as a Planning Area based on the above analysis. This Area is best suited for non-development uses at this time, or until such time that it can be demonstrated that no adverse impacts would result from the development of this Planning Area. Given the existing physical conditions described above and the exclusionary criteria identified, it is not deemed appropriate or feasible to assign any other primary (office, residential) or secondary office\warehouse land uses to this Planning Area under the Upland Growth Land Management Alternative. In addition, since there are no approved remediation plans the Area is eliminated from further EIS evaluation.

UPLAND GROWTH LAND MANAGEMENT ALTERNATIVE

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PLANNING AREAS	A	B	C	D	E	F	G WEST	G EAST	H	J	K	L	M	N	O	P	R
<u>EXCLUSIONARY CRITERIA</u>																	
TIER I																	
I−1 Contaminated Land				x									x	x			x
I−2 Ownership/Jurisdictional		x															x
I−3 Current Development					x				x								
TIER II																	
II−1 Poor Accessibility																	
a. Highway Capacity	x					x					x	x			x		x
b. Direct Highway Impact																	
c. Impact to Local Road								x	x							x	
d. Poor Mass Transportation	x		x						x		x	x	x				x
II−2 Lack Of Public Services																x	x
II−3 Incompatible Land Uses	x								x	x	x	x	x			x	x
II−4 Insufficient Scale	x		x		x	x	x			x				x			
II−5 Lack Of Synergistic Effects																	
a. Community of Place	x		x	x	x	x			x	x	x	x	x	x		x	
b. Disproportionate Densities		x	x		x	x											
c. Poor Jobs/Housing Linkage				x		x			x				x			x	x
II−6 Engineering/Financial Constraints					x								x				x
TIER III																	
III−1 *Lack of TDM/TCM Implementation*	x		x		x	x				x			x				
III−2 Poor Relationship to Open Space/Recreation	x			x			x	x		x		x	x	x			
III−3 Capacity to Foster Cultural Facilities	x					x				x			x	x			
III−4 Lack of Visual Cohesiveness			x		x	x			x				x				

RECOMMENDATION *

	A	B	C	D	E	F	G WEST	G EAST	H	J	K	L	M	N	O	P	R
Retain as a Primary Planning Area		x	x			x	x	x		x					x		
Review as a Satellite Area																	
Secondary Office/Warehouse	x			x					x		x	x		x		x	
Eliminate from Further EIS Evaluation					x				x				x				x

* may include only a portion of a planning area

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GROWTH CENTERS

1. Planning Area A (West)

A. Existing Conditions

The Planning Area is located in the municipality of Carlstadt and is 300 acres in size. It generally is bounded by the NJ Turnpike western spur on the east; the NJSEA Sports Complex on the south; wetland to the north; and existing development on the west. The site is currently vacant and predominantly wetland.

Surrounding land uses include secondary office and distribution development to the west; the NJSEA Brendan Byrne Arena to the south; vacant wetland and the Transcontinental Gas & Pipeline Natural Gas Facility to the east; and vacant wetland to the north.

Access to the Planning Area is from Commerce Road from the west and from Paterson Plank Road from the south. There currently are no existing or proposed rail mass transit facilities available to the Area. Bus services are currently not available to the site however, a bus facility is proposed.

Water and sewer facilities are available to the Area from the Hackensack Water Company and the BCUA, respectively.

B. Projected Land Uses

The screening document proposed 3,005,640 sq. ft of primary office space; 1,350,360 sq. ft. of commercial space, and 5,600 residential units for this Planning Area.

C. Planning Analysis

The subject Planning Area is characterized by the following exclusionary criteria:

TIER I CRITERIA

No Tier I criteria appear to be present.

TIER II CRITERIA

II-1 Poor Accessibility:

d) Poor Mass Transportation Opportunities: The opportunity to access rail mass transportation facilities is poor given the location of the Planning Area and the absence of rail transportation opportunities.

TIER III CRITERIA

No Tier III criteria appear to be present.

D. Planning Recommendations

Planning Area A (West) should be retained as a Planning Area. The scale and size of the Area and projected uses achieve community of place attributes as outlined in the synergy criteria. The implementation of regional highway improvements such as the NJ Turnpike interchange 18W improvements will support additional growth in this area. Existing vacant land adjacent to and surrounding the Planning Area essentially isolate the Area from nearby industrial facilities. Also, the proximity to the Sports Complex promotes compatible land uses. Therefore, the Area is retained as a Planning Area for further EIS evaluation as part of the Hybrid Plan.

2. Planning Area A (East)

A. Existing Conditions

The Planning Area is located in the municipality of Carlstadt and is 51 acres in size. It generally is bounded by the Hackensack River on the east; Paterson Plank Road on the south; existing development on the north; and the NJ Turnpike 18W interchange on the west. This area is currently vacant wetland.

Surrounding land uses include wetland to the west and south; low density residential development across the Hackensack River to the east; and the Transcontinental Gas and Pipeline Company Natural Gas Facility to the north.

Access to the Planning Area is from Paterson Plank Road. Currently there are no existing or proposed rail mass transit or bus services provided to the site although bus service would presumably be available from facilities within Area A (West) described above.

Water and sewer facilities are available to the Area from the Hackensack Water Company and the BCUA, respectively.

B. Projected Land Uses

The screening document proposed 2,040 residential units for this Planning Area.

C. Planning Analysis

The subject Planning Area is characterized by the following exclusionary criteria:

TIER I CRITERIA

No Tier I criteria appear to be present.

TIER II CRITERIA

II-1 Poor Accessibility:

d) Poor Mass Transportation Opportunities: The opportunity to access rail mass transportation facilities is poor given the location of the Planning Area and the absence of rail transportation opportunities.

TIER III CRITERIA

No Tier III criteria appear to be present.

D. Planning Recommendations

Planning Area A (East) should be retained as a Planning Area. Planning Area A (East) also is intended to be integrated with Area A (West) through the implementation of roadway and transit improvements and would, therefore, achieve land use efficiencies. (See Planning Recommendation for Planning Area C in the Upland Growth Land Management Alternative). Given the existing physical conditions described above and the exclusionary criteria identified, it is not deemed appropriate or feasible to assign any other primary (office, commercial) land uses to this Planning Area under the Growth Center Land Management Alternative. Therefore, the Area is retained as a Planning Area for further EIS evaluation as part of the Hybrid Plan.

3. Planning Area B (West)

A. Existing Conditions

The Planning Area is located in the municipality of Secaucus and is 97 acres in size. It generally is bounded by the NJ Turnpike eastern spur on the east; the Mall at Mill Creek on the south; vacant wetland on the north; and Mill Creek on the west. The site is currently vacant wetland.

Surrounding land uses include residential development to the west; vacant wetland to the east and north; and commercial and office uses to the south.

Access to the Planning Area is from the internal road system of the Mall from the south of the tract, which can be accessed from the Route 3 Service Road. There currently are no existing rail mass transit or bus services provided to the site however, bus service is available from existing services at the Mall and rail facilities have been proposed nearby.

Water and sewer facilities are available to the Area from the Hackensack Water Company and the Secaucus MUA, respectively.

B. Projected Land Uses

The screening document proposed 3,880 residential units for this Planning Area.

C. Planning Analysis

The subject Planning Area is characterized by the following exclusionary criteria:

TIER I CRITERIA

No Tier I criteria appear to be present.

TIER II CRITERIA

No Tier II criteria appear to be present.

TIER III CRITERIA

No Tier III criteria appear to be present.

D. Planning Recommendations

Planning Area B (West) should be retained as a Planning Area. The proximity to office and commercial uses adjacent to the Area promote the concept of synergy and community of place attributes. Adjacent residential uses also establish a continuation of a residential community. Together, the scale of development could foster TDM/TCM techniques and cultural facilities. It is not deemed appropriate or feasible to assign any other primary (office, commercial) or secondary office/warehouse land uses to this Planning Area under the Growth Center Land Management Alternative. Therefore the Area is retained as a Planning Area for further EIS evaluation as part of the Hybrid Plan.

4. Planning Area B (East)

A. Existing Conditions

The Planning Area is located in the municipality of Secaucus and is 87 acres in size. It generally is bounded by Chromakill Creek on the east; Paterson Plank Road and Route 3 on the south; vacant wetland to the north; and the NJ Turnpike eastern spur on the west. The Area is predominantly unimproved vacant upland. A seven acre portion of this Area, south of Paterson Plank Road contains an existing storage facility in good condition.

Surrounding land uses include the Harmon Meadow Office Complex to the west, existing warehouse uses to the east, vacant wetland to the north; and commercial and warehouse uses to the south.

Access to the Planning Area is from Paterson Plank Road and the internal road system of the Harmon Meadows Mall, which is accessible from the Route 3 Service Road. There currently are no existing rail mass transit services provided to the site however, bus service is available from existing services at the Mall. Rail mass transit facilities have been proposed for the Area.

Water and sewer facilities are available to the Area from the Hackensack Water Company and the Secaucus MUA, respectively.

B. Projected Land Uses

The screening document proposed 2,918,520 sq. ft. of primary office space and 566,280 sq. ft. of commercial space for this Planning Area.

C. Planning Analysis

The subject Planning Area is characterized by the following exclusionary criteria:

TIER I CRITERIA

I-3 Current Land Development: A 7 acre portion of this Planning Area currently has existing viable development that would not meet the criteria necessary for redevelopment.

TIER II CRITERIA

II-1 Poor Accessibility:

c) Maximum Direct Impact To Local Road System: Given the existing traffic volumes in proximity to the Area, the impact of the projected land uses would be significant on Paterson Plank Road and the local road system.

TIER III CRITERIA

III-2 Poor Relationship To Open Space\Recreation: The Area has an ineffective relationship to open space\recreation areas both within the HMD and adjacent jurisdictions.

D. Planning Recommendations

Planning Area B (East), which includes Areas G (East) and G (West) from the Upland Growth Land Management Alternative, should be retained as a Planning Area. It is adjacent to existing office and commercial uses and therefore, consistent with existing development. The projected office and commercial uses are appropriate for this Planning Area and should be retained however, existing development consistent with current zoning on 7 acres should be eliminated. Therefore, the 7 acres are eliminated and the remaining 80 acres are retained as a Planning Area for further EIS evaluation of the Hybrid Plan.

5. Planning Area B (South)

A. Existing Conditions

The Planning Area is located in the municipality of Secaucus and is 37 acres in size. It is generally bounded by Route 3 on the east; I-495 on the south; Paterson Plank Road on the north; and the NJ Turnpike eastern spur on the west. The Planning Area currently contains a hotel and vacant structures.

Surrounding land uses include residential and industrial development to the west; warehousing and industrial uses to the east; vacant structures to the south; and Harmon Meadows Mall to the north.

Access to the Planning Area is from Paterson Plank Road. There currently are no existing or proposed rail mass transit or bus services provided to the site however, bus service may be available from existing nearby services.

Water and sewer facilities are available to the Area from the Hackensack Water Company and the Secaucus MUA, respectively.

B. Projected Land Uses

The screening document proposed 805,860 sq. ft. of commercial space for this Planning Area.

C. Planning Analysis

The subject Planning Area is characterized by the following exclusionary criteria:

TIER I CRITERIA

I-3 Current Land Development: The development of a warehouse outlet building has been approved by the HMDC on 7 acres within this Planning Area and construction is imminent for this project.

TIER II CRITERIA

No Tier II criteria appear to be present.

TIER III CRITERIA

No Tier III criteria appear to be present.

D. Planning Recommendations

Planning Area B (South), which includes Area F from the Redevelopment Land Management Alternative, should be eliminated as a Planning Area. As described above, 805,860 sq. ft. of commercial space was projected for this Area. However, based on the exclusionary criteria identified above, and the surrounding pattern of existing development, this Area may be more suitable for inclusion in the Satellite Area category for the secondary/office warehouse component. Given the existing physical conditions described above and the exclusionary criteria identified, it is not deemed appropriate or feasible to assign any other primary (commercial\residential) land uses to this Planning Area under the Growth Center Land Management Alternative for further EIS evaluation. (See Planning Analysis for Area F in the Redevelopment Land Management Alternative). Therefore, the 7 acres under current development are eliminated and the remaining 30 acres are retained as a Satellite Area for further EIS evaluation as part of the Hybrid Plan.

6. Planning Area C

A. Existing Conditions

The Planning Area is located in the municipalities of East Rutherford and Rutherford and is 193 acres in size. It generally is bounded by the NJ Turnpike western spur on the east; Berry's Creek on the south and west; and Route 3 on the north. The site is currently vacant wetland and a small portion of unimproved vacant upland. In addition, the portion of this Area that lies between the NJ Transit Bergen Rail Line and Berry's Creek includes portions of the inactive Town of Rutherford Municipal Landfill at both the northern and southern ends.

Surrounding land uses include the Bellemead Office Park to the west; vacant wetland to the east; the NJSEA Sports Complex to the north; and radio towers and the inactive Town Of Lyndhurst Municipal Landfill to the south.

Access to the Planning Area is from Route 3 and the Route 3 Service Road. Currently no existing rail mass transit or bus services are provided to the site however, proposals for both have been made.

Water and sewer facilities are available to those portions of the Area adjacent to Route 3 and the Route 3 Service Road from the Hackensack Water Company and the BCUA, respectively. The remainder of the Planning Area presumably could be served by the Hackensack Water Company and the BCUA.

B. Projected Land Uses

The screening document proposed 3,880 residential units; 5,619,240 sq. ft. of primary office space; and 217,800 sq. ft. of commercial space for this Planning Area.

C. Planning Analysis

The subject Planning Area is characterized by the following exclusionary criteria:

TIER I CRITERIA

I-1 Severe Land Contamination: Approximately 20 acres of this Planning Area consists of the inactive Town of Rutherford Municipal Landfill. To date, no studies have been undertaken to determine the extent of possible contamination. In addition, there currently is no program for closure or clean-up activities. This criteria affects the northern and southern "islands" that are south of the NJ Transit Bergen Rail Line.

TIER II CRITERIA

II-2 Lack Of Efficient Public Services: The majority of the Planning Area, located between Berry's Creek Canal and Berry's Creek to the south, is currently not directly serviced by sewer and water facilities.

II-6 Engineering/Financial Constraints: The development of landfills, assuming the absence of health hazards, require extraordinary site preparation and infrastructure costs.

TIER III CRITERIA

III-2 Poor Relationship To Open Space\Recreation: The Area has an ineffective relationship to open space\recreations areas both within the HMD and adjacent jurisdictions.

D. Planning Recommendations

The portion of Planning Area C that is affected by Criteria I-1 should be eliminated from the Planning Area. The balance of the Planning Area should be retained for further analysis in the hybrid plan. The central "island" (as shown on the map) between the NJ Transit Bergen Rail Line and Berry's Creek is unaffected by Criteria I-1 and can be accessed by the improvement of an existing unimproved road that traverses the landfilled area to the north. Vehicular access to Route 3 and to the local road west of Berry's Creek provide access to the Planning Area. Given the existing physical conditions described above and the exclusionary criteria identified; it is not deemed appropriate or feasible to assign any secondary office/ warehouse land uses to this Planning Area. Therefore, this Area is retained as a Planning Area for further EIS evaluation as part of the Hybrid Plan.

7. Planning Area D

A. Existing Conditions

The Planning Area is located in the municipality of Secaucus and is 252 acres in size. It generally is bounded by Penhorn Creek and the NJ Turnpike eastern spur on the east and south; the Secaucus Outlet Center on the north; and the Hackensack River on the west. The site currently contains vacant unimproved upland and warehousing uses.

Surrounding land uses include the Sawmill Creek Wildlife Management Area to the west across the Hackensack River and the Castle Road Outlet Center to the west; an inactive landfill; a PSE&G Facility; and the Conrail Croxton Rail Yards to the east; and commercial and warehousing development to the north.

Access to the Planning Area is from New County Road which bisects the site in a north\south direction and Castle Road which bisects the site in an east\west direction. Currently there is no existing rail mass transit or bus service to the area but both are proposed.

Water and sewer facilities are available to the Area from the Hackensack Water Company and the Secaucus MUA, respectively.

B. Projected Land Uses

The screening document proposed is 7,100,280 sq. ft. of primary office space and 6,760 residential units for this Planning Area.

C. Planning Analysis

The subject Planning Area is characterized by the following exclusionary criteria:

TIER I CRITERIA

No Tier criteria appear to be present.

TIER II CRITERIA

II-1 Poor Accessibility:

a) Highway Capacity: The road and highway system adjacent to the Planning Area cannot reasonably be improved to accommodate the extent of traffic projected from the Planning Area (see Planning Recommendation).

c) Maximum Direct Impact To Local Road System: Given the existing traffic volumes in proximity to the Area, the impact of the projected land uses would be significant on the local road system (see Planning Recommendation).

II-5 Lack Of Synergistic Effects:

b) Disproportionate Densities: The projected office use is appropriate for this Planning Area however, the Floor Area Ratio should be adjusted to reflect existing market conditions (see Planning Recommendation).

TIER III CRITERIA

III-4 Lack of Visual Cohesiveness: The projected high density office development would have a negative impact on HMD viewsheds.

D. Planning Recommendations

Planning Area D should be retained as a Planning Area. The Tier II criteria discussed above are applicable only in the absence of the proposed mass transportation projects for the Secaucus Transfer Station and the related NJ Turnpike interchange. As described in the Planning Analysis for Planning Area O in the Upland Growth Land Management Alternative and Planning Area H in the Redevelopment Land Management Alternative, the projected land uses are appropriate however, the projected densities are subject to the proposed mass transportation improvements. In addition, this Planning Area contains the 17 acre rock outcrop known as Laurel Hill. Therefore, the 17 acres are eliminated and the remaining 235 acres are retained as a Planning Area for further EIS evaluation as part of the Hybrid Plan.

GROWTH CENTERS LAND MANAGEMENT ALTERNATIVE

6\15\95

PLANNING AREAS	A WEST	A EAST	B WEST	B EAST	B SOUTH	C	D
EXCLUSIONARY CRITERIA							
TIER I							
I–1 Contaminated Land						x	
I–2 Ownership/Jurisdictional							
I–3 Current Development				x	x		
TIER II							
II–1 Poor Accessibility							
a. Highway Capacity							x
b. Direct Highway Impact							
c. Impact to Local Road				x			x
d. Poor Mass Transportation	x	x					
II–2 Lack Of Public Services						x	
II–3 Incompatible Land Uses							
II–4 Insufficient Scale							
II–5 Lack Of Synergistic Effects							
a. Community of Place							
b. Disproportionate Densities							x
c. Poor Jobs/Housing Linkage							
II–6 Engineering/Financial Constraints						x	
TIER III							
III–1 Lack of TDM/TCM Implementation							
III–2 Poor Relationship to Open Space/Recreation				x		x	
III–3 Capacity to Foster Cultural Facilities							
III–4 Lack of Visual Cohesiveness							x
RECOMMENDATION *							
Retain as a Primary Planning Area	x	x	x	x		x	x
Review as a Satellite Area							
Secondary Office/Warehouse					x		
Eliminate from Further EIS Evaluation				x	x	x	x

* may include only a portion of a planning area

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DISPERSED DEVELOPMENT AREAS

1. Planning Area A

A. Existing Conditions

The Planning Area is located in the municipality of Carlstadt and is 81 acres in size. It generally is bounded by vacant wetland on the east; Barell Avenue on the south; Commerce Road to the north; and Washington Avenue on the west. The site is currently vacant wetland.

Surrounding land uses include the Carlstadt Industrial Area to the west; vacant wetland to the east; and existing warehouse development to the north and south.

Access to the Planning Area is from Commerce Road and Barell Avenue. Both Washington Ave. and Commerce Rd. have been improved to accommodate 4 lanes of traffic. There currently are no rail mass transit or bus services to the Planning Area. No rail mass transit facilities are proposed. Bus service may be available from nearby regional routes.

Municipal water and sewer facilities are available to the Area from the Hackensack Water Company and the BCUA, respectively.

B. Projected Land Uses

The screening document proposed 3,240 residential units for this Planning Area.

C. Planning Analysis

The subject Planning Area is characterized by the following exclusionary criteria:

TIER I CRITERIA

No Tier I criteria appear to be present.

TIER II CRITERIA

II-1 Poor Accessibility:

d) Poor Mass Transportation Opportunities: Bus service is not available to the Planning Area and there is no opportunity to access rail mass transit facilities.

II-5 Lack Of Synergistic Effect:

a) Community Of Place: The Planning Area does not provide the opportunity to achieve community of place attributes because it is isolated from other Planning Areas.

c) Poor Jobs To Housing Linkage: The size and isolation of this Planning Area do not provide sufficient linkages between housing and employment land uses.

TIER III CRITERIA

III-3 Capacity To Foster Cultural Facilities: The potential to foster the development of cultural facilities is not available due to the small size and location of the Area.

D. Planning Recommendations

Based on the above exclusionary criteria, Planning Area A should be retained as a Planning Area. Given the existing physical conditions described above and the lack of exclusionary criteria, it is not deemed appropriate or feasible to assign any other primary (office, commercial) or secondary office\warehouse land uses to this Planning Area under the Dispersed Development Areas Alternative. A portion of this Area was included and retained as part of Planning Area A (West) in the Growth Center Land Management Alternative for the proposal of residential units. (See Planning Analysis for Planning Area A West) in the Growth Center Land Management Alternative above. Therefore, the Area is retained as a Planning Area for further EIS evaluation as part of the Hybrid Plan.

2. Planning Area B

A. Existing Conditions

The Planning Area is located in the municipality of Carlstadt and is 32 acres in size. It generally is bounded by the NJ Turnpike western spur on the east; Paterson Plank Road on the south; vacant wetland to the north; and existing warehouse development on the west. The site is currently vacant wetland.

Surrounding land uses include existing warehouse uses to the west; vacant wetland to the east and north; and the NJSEA Brendan Byrne Arena to the south. Access to the Planning Area is from Paterson Plank Road and Michelle Place. There currently are no existing rail or bus mass transit services to the site. However, bus service has been proposed for the Area.

Municipal water and sewer facilities are available to the Area from the Hackensack Water Company and the BCUA; respectively.

B. Projected Land Uses

The screening document proposed 1,393,920 sq. ft. of primary office space for this Planning Area.

C. Planning Analysis

The subject Planning Area is characterized by the following exclusionary criteria:

TIER I CRITERIA

No Tier I criteria appear to be present.

TIER II CRITERIA

II-5 Lack Of Synergistic Effects:

a) Community Of Place: The Planning Area does not provide the opportunity to achieve community of place attributes because it is isolated from other Planning Areas.

c) Poor Jobs To Housing Linkage: The size and isolation of this Planning Area do not provide sufficient linkages between housing and employment land uses.

TIER III CRITERIA

III-2 Poor Relationship To Open Space/Recreation: The Area has an ineffective relationship to open space/recreation areas both within the HMD and in adjacent jurisdictions.

D. Planning Recommendations

Planning Area B should be retained as a Planning Area. (See Planning Analysis for Planning Area A (West) in the Growth Center Land Management Alternative). Accordingly, this Area was retained within the Growth Center Land Management Alternative as part of a larger Planning Area which proposed commercial and office land uses for further EIS evaluation as part of the Hybrid Plan. It is not deemed appropriate or feasible to assign any secondary office/ warehouse land uses to this Planning Area under the Dispersed Development Areas or any other Land Management Alternative.

3. Planning Area C

A. Existing Conditions

The Planning Area is located in the municipalities of Carlstadt and East Rutherford and is 58 acres in size. It generally is bounded by the Hackensack River on the east; vacant wetland on the south and north; and the NJ Turnpike 18W interchange on the west. In addition to "LT's Golf and Marina Center", which is a temporary use, there are low intensity waterfront marina-related uses.

Surrounding land uses include the NJSEA Brendan Byrne Arena to the west; industrial and residential development to the east; vacant wetland to the south; and the Transcontinental Gas and Pipeline Company Natural Gas Facility to the north.

Access to the Planning Area is from Paterson Plank Road. There currently are no existing or proposed rail or bus mass transit services available to the site. However, bus facilities have been proposed for nearby locations.

Municipal water and sewer facilities are available to the Area from the Hackensack Water Company and the BCUA, respectively.

B. Projected Land Uses

The screening document proposed 2,320 residential units for this Planning Area.

C. Planning Analysis

The subject Planning Area is characterized by the following exclusionary criteria:

TIER I CRITERIA

No Tier I criteria appear to be present.

TIER II CRITERIA

II-1 Poor Accessibility:

d) Poor Mass Transportation Opportunities: Bus service is not available to the Planning Area and there is no opportunity to access rail mass transit facilities.

II-4 Insufficient Scale: The size, and projected density of this Planning Area cannot provide sufficient population density to maximize District-wide land use efficiencies.

II-5 Lack Of Synergistic Effects:

b) Disproportionate Densities: The projected land use in this Planning Area is appropriate. However, consideration should be given to adjusting the density to a level consistent with waterfront areas in the HMD.

TIER III CRITERIA

III-1 Lack Of TDM/TCM Opportunities: The opportunity to institute Transportation Demand Management (TDM) programs would be highly problematic given the scale of the single land use that can be assigned to the Area.

III-3 Capacity To Foster Cultural Facilities: The potential to foster the development of cultural facilities is not available due to the small size and single land use assigned to the Area.

D. Planning Recommendations

Planning Area C should be retained as a Planning Area. Consideration should be given to adjusting the density to reflect existing residential development adjacent to waterfront areas. (See Planning Analysis for Planning Area C in the Upland Growth Land Management Alternative and Planning Area A (East) in the Growth Center Land Management Alternative). Given the existing physical conditions described above and the exclusionary criteria identified, it is not deemed appropriate or feasible to assign any other primary (office, commercial) or secondary office\warehouse land uses to this Planning Area. Therefore, this Planning Area which also incorporates Planning Areas retained from other Alternatives, is retained as a Planning Area for further EIS evaluation as part of the Hybrid Plan.

4. Planning Area D

A. Existing Conditions

The Planning Area is located in the municipality of East Rutherford and is 65 acres in size. It generally is bounded by the NJ Turnpike on the east; Berry's Creek Canal on the south; Route 3 on the north; and Berry's Creek and Route 3 on the west. A portion of the Planning Area currently has an office and hotel development.

Surrounding land uses include warehousing to the west; vacant wetlands to the south and east; and the NJSEA Sports Complex to the north.

Access to the Planning Area is from the Route 3 Service Road to the north of the tract. There currently are no existing or proposed rail mass transit services to the site. Bus service currently is provided to the site.

Municipal water and sewer facilities are available to the Area from the Hackensack Water Company and the BCUA, respectively.

B. Projected Land Uses

The screening document proposed 2,831,400 sq. ft. of primary office space.

C. Planning Analysis

The subject Planning Area is characterized by the following exclusionary criteria:

TIER I CRITERIA

No Tier I Criteria appear to be present.

TIER II CRITERIA

II-1 Poor Accessibility:

b) Direct Highway Impact: The road and highway system within or adjacent to the Planning Area cannot reasonably be improved to accommodate the extent of traffic projected from the Planning Area. New roadway access and rights-of-way are unavailable or insufficient.

II-5 Lack Of Synergistic Effects:

a) Community Of Place: The Planning Area does not provide the opportunity to achieve community of place attributes because it is isolated from other Planning Areas.

TIER III CRITERIA

III-2 Poor Relationship To Open Space/Recreation: The Area has an ineffective relationship to open space/recreation areas both within the HMD and in adjacent jurisdictions.

D. Planning Recommendations

Planning Area D, which includes part of Area C from the Growth Center Land Management Alternative, should be retained as a Planning Area. The projected office use is appropriate for this Planning Area and should be retained for further EIS evaluation. Consideration should be given to adjusting the Floor Area Ratio to more accurately reflect existing and projected development patterns and market demand for office space within the HMD. (See Planning Analysis for Planning Area C in the Growth Center Land Management Alternative). Given the existing physical conditions described above and the exclusionary criteria identified, it is not deemed appropriate or feasible to assign any secondary office/warehouse land uses to this Planning Area. Therefore, this Area is retained as a Planning Area for further EIS evaluation as part of the Hybrid Plan.

5. Planning Area E

A. Existing Conditions

The Planning Area is located in the municipalities of East Rutherford and Rutherford and is 90 acres in size. It generally is bounded by vacant wetland on the east and south; Berry's Creek Canal and the Route 3 Service Road to the north; and Berry's Creek on the west. The site is currently vacant wetland and also contains approximately 12 acres of an inactive municipal landfill.

Surrounding land uses include office development to the west; and vacant wetland to the east, north, and south.

Access to the Planning Area is from the Route 3 Service Road from the north of the tract. There currently are no rail mass transit or bus services available to the site although proposals for both have been made.

Municipal water and sewer facilities are available to the Area from the Hackensack Water Company and the BCUA, respectively.

B. Projected Land Uses

The screening document proposed 3,049,200 sq. ft. of primary office space and 435,600 sq. ft. of commercial space for this Planning Area.

C. Planning Analysis

The subject Planning Area is characterized by the following exclusionary criteria:

TIER I CRITERIA

I-1 Severe Land Contamination: Approximately 12 acres of the site south of the NJ Transit Bergen Rail Line is part of an old landfill. This inactive landfill has not been studied to determine the extent of possible contamination. There is currently no program for closure or clean-up activity. The balance of the land within the Planning Area is not affected.

TIER II CRITERIA

II-1 Poor Accessibiiity:

a) Highway Capacity: The road and highway system (the Route 3 Service Road west of Berry's Creek) within and adjacent to the Planning Area cannot reasonably be improved to accommodate the extent of traffic projected from the Planning Area.

II-5 Lack Of Synergistic Effects:

a) Community Of Place: The Planning Area and surrounding areas do not interact sufficiently to provide the opportunity to achieve community of place attributes.

II-6 Engineering/Financial Constraints: The development of landfills, assuming the absence of health hazards, require extraordinary site preparation and infrastructure costs.

TIER III CRITERIA

III-2 Poor Relationship To Open Space/Recreation: The Area has an ineffective relationship to open space/recreation areas both within the HMD and in adjacent jurisdictions.

D. Planning Recommendations

Planning Area E, which includes part of Area C from the Growth Center Land Management Alternative, should be retained as a Planning Area. Consideration should be given to adjusting the Office Floor Area Ratio to more accurately reflect existing and projected development patterns and market demand for office space within the HMD. (See Planning Analysis for Planning Area C in the Growth Center Land Management Alternative proposing office and residential uses). Given the existing physical conditions described above and the exclusionary criteria identified, it is not deemed appropriate or feasible to assign any secondary office/warehouse land uses to this Planning Area. Therefore, this Area is retained as a Planning Area for further EIS evaluation as part of the Hybrid Plan.

6. Planning Area F (West)

A. Existing Conditions

The Planning Area is located in the municipality of Secaucus and is 97 acres in size. It generally is bounded by the NJ Turnpike eastern spur on the east; the Mall at Mill Creek on the south; vacant wetland on the north; and Mill Creek on the west. The site is currently vacant wetland.

Surrounding land uses include existing residential development to the west; vacant wetland to the east and the north; and the office and commercial development of the Mall at Mill Creek to the south.

Access to the Planning Area is from the internal road system of the Mall from the south of the tract, which can be accessed from the Route 3 Service Road. There currently are no existing rail mass transit facilities available to the site however, proposals have been made for nearby locations. Bus service is available from the existing development adjacent to the site.

Municipal water and sewer facilities are available to the Area from the Hackensack Water Company and the Secaucus MUA, respectively.

B. Projected Land Uses

The screening document proposed 3,880 residential units for this Planning Area.

C. Planning Analysis

The subject Planning Area is characterized by the following exclusionary criteria:

TIER I CRITERIA

No Tier I criteria appear to be present.

TIER II CRITERIA

No Tier II criteria appear to be present.

TIER III CRITERIA

No Tier III criteria appear to be present.

D. Planning Recommendations

Based on the above, Planning Area F (West), which includes Planning Area B (West) from the Growth Center Land Management Alternative, should be retained as Planning Area. The projected residential use is appropriate for the Area and should be considered for further evaluation in the EIS. (See Planning Analysis for Planning Area B (West) in the Growth Center Land Management Alternative). It is not deemed appropriate or feasible to assign any other primary (office, commercial) or secondary office\warehouse land uses to this Planning Area. Therefore, this Area is retained as a Planning Area for further EIS evaluation as part of the Hybrid Plan.

7. Planning Area F (East)

A. Existing Conditions

The Planning Area is located in the municipality of Secaucus and is 50 acres in size. It generally is bounded by Chromakill Creek on the east; Paterson Plank Road on the south; vacant wetland to the north; and Harmon Meadows Mall on the west. The site is currently unimproved vacant upland.

Surrounding land uses include commercial and office uses to the west; warehouse uses to the east; vacant wetland to the north; and retail and warehouse uses to the south.

Access to the Planning Area is from Paterson Plank Road from the south of the tract and through the internal road system for the Mall. There currently are no existing rail mass transit facilities available to the site however, proposals have been made. Bus service is available from the existing development adjacent to the Planning Area.

Municipal water and sewer facilities are available to the Area from the Hackensack Water Company and the Secaucus MUA, respectively.

B. Projected Land Uses

The screening document proposed 2,178,000 sq. ft. of primary office space for this Planning Area.

C. Planning Analysis

The subject Planning Area is characterized by the following exclusionary criteria:

TIER I CRITERIA

No Tier I criteria appear to be present.

TIER II CRITERIA

II-1 Poor Accessibility:

a) Highway Capacity: The road and highway system within and adjacent to the Planning Area cannot reasonably be improved to accommodate the extent of traffic projected from the Planning Area.

c) Maximum Direct Impact To Local Road System: Given the existing traffic volumes in proximity to the Area, the impact of the projected land use would be significant on Paterson Plank Road and on the local road system.

II-5 Lack Of Synergistic Effects:

a) Community Of Place: The Planning Area and surrounding areas do not interact sufficiently to provide the opportunity to achieve community of place attributes.

TIER III CRITERIA

III-2 Poor Relationship To Open Space/Recreation: The Area has an ineffective relationship to open space/recreation areas both within the HMD and in adjacent jurisdictions.

D. Planning Recommendations

Planning Area F (East), which includes Planning Area G (East) from the Upland Growth Land Management Alternative and part of Planning Area B (East) from the Growth Center Land Management Alternative, should be retained as a Planning Area and considered for further evaluation in the EIS. The projected office use is appropriate for this Area however, in the development of a Hybrid Plan the designation of other primary (commercial) land uses should be considered. (See Planning Analysis for Planning Area G (East) in the Upland Growth Land Management Alternative and for Planning Area B (East) in the Growth Center Land

Management Alternative). Therefore, this Planning Area which also incorporates Planning Areas retained from other Alternatives, is retained as a Planning Area for further EIS evaluation as part of the Hybrid Plan.

8. Planning Area G

A. Existing Conditions

The Planning Area is located in the municipality of North Bergen and is 92 acres in size. It generally is bounded by the West Shore Freight Rail Line on the east; the NJ Transit Northeast Corridor Commuter Rail Line and Penhorn Creek on the south; I-495 to the north, and the NJ Turnpike eastern spur on the west. The site is currently vacant wetland.

Surrounding land uses include vacant wetland to the west and south; trucking terminals to the east; and industrial and warehousing uses to the north.

Access to the Planning Area is from I-495. There currently are no existing or proposed rail or bus mass transit facilities serving the site. However, bus service may be available from nearby regional routes.

Municipal water and sewer facilities are available to the Area from the Hackensack Water Company and the North Bergen MUA, respectively.

B. Projected Land Uses

The screening document proposed 3,680 residential units for this Planning Area.

C. Planning Analysis

The subject Planning Area is characterized by the following exclusionary criteria:

TIER I CRITERIA

No Tier I criteria appear to be present.

TIER II CRITERIA

II-5 Lack Of Synergistic Effects:

c) Poor Jobs To Housing Linkage: The size and isolation of this Planning Area do not provide sufficient linkages between housing and employment land uses.

TIER III CRITERIA

III-1 Lack Of TDM/TCM Opportunities: The opportunity to institute Transportation Demand Management (TDM) programs would be highly problematic given the scale of the single land use that can be assigned to the Area.

III-2 Poor Relationship To Open Space/Recreation: The Area has an ineffective relationship to open space/recreation areas both within the HMD and in adjacent jurisdictions.

III-3 Capacity To Foster Cultural Facilities: The size, isolation and single land use assigned to Planning Area do not provide the opportunity to foster cultural facilities.

D. Planning Recommendations

Planning Area G should be retained as a Planning Area and considered for further evaluation in the EIS. The projected 3,680 residential units described above are appropriate for this Area. However, in the development of a Hybrid Plan the designation of other primary (commercial, office) land uses should be considered. (See Planning Analysis for Planning Area O in the Highway Corridors Land Management Alternative below). Therefore, this Area is retained as a Planning Area for further EIS evaluation as part of the Hybrid Plan.

9. Planning Area H

A. Existing Conditions

The Planning Area is located in the municipality of Secaucus and is 169 acres in size. It generally is bounded by the NJ Turnpike eastern spur on the east and south; New County Road Extension to the north; and the Hackensack River on the west. The site is currently unimproved vacant upland.

Surrounding land uses include the Sawmill Creek Wildlife Management Area across the Hackensack River to the west; vacant wetland and an inactive landfill to the east; warehousing to the north; and vacant wetland to the south.

Access to the Planning Area is from New County Road from the north of the tract. There currently are no rail mass transit or bus facilities currently provided for the site. However, both are proposed (see Planning Recommendation).

Municipal water and sewer facilities are available to the Area from the Hackensack Water Company and the Secaucus MUA, respectively.

B. Projected Land Uses

The screening document proposed 6,760 residential units for this Planning Area.

C. Planning Analysis

The subject Planning Area is characterized by the following exclusionary criteria:

TIER I CRITERIA

No Tier I criteria appear to be present.

TIER II CRITERIA

II-1 Poor Accessibility:

a) Highway Capacity: The road and highway system within and adjacent to the Planning Area cannot reasonably be improved to accommodate the extent of traffic projected from the Planning Area (see Planning Recommendation below).

TIER III CRITERIA

No Tier III criteria appear to be present.

D. Planning Recommendations

Planning Area H should be retained as a Planning Area. The projected residential use for this Area is appropriate and should be considered for further evaluation in the EIS. (See Planning Analysis for Planning Area O in the Upland Growth Land Management Alternative and Planning Area D in the Growth Center Land Management Alternative). The implementation of mass transit projects such as the Secaucus Transfer Station and the proposed NJ Turnpike interchange will provide adequate rail and roadway mass transportation improvements which will relieve the poor accessibility problems. It is not deemed appropriate or feasible to assign any other primary (office, commercial) or secondary office\warehouse land uses to this Planning Area under the Dispersed Development Areas Land Management Alternative. In addition, this Area contains the 17 acre rock outcrop known as Laurel Hill. Therefore, it is recommended to eliminate the 17 acres and retain the remaining 152 acres as a Planning Area for further EIS evaluation as part of the Hybrid Plan.

10. Planning Area I

A. Existing Conditions

The Planning Area is located in the municipality of Lyndhurst and is 105 acres in size. It generally is bounded by Berry's Creek on the east and north; vacant land on the south; and the Bellemead Industrial Park on the west. As indicated below, the Planning Area consists largely of the inactive Town of Lyndhurst Landfill

Surrounding land uses include warehousing and office uses to the west; vacant wetland to the east and north; and the inactive Avon landfill to the south.

Access to the Planning Area is from Valley Brook Avenue which bisects the site an east\west direction. There currently are no existing or proposed rail or bus mass transit facilities available to the site. However, bus service may be available from bus routes that serve nearby areas. Municipal water and sewer facilities are available to the Area from the Jersey City Dept. of Water and the BCUA, respectively.

B. <u>Projected Land Uses</u>

The screening document proposed 2,526,480 sq. ft. of primary office space, 435,600 sq. ft. of commercial space, and 1,080 residential units for this Planning Area.

C. <u>Planning Analysis</u>

The subject Planning Area is characterized by the following exclusionary criteria:

TIER I CRITERIA

I-1 <u>Severe Land Contamination:</u> This old landfill has not been studied to determine the extent of hazardous material contamination. There is currently no program for closure or clean-up activities.

TIER II CRITERIA

II-1 <u>Poor Accessibility:</u>

d) <u>Poor Mass Transportation Opportunities:</u> There are no existing or proposed rail mass transit facilities. Nearby bus routes along Valley Brook Avenue could be made available to the Area.

II-3 <u>Incompatible Land Uses:</u> As stated above, the Area is an inactive landfill surrounded by contiguous landfill areas and warehouse uses.

II-6 <u>Engineering/Financial Constraints:</u> The development of landfills, assuming the absence of health hazards, require extraordinary site preparation and infrastructure costs.

TIER III CRITERIA

III-2 <u>Poor Relationship To Open Space/Recreation:</u> The Area has an ineffective relationship to open space/recreation areas both within the HMD and in adjacent jurisdictions.

III-4 <u>Lack Of Visual Cohesiveness:</u> The projected land uses in the Planning Area will have a negative impact on overall HMD viewsheds including views from in-District locations to areas outside the District and from areas outside the District to locations in this Planning Area,and views across the District.

D. Planning Recommendations

Planning Area I should be removed from further consideration as a Planning Area.(See Planning Analysis for Planning Area M in the Upland Growth Land Management Alternative). The Area is unsuitable for development uses at this time and until such time it can be demonstrated that no adverse effects would result from landfill development. Given the existing physical conditions described above and the exclusionary criteria identified, it is not deemed appropriate or feasible to assign any primary or secondary office\warehouse land uses to this Planning Area under the Dispersed Development Areas or any other Land Management Alternative. Therefore, this Area has been eliminated from further EIS evaluation.

11. Planning Area J

A. Existing Conditions

The Planning Area is located in the municipality of Kearny and is 37 acres in size. It generally is bounded by Route 280 on the east and south; the Newark-Harrison Turnpike to the north; and the Kingsland Freight Rail Line on the west. The site currently contains industrial uses.

Surrounding land uses include out-of-district existing industrial development to the west; an inactive landfill to the east; the Kearny freshwater marsh and another inactive landfill area to the north; and Route 280 and NJ Transit Rail Lines to the south.

Access to the site is available from the Newark-Harrison Turnpike. There currently are no existing or proposed rail or bus mass transit facilities available to the site. However, bus service may be available from nearby regional routes.

Municipal water and sewer facilities are available to the Area from the Passaic Valley Water Commission and the Passaic Valley Sewerage Commission.

B. Projected Land Uses

The screening document proposed 805,860 sq. ft. of regional commercial space for this Planning Area.

C. Planning Analysis

The subject Planning Area is characterized by the following exclusionary criteria:

TIER I CRITERIA

No Tier I criteria appear to be present.

TIER II CRITERIA

II-1 Poor Accessibility:

a) Highway Capacity: The road and highway system west of the Planning Area, which is outside the District, cannot reasonably be improved to accommodate the extent of traffic projected from the Planning Area.

c) Maximum Direct Impact To Local Road System: Given the existing traffic volumes in proximity to the Area, the impact of the projected land uses would be significant on the local road system west of the Planning Area.

II-5 Lack Of Synergistic Effects:

a) Community Of Place: The Planning Area does not provide the opportunity to achieve community of place attributes because it is isolated from other Planning Areas.

TIER III CRITERIA

III-2 Poor Relationship To Open Space/Recreation: The Area has an ineffective relationship to open space/recreation areas both within the HMD and in adjacent jurisdictions.

D. Planning Recommendations

Planning Area J, which is included in Planning Area I in the Redevelopment Land Management Alternative, should be eliminated as a Planning Area. Based on the above exclusionary criteria, this Area is more suitable for inclusion in the Satellite Area category for secondary office\warehouse development. (See Planning Analysis for Planning Area I in the Redevelopment Land Management Alternative). Given the existing physical conditions described above and the exclusionary criteria identified, it is not deemed appropriate or feasible to assign any other primary (residential) land uses to this Planning Area. Therefore, this Area is retained as a Satellite Area for further EIS evaluation as part of the Hybrid Plan.

12. Planning Area K

A. Existing Conditions

The Planning Area is located in the municipality of Kearny and is 67 acres in size. It generally is bounded by the Hackensack River on the east and north; a NJ Transit Commuter Rail Line on the south; and unimproved vacant land on the west. The site is currently vacant and is known to be contaminated with coke processing by-products.

Surrounding land uses include remnants of a heavily industrialized area to the west; the Public Service Electric & Gas Company Jersey City Generating Station power plant across the Hackensack River to the east; an inactive landfill across the river to the north; and existing heavy industrial uses to the south.

Access to the Planning Area is from Fishhouse Road from the south of the tract and through Route 7 between Harrison and Jersey City. There currently are no existing or proposed rail or bus mass transit facilities available to the site.

Water and sewer facilities are presently not available to the Area.

B. Projected Land Uses

The screening document proposed 609,840 sq. ft. of commercial space and 1,698,840 sq. ft. of primary office space for this Planning Area.

C. Planning Analysis

The subject Planning Area is characterized by the following exclusionary criteria:

TIER I CRITERIA

I-1 Severe Land Contamination: The Planning Area is known to be contaminated with a variety of coking and processing chemical residues. Currently there are no plans for remediation and clean-up activities.

I-2 Ownership Difficulties/HMDC Jurisdictional Issues: The subject Planning Area is owned by the Hudson County Improvement Authority and at one time was proposed as the site for the Hudson County Solid Waste Resource Recovery Facility.

TIER II CRITERIA

II-1 Poor Accessibility:

a) Highway Capacity: Access to the Planning Area is restricted by the only one access point through an elevated rail line traversing the southern portion of the site, impairing the ability to support the projected land uses for this Area.

b) Direct Highway Impact: The Planning Area must use the regional highway system as its primary means of access without existing or future alternative secondary access opportunities that can be reasonably be expected to be built.

d) Poor Mass Transportation Opportunities: As indicated above, there are insufficient opportunities for rail mass transportation facilities to serve the Area. Access to the Area by bus would also be difficult because of physical constraints (railroad bridge height, etc.)

II-2 Lack Of Efficient Public Services: Sewer and water facilities currently do not directly serve the site.

II-3 Incompatible Land Uses: Since regional shopping facilities and primary office space are projected for this Area, the surrounding heavy industrial uses and the poor accessibility create market impediments.

II-5 Lack Of Synergistic Effects:

a) Community Of Place: The Planning Area does not provide the opportunity to achieve community of place attributes because it is isolated from other Planning Areas.

II-6 Engineering/Financial Constraints: The development of contaminated land, assuming the absence of health hazards, require extraordinary site preparation and engineering costs.

D. Planning Recommendations:

Planning Area K, which includes Planning Area R from the Upland Growth Land Management Alternative, should be eliminated as a Planning Area. (See Planning Analysis for Planning Area R in the Upland Growth Land Management Alternative). The Area is unsuitable for development uses at this time and until such time it can be demonstrated that no adverse effects would result from development of contaminated land. Given the existing physical conditions described above and the exclusionary criteria identified, it is not deemed appropriate or feasible to assign any other primary (residential) land uses to this Planning Area under the Dispersed Development Areas or any other Land Management Alternative. In addition, there are no remediation plans and, therefore, the Area is eliminated from further EIS evaluation.

13. Planning Area L

A. Existing Conditions

The Planning Area is located in the municipality of Secaucus and is 32 acres in size. It generally is bounded by Penhorn Creek on the east; the NJ Transit Main Line Rail Line on the south; the NJ Transit Bergen Rail Line to the north; and New County Road on the west. The site currently contains unimproved vacant land, wetland and existing warehousing and industrial development.

Surrounding land uses include the Castle Road Outlet Center and warehousing uses to the west; the Conrail Croxton Yards to the east; Public Service Electric & Gas Company Facilities and an inactive landfill to the south; and existing warehousing uses to the north.

Access to the Planning Area is from New County Road which bisects the Planning Area in a north\south direction. Currently no rail mass transit or bus services are provided to the site but both are proposed. (See Planning Recommendation below).

Municipal water and sewer facilities currently do not directly serve the Area however, service could be provided from the Hackensack Water Company and the Secaucus MUA, respectively.

B. Projected Land Uses

The screening document proposed 4,878,720 sq. ft. of primary office space for this Planning Area.

C. Planning Analysis

The subject Planning Area is characterized by the following exclusionary criteria:

TIER I CRITERIA

No Tier I criteria appear to be present.

TIER II CRITERIA

II-1 Poor Accessibility:

a) Highway Capacity: The road and highway system within and adjacent to the Planning Area cannot reasonably be improved to accommodate the extent of traffic projected from the Planning Area (see Planning Recommendation).

II-2 Lack Of Efficient Public Services: Sewer and water facilities currently do not directly serve the site.

II-5 Lack Of Synergistic Effects:

b) Disproportionate Densities: Although office space is appropriate for this Planning Area, consideration should be given to adjusting the Floor Area Ratio (FAR 4.0) (see Planning Recommendation).

TIER III CRITERIA

III-2 Poor Relationship To Open Space/Recreation: The Area has an ineffective relationship to open space/recreation areas both within the HMD and in adjacent jurisdictions.

D. Planning Recommendations

Planning Area L, which is included in Planning Area D in the Growth Center Land Management Alternative, should be retained as a Planning Area. The projected office use is appropriate for this Planning Area and should be considered for further evaluation in the EIS. (See Planning Analysis for Planning Area D in the Growth Center Land Management Alternative). The projected land use for this Area is based on implementation of mass transit projects such as the Secaucus Transfer Station and the proposed NJ Turnpike interchange which will provide adequate rail and roadway transportation improvements. Given the existing physical conditions described above and the exclusionary criteria identified, it is not deemed appropriate or feasible to assign any other primary (commercial, residential) or secondary office/warehouse land uses to this Planning Area. Therefore, the Area is retained as a Planning Area for further EIS evaluation as part of the Hybrid Plan.

DISPERSED DEVELOPMENT AREAS
LAND MANAGEMENT ALTERNATIVE

6\15\95

PLANNING AREAS	A	B	C	D	E	F WEST	F EAST	G	H	I	J	K	L
EXCLUSIONARY CRITERIA													
TIER I													
I-1 Contaminated Land					x					x		x	
I-2 Ownership/Jurisdictional												x	
I-3 Current Development													
TIER II													
II-1 Poor Accessibility													
a. Highway Capacity					x		x		x		x	x	x
b. Direct Highway Impact				x								x	
c. Impact to Local Road							x				x		
d. Poor Mass Transportation	x		x							x		x	
II-2 Lack Of Public Services												x	x
II-3 Incompatible Land Uses										x		x	
II-4 Insufficient Scale			x										
II-5 Lack Of Synergistic Effects													
a. Community of Place	x	x		x	x		x				x	x	
b. Disproportionate Densities			x										x
c. Poor Jobs/Housing Linkage	x	x						x					
II-6 Engineering/Financial Constraints					x					x		x	
TIER III													
III-1 Lack of TDM/TCM Implementation			x					x					
III-2 Poor Relationship to Open Space/Recreation		x		x	x		x	x		x	x		x
III-3 Capacity to Foster Cultural Facilities	x		x					x					
III-4 Lack of Visual Cohesiveness										x			
RECOMMENDATION *													
Retain as a Primary Planning Area	x	x	x	x	x	x	x	x	x				x
Review as a Satellite Area													
Secondary Office/Warehouse											x		
Eliminate from Further EIS Evaluation									x	x		x	

* may include only a portion of a planning area

ddacrtia.wk1

HIGHWAY CORRIDORS

1. Planning Area A

A. Existing Conditions

The Planning Area is located in the municipality of Carlstadt and is 32 acres in size. It generally is bounded by the NJ Turnpike 18W interchange on the east; Paterson Plank Road on the south; wetlands on the north; and existing development on the west. The Area is currently vacant wetland.

Surrounding land uses include existing warehouse uses to the west; wetlands to the east and north; and the NJSEA Brendan Byrne Arena to the south.

Access to the Planning Area is from Paterson Plank Road and Michelle Place. There currently are no existing rail mass transit or bus services available to the site. However, bus facilities have been proposed.

Water and sewer facilities are available to the Area from the Hackensack Water Company and the BCUA, respectively.

B. Projected Land Uses

The screening document proposed 1,280 residential units for this Planning Area.

C. Planning Analysis

The subject Planning Area is characterized by the following exclusionary criteria:

TIER I CRITERIA

No Tier I criteria appear to be present.

TIER II CRITERIA

II-1 Poor Accessibility:

d) Poor Mass Transportation Opportunities: There are no available rail mass transportation facilities, either existing or proposed. However, bus transportation may be available from nearby regional routes.

II-4 Insufficient Scale: The Planning Area and surrounding areas cannot achieve sufficient population density to maximize district-wide land use efficiencies.

II-5 Lack of Synergistic Effects:

a) Community Of Place: The Planning Area and surrounding land uses do not interact sufficiently to provide the opportunity to achieve community of place attributes.

TIER III CRITERIA

III-1 Lack Of TDM/TCM Implementation: The opportunity to implement TDM/TCM programs would be highly problematic given the scale of the single land use that can be proposedfor the Area.

III-2 Poor Relationship To Open Space/Recreation: The Area has an ineffective relationship to open space\recreation areas both within the HMD and in adjacent jurisdictions.

III-3 Capacity To Foster Cultural Facilities: The potential to foster the development of cultural facilities is not available given the small size and single use that can be projected for the Area.

D. Planning Recommendations

Based on the above exclusionary criteria, the projected residential use is not appropriate for this Planning Area. However, Planning Area A should be considered for other primary (office, commercial) land uses. (See Planning Analysis for Planning Area A (West) in the Growth Center Land Management Alternative and Planning Area B in the Dispersed Development Areas Land Management Alternative). Therefore, this Planning Area which also incorporates Planning Areas retained from other Alternatives, is retained for further EIS evaluation as part of the Hybrid Plan.

2. Planning Area B

A. Existing Conditions

The Planning Area is located in the municipalities of Carlstadt and East Rutherford and is 78 acres in size. It generally is bounded by the Hackensack River on the east; wetlands on the south and north; and the NJ Turnpike 18W interchange on the west. This Planning Area currently contains vacant wetland; "LT's Golf and Marina Center", which is a temporary use; and other low intensity waterfront related uses.

Surrounding land uses include the NJSEA Brendan Byrne Arena and wetlands to the west; existing industrial and residential development across the Hackensack River to the east in Secaucus; the Transcontinental Gas and Pipeline Company Natural Gas Facility to the north; and wetlands to the south.

Access to the Planning Area is from Paterson Plank Road which bisects the site in an east\west direction. There currently are no existing or proposed rail mass transit or bus services to the site. However, bus facilities have been proposed for a nearby location.

Water and sewer facilities are available to the Area from the Hackensack Water Company and the BCUA, respectively.

B. Projected Land Uses

The screening document proposed 3,120 residential units for this Planning Area.

C. Planning Analysis

The subject Planning Area is characterized by the following exclusionary criteria:

TIER I CRITERIA

I-2 Ownership Difficulties/HMDC Jurisdictional Issues: The southern portion of this Planning Area, adjacent to Route 3, is not accessible. Access would require the traversing of properties owned by the Transcontinental Gas & Pipeline Company and the NJDEPE. The property owned by the NJDEPE was acquired through the Green Acres Program and would preclude access rights-of-way for private development. As such, these properties are not available. This criteria does not, however, affect the properties adjacent to Paterson Plank Road.

TIER II CRITERIA

II-1 Poor Accessibility:

d) Poor Mass Transportation Opportunities: There are no available rail mass transportation facilities, either existing or proposed. Bus service may be available from nearby regional routes.

II-5 Lack of Synergistic Effects:

b) Disproportionate Densities: The Planning Area exhibits high densities that do not reflect existing residential development adjacent to waterfront areas.

c) Poor Jobs To Housing Linkage: The lack of possible linkages between the subject Area with other Planning Areas limits opportunities to achieve meaningful jobs to housing linkages.

TIER III CRITERIA

III-4 Lack of Visual Cohesiveness: The projected land use in the Planning Area will have a negative impact on overall HMD viewsheds since it will be an isolated development area surrounded by wetland and the Hackensack River.

D. Planning Recommendations

Those parcels unaffected by Criteria I-2 should be retained for further evaluation in the EIS. The projected residential use is appropriate for this Area and consideration should be given to adjusting the densities to reflect existing development patterns adjacent to waterfront areas. (See the Planning Analysis for Planning Area C in the Upland Growth Land Management Alternative; Planning Area A (East) in the Growth Center Land Management Alternative; and Planning Area C in the Dispersed Development Areas Land Management Alternative). Those parcels affected by the Criteria I-2 should be eliminated from further consideration in the development of a Hybrid Plan. Given the existing physical conditions described above and the exclusionary criteria identified, it is not deemed appropriate or feasible to assign any other primary (office, commercial) or secondary office\warehouse land uses to this Planning Area. Therefore, the 17 acres affected by Criteria I-2 are eliminated and the remaining 61 acres, which also incorporate Planning Areas retained from other alternatives, are retained for further EIS evaluation as part of the Hybrid Plan.

3. Planning Area C

A. Existing Conditions

The Area is located in the municipality of East Rutherford and is the site of the New Jersey Sports and Exposition Authority (NJSEA) Arena. The Area generally is bounded in the north by Paterson Plank Road; in the south by Route 3; in the east by the New Jersey Turnpike western spur; and in the west by Route 120. The Area consists of 140 acres which includes the building envelope for the Brendan Byrne Arena and its parking facilities. The NJSEA previously has proposed office development on a 12 acre portion of the 140 acre site.

Surrounding land uses include the existing Giants Stadium to the west; vacant unimproved land east of the NJ Turnpike; warehouse uses and vacant land to the north; and radio towers and Route 3 to the south.

Access to the Planning Area consists of excellent regional roadways. Presently, no regularly scheduled daily mass transportation facilities serve the site. Public bus transportation serves the site only on days that events take place at NJSEA facilities. There currently are no existing or proposed rail mass transit facilities available to the Area.

Water and sewer facilities are available to the Area from the Hackensack Water Company and the BCUA, respectively.

B. Projected Land Uses

The screening document proposed 1,800,000 sq. ft. of primary office space for this Planning Area. This represents an increase of 1,000,000 sq. ft. above the NJSEA proposal to construct 800,000 sq. ft. of primary office space on a 12 acre site within the Planning Area (see the Upland Growth Land Management Alternative, Planning Area B).

C. Planning Analysis

The subject Planning Area is characterized by the following exclusionary criteria:

TIER I CRITERIA

I-2 Ownership Difficulties/HMDC Jurisdictional Issues: HMDC has limited jurisdiction over NJSEA lands. Also, the NJSEA has withdrawn a proposal to develop a 12 acre parcel for primary office use at this time. It is anticipated that a new development plan for this Area will be proposed in the near future which will incorporate the 12 acres of land at the Arena site.

TIER II CRITERIA

No Tier II criteria appear to be present.

TIER III CRITERIA

No Tier III criteria appear to be present.

D. Planning Recommendations

Although this Planning Area meets the Tier I, criteria I-2 it is reasonable to retain the proposed land use for this Planning Area as it may reflect future NJSEA activities. Such uses could be linked to the sports complex surrounding the Planning Area. Also, an adjustment to the Floor Area Ratio is deemed appropriate in order to be consistent with existing and projected office development patterns and market conditions in the District. Accordingly, primary office space is proposed for this Planning Area for further EIS evaluation as part of the Hybrid Plan. This Planning Area was also reviewed and retained under the Upland Growth Land Management Alternative Area B. Therefore, it is recommended that the 12 acres within this Area the NJSEA proposed to utilize should be retained as a Planning Area for further EIS evaluation as part of the Hybrid Plan.

4. Planning Area D

A. Existing Conditions

The Planning Area is located in the municipality of Rutherford and is 22 acres in size. It generally is bounded by Berry's Creek on the east; Route 3 on the south; existing development to the north; and the Route 3 Service Road on the west.

Surrounding land uses include existing warehouse uses to the west and north; the NJSEA Sports Complex to the east; and existing office development to the south. The Planning Area currently contains a secondary office and distribution use within a single structure.

Access to the Planning Area is from Veterans Boulevard and the Route 3 Service Road. This Area is adjacent to the NJ Transit Bergen Rail Line but, is approximately 3/4 of a mile from the Rutherford Station. Bus service is available from existing nearby locations. There are no existing or proposed rail mass transit facilities available to the Area.

Water and sewer facilities are available to the Area from the Hackensack Water Company and the BCUA, respectively.

B. Projected Land Uses

The screening document proposed 958,320 sq. ft. of primary office space for this Planning Area.

C. Planning Analysis

The subject Planning Area is characterized by the following exclusionary criteria:

TIER I CRITERIA

No Tier I criteria appear to be present.

TIER II CRITERIA

II-5 Lack of Synergistic Effects:

a) Community Of Place: The Planning Area and surrounding land uses do not interact sufficiently to provide the opportunity to achieve community of place attributes.

TIER III CRITERIA

III-2 Poor Relationship To Open Space\Recreation: The Area has an effective relationship to open space\recreation areas both within the HMD and in adjacent jurisdictions.

D. Planning Recommendations

Planning Area D should be retained as a Planning Area. The projected land use for this Area is appropriate and should be utilized in the development of a Hybrid Plan. Consideration should be given to adjusting the projected Floor Area Ratio to more accurately reflect existing and projected office development and market conditions in the HMD. Given the existing physical conditions described above and the exclusionary criteria identified, it is not deemed appropriate or feasible to assign any other primary (commercial, residential) land uses to this Planning Area. Therefore, this Area is retained for further EIS evaluation as part of the Hybrid Plan.

5. Planning Area E

A. Existing Conditions

The Planning Area is located in the municipality of East Rutherford and is 65 acres in size. It generally is bounded by the NJ Turnpike 16W interchange on the east; Berry's Creek Canal on the south; Route 3 to the north; and Route 3 and Berry's Creek on the west. The Area consists of vacant upland and wetland.

Surrounding land uses include the NJ Sports Complex to the north; vacant wetland to the south and east; and warehouse and office uses to the west. A portion of the Planning Area currently contains an existing office building and a hotel.

Access to the Planning Area is from the Route 3 Service Road. There currently are no existing or proposed rail mass transit services to the Planning Area. Bus service is available to existing nearby development in this Area and presumably would be available to the remaining portions of the Planning Area.

Water and sewer facilities are available to the Area from the Hackensack Water Company and the BCUA, respectively.

B. Projected Land Uses

The screening document proposed 4,247,100 sq. ft. of primary office space for this Planning Area.

C. Planning Analysis

The subject Planning Area is characterized by the following exclusionary criteria:

TIER I CRITERIA

No Tier I Criteria appear to be present.

TIER II CRITERIA

II-1 Poor Accessibility:

b) Direct Highway Impact: The Planning Area must utilize the regional highway system as its primary means of access without existing or future alternative secondary access opportunities that reasonably can be expected to be built.

II-5 Lack of Synergistic Effects:

b) Disproportionate Densities: The Planning Area exhibits high densities for office space (1.5 FAR) that do not reflect existing or projected HMD market conditions.

TIER III CRITERIA

III-2 Poor Relationship To Open Space\Recreation: The Area has an effective relationship to open space\recreation areas both within the HMD and in adjacent jurisdictions.

D. Planning Recommendations

Planning Area E should be retained as Planning Area. The projected office use is appropriate for the Area and should be utilized in the development of a Hybrid Plan. (See Planning Analysis for Planning Area C in the Growth Center Land Management Alternative and Planning Area D in the Dispersed Development Areas Land Management Alternative). Consideration should be given to adjusting the Floor Area Ratio to be more consistent with existing and projected office development and market conditions within the HMD. Given the existing physical conditions described above and the exclusionary criteria identified, it is not deemed appropriate or feasible to assign any secondary office\warehouse land uses to this Planning Area. Therefore, this Planning Area which also incorporates Planning Areas retained from other Alternatives, is retained as a Planning Area for further EIS evaluation as part of the Hybrid Plan.

5. Planning Area F

A. Existing Conditions

The Planning Area is located in the municipality of East Rutherford and is 216 acres in size. It generally is bounded by the NJ Turnpike on the east; the NJ Transit Bergen Rail Line on the south and west; and Berry's Creek Canal to the north. The Area currently is vacant wetland.

Surrounding land uses include vacant wetlands and an inactive municipal landfill to the south and east; the NJ Turnpike 16W interchange to the north; and the Hackensack River to the east.

There currently are no rail mass transit or bus services available to the site. However, both types of services are proposed for the Area.

Water and sewer facilities currently do not directly serve the Area. However, services could presumably be provided from existing nearby lines operated by the Hackensack Water Company and the BCUA, respectively.

B. Projected Land Uses

The screening document proposed 8,640 residential units for this Planning Area.

C. Planning Analysis

The subject Planning Area is characterized by the following exclusionary criteria:

TIER I CRITERIA

No Tier I criteria appear to be present.

TIER II CRITERIA

II-1 Poor Accessibility:

a) Highway Capacity: The road system adjacent to the Planning Area cannot reasonably be improved to accommodate the extent of traffic projected from the Planning Area.

b) Direct Highway Impact: The Planning Area must utilize the regional highway system as its primary means of access without existing or future alternative secondary access opportunities that can reasonably be expected to be built.

TIER III CRITERIA

III-2 Poor Relationship To Open Space\Recreation: The Area has an effective relationship to open space\recreation areas both within the HMD and in adjacent jurisdictions.

III-4 Lack of Visual Cohesiveness: The projected land use in the Planning Area will have a negative impact on overall HMD viewsheds.

D. Planning Recommendations

Planning Area F, which includes part of Area C from the Growth Center Land Management Alternative and part of Area E from the Dispersed Development Areas Land Management Alternative, should be retained as a Planning Area. The projected residential use is appropriate for the Area and should be considered in the development of a Hybrid Plan. However, consideration should be given for other primary land uses. (See Planning Analysis for Planning Area C in the Growth Center Land Management Alternative and Planning Area E in the Dispersed Development Areas Land Management Alternative). Therefore, this Planning Area which also incorporates Planning Areas retained from other Alternatives, is retained as a Planning Area for further EIS evaluation as part of the Hybrid Plan.

7. Planning Area G

A. Existing Conditions

The Planning Area is located in the municipality of Rutherford and is 72 acres in size. It generally is bounded by the NJ Transit Bergen Rail Line on the east; vacant wetland on the south; Route 3 to the north; and existing office development on the west. The Area currently consists of vacant wetland; an inactive landfill; and an existing office building. The office building and the inactive landfill consist of approximately 25 acres. Berry's Creek also traverses the center of the Planning Area.

Surrounding land uses include office and warehouse uses to the west and north; and vacant wetland to the east and south. Also, to the south is an inactive municipal landfill.

Access to the Planning Area is from the Route 3 Service Road which can be accessed from both Route 3 and Route 17. There currently are no rail mass transit or bus services available to this site although both are proposed.

Water and sewer facilities are available to the Area from the Hackensack Water Company and the BCUA, respectively.

B. Projected Land Uses

The screening document proposed 740,520 sq. ft. of primary office space and 2,200 residential units for this Planning Area.

C. Planning Analysis

The subject Planning Area is characterized by the following exclusionary criteria:

TIER I CRITERIA

I-1 Severe Land Contamination: Approximately 12 acres of this Planning Area consists of an inactive municipal landfill. To date no studies have been undertaken to determine the extent of possible contamination. There currently is no program for closure or clean-up activities.

I-3 Current Land Development: A 13 acre portion of this Planning Area currently has existing viable development that would not meet the criteria necessary for redevelopment.

TIER II CRITERIA

II-1 Poor Accessibility:

a) Highway Capacity: The road system adjacent to the Planning Area cannot reasonably be improved to accommodate the extent of traffic projected from the Planning Area.

b) Direct Highway Impact: The Planning Area must utilize the regional highway system as its primary means of access without existing or future alternative secondary access opportunities that can reasonably be expected to be built.

II-6 Engineering/Financial Constraints: The development of landfills, assuming the absence of health hazards, require extraordinary site preparation and infrastructure costs. In addition, the costs associated with razing existing structures in good condition would be prohibitive and would qualify as a financial constraint to new development.

TIER III CRITERIA

III-2 Poor Relationship To Open Space\Recreation: The Area has an ineffective relationship to open space\recreation areas both within the HMD and in adjacent jurisdictions.

D. Planning Recommendations

Planning Area G should be retained for use in the Hybrid Plan. Planning Area G, is included as part of Area C from the Growth Center Land Management Alternative and part of Area E from the Dispersed Development Areas Land Management Alternative. (See Planning Analysis for Planning Area C in the Growth Center Land Management Alternative and Planning Area E in the Dispersed Development Areas Land Management Alternative). Given the existing physical conditions described above and the exclusionary criteria identified, it is not deemed appropriate or feasible to assign any secondary office/warehouse land uses to this Planning Area. Therefore, the existing office building consistent with current zoning (13 acres) has been eliminated and the remaining 59 acres are retained for further EIS evaluation as part of the Hybrid Plan.

8. Planning Area H

A. Existing Conditions

The Planning Area is located in the municipality of Secaucus and is 57 acres in size. It generally is bounded by Route 3 and existing development on the east; existing development on the south; Paterson Plank Road to the north; and the Hackensack River on the west.

Surrounding land uses include existing residential and commercial uses to the east; existing industrial and residential uses to the north; vacant wetland to the west across the Hackensack River; and existing commercial, office and residential uses to the south. The Planning Area currently consists of unimproved vacant upland, commercial\retail uses, and office uses.

Access to the Planning Area is from Meadowlands Parkway which bisects the site in a north\south direction and Paterson Plank Road from the north. There are no existing or proposed rail mass transit services available to the site. Bus service does access the southern portion of this Planning Area and could presumably serve the remaining portion of the site.

Water and sewer facilities are available to the Area from the Hackensack Water Company and the Secaucus MUA, respectively.

B. Projected Land Uses

The screening document proposed 1,524,600 sq. ft. of primary office space and 880 residential units for this Planning Area. This Area is utilized in the absence of more suitable areas for development that will meet HMDC need projections under the Highway Corridors Land Management Alternative.

C. Planning Analysis

The subject Planning Area is characterized by the following exclusionary criteria:

TIER I CRITERIA

I-2 Ownership Difficulties\ HMDC Jurisdictional Issues: A parcel located in the central portion of the Planning Area is currently owned and utilized by the Secaucus Department of Public Works.

I-3 Current Land Development: The northern portion of this Planning Area is affected by the proposed extension of Meadowlands Parkway (see Upland Growth, Planning Area E and Redevelopment, Planning Area N). In addition, the southern portion of Planning Area H includes an office complex that was approved by the HMDC in June 1988. The need projections and economic survey for future growth for the District was completed in 1990. Therefore, this project which consists of 400,000 sq. ft. of office space was not included in the economic forecasts and is outside of the HMDC growth projections. In addition, this Area includes the 5 acres redeveloped at the initiative of the owner as described in the analysis for Planning Area E in the Upland Growth Alternative.

TIER II CRITERIA

II-5 Lack of Synergistic Effects:

a) Community Of Place: The Planning Area and surrounding land uses do not interact sufficiently to provide the opportunity to achieve community of place attributes.

II-6 Engineering/Financial Constraints: The extension of Meadowlands Parkway into the northern portion of this Planning Area would severely diminish development potential.

TIER III CRITERIA

No Tier III criteria appear to be present.

D. Planning Recommendations

Based on the above exclusionary criteria, specifically Criteria I-2 and I-3, Planning Area H should be eliminated as a Planning Area. (See the Planning Analysis for Planning Areas E and N in the Redevelopment Land Management Alternative and Planning Area E in the Upland Growth Land Management Alternative). Given the existing physical conditions described above and the exclusionary criteria identified, it is not deemed appropriate or feasible to assign any other primary (commercial) or secondary office/warehouse land uses to this Planning Area under the Highway Corridors Land Management Alternative. Therefore, the 52 acres affected by Tier I Criteria have been eliminated and the 3 acres described in the Redevelopment Area E analysis are retained as a Satellite Area for further EIS evaluation as part of the Hybrid Plan.

9. Planning Area I

A. Existing Conditions

The Planning Area is located in the municipality of Secaucus and is 17 acres in size. It generally is bounded by Plaza Centre Road on the east; Paterson Plank Road and old Route 153 on the south; and Route 3 to the north and west. The Planning Area currently consists of a mix of viable commercial and industrial buildings in good condition. These buildings include a shopping center and related parking, a bank, a trucking terminal, gas stations and restaurants.

Although this Planning Area is within proximity to the Route 3 corridor, it is primarily identified as a part of the older established portion of Secaucus. The type of existing development and scale of the built environment is such that a small town community appearance is apparent.

Surrounding land uses include industrial uses to the west; a mix of commercial and residential uses to the east; residential development to the north; and a mix of commercial and residential uses to the south.

Access to the Planning Area is from Paterson Plank Road; Plaza Centre Road and a series of local roads in the "Downtown" area of Secaucus. There currently are no existing or proposed rail mass transit services to the site. The Planning Area currently has bus service available.

Water and sewer facilities are available to the Area from the Hackensack Water Company and the Secaucus MUA, respectively.

B. Projected Land Uses

The screening document proposed 370,260 sq. ft. of commercial space for this Planning Area. This Area is utilized in the absence of more suitable areas for development that will meet HMDC need projections in the Highway Corridors Land Management Alternative.

C. Planning Analysis

The subject Planning Area is characterized by the following exclusionary criteria:

TIER I CRITERIA

I-3 Current Land Development: This Planning Area currently has existing viable development that would not meet the criteria necessary for redevelopment.

TIER II CRITERIA

II-1 Poor Accessibility:

c) Maximum Direct Impact To Local Road System: This Planning Area has access to several roadways which are located within the downtown Secaucus business district. The ability to increase road capacity is limited by existing buildings, on street parking and restrictive rights-of-way.

II-5 Lack of Synergistic Effects:

a) Community Of Place: The Planning Area and surrounding land uses do not interact sufficiently to provide the opportunity to achieve community of place attributes. The Planning Area consists of small scale commercial/ retail uses and adjoining residential neighborhoods. The retail is neighborhood/community based and is not oriented to regional shopping needs. It does not serve projected new residential or office markets and lacks synergy with these uses.

II-6 Engineering/Financial Constraints: This Planning Area is bisected by Paterson Plank Road which is a County roadway accommodating significant volumes of traffic. The opportunity to develop this site for the projected land use is severely impacted by this physical constraint. In addition, the costs associated with razing existing structures in good condition would be prohibitive and would qualify as a financial constraint to new commercial development.

TIER III CRITERIA

III-3 Capacity To Foster Cultural Facilities: The size and type of use proposed for the Planning Area is insufficient to foster cultural facilities of a regional nature.

D. Planning Recommendations

Planning Area I should be eliminated as a Planning Area. Based on the above exclusionary criteria and the physical constraints related to the local road, this Planning Area should be removed from further consideration in the EIS evaluation. Given the existing physical conditions described above and the exclusionary criteria identified, it is not deemed appropriate or feasible to assign any other primary (office, residential) or secondary office/warehouse land uses to this Planning Area under the Highway Corridors or any other Land Management Alternative. Therefore, the Area is eliminated from further EIS evaluation.

10. Planning Area J

A. Existing Conditions

The Planning Area is located in the municipality of Secaucus and is 10 acres in size. It generally is bounded by the NJ Turnpike eastern spur on the east; Route 3 on the south; vacant wetlands on the north; and existing commercial and retail development on the west. The site currently contains a temporary commercial use.

Surrounding land uses include the Mall at Mill Creek to the west; Harmon Meadows Mall to the east; vacant wetlands to the north; and existing commercial and office development to the south.

Access to the Planning Area is from Route 3 and the internal roads associated with the adjacent shopping centers. There currently are no existing or proposed rail mass transit services available to this area however, bus service is available.

Water and sewer facilities are available to the Area from the Hackensack Water Company and the Secaucus MUA, respectively.

B. Projected Land Uses

The screening document proposed 43,560 sq. ft. of commercial space and 348,480 sq. ft. of primary office space for this Planning Area.

C. Planning Analysis

The subject Planning Area is characterized by the following exclusionary criteria:

TIER I CRITERIA

No Tier I criteria appear to be present.

TIER II CRITERIA

No Tier II criteria appear to be present.

TIER III CRITERIA

III-2 Poor Relationship To Open Space\Recreation: The Area has an ineffective relationship to open space\recreation areas both within the HMD and in adjacent jurisdictions.

III-3 Capacity To Foster Cultural Facilities: The size and type of uses proposed for the Planning Area are insufficient to foster cultural facilities.

D. Planning Recommendations

Planning Area J should be retained as a Planning Area and developed to reflect the existing development of the surrounding area. The projected land uses are appropriate for the Area and should be retained for the development of a Hybrid Plan. This should reflect an adjustment to the office Floor Area Ratio and the removal of the projected commercial space described above. Given the existing physical conditions described above and the exclusionary criteria identified, it is not deemed appropriate or feasible to assign any other primary (residential) or secondary office/warehouse land uses to this Planning Area under the Highway Corridor Land Management Alternative. Therefore, this Area is retained as a Planning Area for further EIS evaluation as part of the Hybrid Plan.

11. Planning Area K (North)

A. Existing Conditions

The Planning Area is located in the municipality of Secaucus and is 33 acres in size. It generally is bounded by Chromakill Creek on the east; office and commercial uses on the south; vacant wetland to the north; and the NJ Turnpike eastern spur on the west. The Area is currently unimproved vacant upland.

Surrounding land uses include vacant wetland to the west, east and north; and the Harmon Meadows Mall to the south.

Access to the Planning Area is from Route 3 and the internal road network for the shopping center. There currently are no existing rail mass transit services provided to the site however, proposals have been made from the Hudson Waterfront Transit Plans. Bus service is currently available to adjacent areas and presumably would be available to the Planning Area.

Water and sewer facilities are available to the Area from the Hackensack Water Company and the Secaucus MUA, respectively.

B. Projected Land Uses

The screening document proposed 1,320 residential units for this Planning Area.

C. Planning Analysis

The subject Planning Area is characterized by the following exclusionary criteria:

TIER I CRITERIA

No Tier I criteria appear to be present.

TIER II CRITERIA

No Tier II criteria appear to be present.

TIER III CRITERIA

No Tier III criteria appear to be present.

D. Planning Recommendations

Planning Area K (North) should be retained as a Planning Area and used in the development of a Hybrid Plan. The projected land use is appropriate, however, consideration should be given to other primary (office, commercial) land uses for further evaluation in the EIS. (See the Planning Analysis for Planning Area G (West) in the Upland Growth Land Management Alternative and Planning Area B (East) in the Growth Center Land Management Alternative). Given the existing physical conditions described above and the exclusionary criteria identified, it is not deemed appropriate or feasible to assign secondary office/warehouse land uses to this Planning Area under the Highway Corridor Land Management Alternative. Therefore, this Planning Area which also incorporates Planning Areas retained from other Alternatives, is retained as a Planning Area for further EIS evaluation as part of the Hybrid Plan.

12. Planning Area K (East)

A. Existing Conditions

The Planning Area is located in the municipality of Secaucus and is 50 acres in size. It generally is bounded by Chromakill Creek on the east and north; Paterson Plank Road on the south; and Harmon Meadows Mall on the west. The site is currently vacant unimproved upland.

Surrounding land uses include commercial and office uses to the west; industrial uses to the east; vacant wetland to the north; and existing retail and warehouse uses to the south.

Access to the Planning Area is from Paterson Plank Road and the Route 3 Service Road. There currently are no existing rail mass transit services provided to the site however, current proposals are being investigated. Bus service currently provides access to the site.

Water and sewer facilities are available to the Area from the Hackensack Water Company and the Secaucus MUA, respectively.

B. Projected Land Uses

The screening document proposed 1,280 residential units and 392,040 sq. ft. of commercial space for this Planning Area.

C. Planning Analysis

The subject Planning Area is characterized by the following exclusionary criteria:

TIER I CRITERIA

No Tier I criteria appear to be present.

TIER II CRITERIA

No Tier II criteria appear to be present.

TIER III CRITERIA

No Tier III criteria appear to be present.

D. Planning Recommendations

Planning Area K (East) should be retained as a Planning Area. Although the projected land uses are appropriate for this Area, it is recommended that the residential uses be eliminated in the development of a Hybrid Plan. (See the Planning Analysis for Planning Area G (East) in the Upland Growth Land Management Alternative; Planning Area B (East) in the Growth Center Land Management Alternative; and Planning Area F (East) in the Dispersed Development Areas Land Management Alternative). Given the existing physical conditions described above and the exclusionary criteria identified, it is not deemed appropriate or feasible to assign any secondary office\warehouse land uses to this Planning Area. Therefore, this Planning Area which also incorporates Planning Areas retained from other Alternatives, is retained as a Planning Area for further EIS evaluation as part of the Hybrid Plan.

13. Planning Area K (West)

A. Existing Conditions

The Planning Area is located in the municipality of Secaucus and is 10 acres in size. It generally is bounded by Harmon Meadows Mall on the east; Route 3 on the south; existing development to the north; and the NJ Turnpike eastern spur on the west. The site is currently vacant unimproved upland and wetland.

Surrounding land uses include office and commercial uses to the north and west; Harmon Meadows Mall to the east; and existing office and industrial uses to the south.

Access to the Planning Area is from the Route 3 Service Road and Plaza Drive to the east. There currently are no existing or proposed rail mass transit services provided to the site. Bus service is currently provided to the site.

Water and sewer facilities are available to the Area from the Hackensack Water Company and the Secaucus MUA, respectively.

B. Projected Land Uses

The screening document proposed 1,089,000 sq. ft. of primary office space for this Planning Area.

C. Planning Analysis

The subject Planning Area is characterized by the following exclusionary criteria:

TIER I CRITERIA

I-2 Ownership Difficulties\ HMDC Jurisdictional Issues: This Planning Area is currently owned by the NJ Turnpike Authority and may not be available for development.

TIER II CRITERIA

II-1 Poor Accessibility:

b) Direct Highway Impact: The Planning Area must utilize the regional highway system as its primary means of access without existing or future alternative secondary access opportunities that can reasonably be expected to be built.

II-5 Lack Of Synergistic Effects:

b) Disproportionate Densities: The Planning Area exhibits an extraordinarily high Floor

Area Ratio for office space (2.5 FAR) that do not reflect HMD market conditions.

TIER III CRITERIA

III-2 Poor Relationship To Open Space\Recreation: The Area has an ineffective relationship to open space\recreation areas both within the HMD and in adjacent jurisdictions.

D. Planning Recommendations

Planning Area K (West) should be eliminated as a Planning Area. Given the existing physical conditions described above and the exclusionary criteria identified, it is not deemed appropriate or feasible to assign any other primary (commercial, residential) or secondary office/warehouse land uses to this Planning Area under the Highway Corridors or any other Land Management Alternative. Therefore, the Planning Area is eliminated from any further EIS evaluation.

14. Planning Area L

A. Existing Conditions

The Planning Area is located in the municipality of Secaucus and is 32 acres in size. It generally is bounded by the NJ Turnpike eastern spur on the east and south; Paterson Plank Road to the north; and County Road on the west. The Planning Area currently consists of residential and industrial buildings in good condition. These uses include a senior citizens home, apartment buildings and viable warehouse uses.

Surrounding land uses include the Meadowview County Hospital to the west; vacant wetlands and industrial uses to the east; and existing residential and commercial development to the north and south.

Access to the Planning Area is from County Road. There currently are no existing or proposed rail mass transit services provided to the site. Bus service is currently available to the site.

Water and sewer facilities are available to the Area from the Hackensack Water Company and the Secaucus MUA, respectively.

B. Projected Land Uses

The screening document proposed 348,480 sq. ft. of commercial space and 696,960 sq. ft. of primary office space for this Planning Area. The Area is utilized in the absence of more suitable areas that will meet HMDC need projections in the Highway Corridor Land Management Alternative.

C. Planning Analysis

The subject Planning Area is characterized by the following exclusionary criteria:

TIER I CRITERIA

I-2 Ownership Difficulties\ HMDC Jurisdictional Issues: A two acre portion of this Planning Area is owned by the Town of Secaucus. It currently is used for recreation purposes and may not be available for development.

I-3 Current Land Development: This Planning Area currently has existing viable development that would not meet the criteria necessary for redevelopment.

TIER II CRITERIA

II-1 Poor Accessibility:

a) Highway Capacity: Both County Road and Paterson Plank Road cannot be improved to accommodate the anticipated volume of traffic from the Planning Area. The location of a hospital; severe steep sloped areas east of County Road; existing uses within the Planning Area; and the limited right-of-way on Paterson Plank Road, would preclude extensive improvements required by the projected land uses.

b) Direct Highway Impact: The Planning Area must utilize the regional highway system as its primary means of access without existing or future alternative secondary access opportunities that can reasonably be expected to be built.

II-4 Insufficient Scale: The Planning Area and surrounding areas cannot achieve sufficient population density to maximize district-wide land use efficiencies.

II-5 Lack of Synergistic Effects:

a) Community Of Place: The Planning Area and surrounding land uses do not interact sufficiently to provide the opportunity to achieve community of place attributes. The existing pattern of development is viable and would not be anticipated for displacement within the 20 year planning period.

II-6 Engineering/Financial Constraints: This Planning Area is adjacent to County Road which is a County roadway accommodating significant volumes of traffic. The opportunity to develop this site for the projected land use is severely impacted by this physical constraint. In addition, the costs associated with razing existing structures in good condition would be prohibitive and would qualify as a financial constraint to new commercial development.

TIER III CRITERIA

III-3 Capacity To Foster Cultural Facilities: The size and type of uses proposed for the Planning Area are insufficient to foster cultural facilities.

D. Planning Recommendations

Planning Area L should be eliminated as a Planning Area. Given the existing physical conditions described above and the exclusionary criteria identified, it is not deemed appropriate or feasible to assign any other primary (residential) or secondary office/warehouse land uses to this Planning Area under the Highway Corridors or any other Land Management Alternative. Therefore, the Planning Area is eliminated from any further EIS evaluation.

15. Planning Area M

A. Existing Conditions

The Planning Area is located in the municipalities of Secaucus and North Bergen and is 37 acres in size. It generally is bounded by Route 3 on the east; I-495 on the south; Paterson Plank Road to the north; and the NJ Turnpike eastern spur on the west. This Planning Area currently consists of vacant structures and commercial and industrial uses.

Surrounding land uses include existing residential and industrial development to the west and east; Harmon Meadows Mall to the north; and vacant wetlands to the south.

Access to the Planning Area is from Paterson Plank Road. There currently are no existing or proposed rail mass transit services available to the site. Bus service currently does not access the site but is presumably available from nearby regional routes.

Water and sewer facilities are available to the Area from the Hackensack Water Company and the Secaucus MUA, respectively.

B. Projected Land Uses

The screening document proposed 653,400 sq. ft. of primary office space and 609,840 sq. ft. of commercial space for this Planning Area.

C. Planning Analysis

The subject Planning Area is characterized by the following exclusionary criteria:

TIER I CRITERIA

I-3 Current Land Development: The development of a warehouse/outlet building has been approved by the HMDC on 7 acres of the Planning Area. Construction for this project is imminent.

TIER II CRITERIA

II-5 Lack of Synergistic Effects:

b) Disproportionate Densities: Although the office space is appropriate for this Planning Area the Floor Area Ratio (1.5 FAR) is not compatible with existing or projected development patterns and market conditions in the HMD.

TIER III CRITERIA

III-2 Poor Relationship To Open Space\Recreation: The Area has an ineffective relationship to open space\recreation areas both within the HMD and in adjacent jurisdictions.

D. Planning Recommendations

Planning Area M should be eliminated as a Planning Area. As described above, 609,840 sq. ft. of commercial space and 653,400 sq. ft. of primary office space was projected for this Area. However, based on the exclusionary criteria identified above, and the surrounding pattern of existing development, this Area is more suitable for inclusion in the Satellite Area category for the secondary/office warehouse component. Given the existing physical conditions described above and the exclusionary criteria identified, it is not deemed appropriate or feasible to assign any other primary (commercial\residential) land uses to this Planning Area under the Highway Corridors Land Management Alternative for further EIS evaluation. (See Planning Analysis for Area F in the Redevelopment Land Management Alternative and Planning Area B (South) in the Growth Center Land Management Alternative). Therefore, this Planning Area which also incorporates Planning Areas retained from other Alternatives, is retained as a Satellite Area for further EIS evaluation as part of the Hybrid Plan.

16. Planning Area N

A. Existing Conditions

The Planning Area is located in the municipality of Secaucus and is 17 acres in size. It generally is bounded by the West Shore Line Freight Rail Line on the east; existing development on the south; Paterson Plank Road to the north; and Route 3 on the west.

Surrounding land uses include warehouse and commercial uses to the west; heavy industrial uses to the east; vacant unimproved land and Harmon Meadows Mall to the north; and the North Bergen Park and Ride Facility and industrial uses to the south.

Access to the Planning Area is from Route 3 and Paterson Plank Road. There currently are no existing or proposed rail mass transit facilities available to the site. Bus service presumably would be available from nearby regional routes.

Uses located within the Planning Area include an appliance retail facility and a mini-warehouse storage operation, both developed within the past 10 years. Therefore, the condition of the buildings and viability of other existing uses appear to be adequate. Under this land management alternative, this planning area was selected for testing since it was proximate to Route 3.

Water and sewer facilities are available to the Area from the Hackensack Water Company and the Secaucus MUA, respectively.

B. Projected Land Uses

The screening document proposed 370,260 sq. ft. of commercial space for the Planning Area. This Area is utilized in the absence of more suitable areas that will meet HMDC need projections in the Highway Corridors Land Management Alternative.

C. Planning Analysis

The subject Planning Area is characterized by the following exclusionary criteria:

TIER I CRITERIA

I-3 Current Land Development: This Planning Area currently has existing viable development that would not meet the criteria necessary for redevelopment.

TIER II CRITERIA

II-4 Insufficient Scale: The Planning Area and surrounding areas cannot achieve sufficient population density to maximize district-wide land use efficiencies.

II-5 Lack of Synergistic Effects:

a) Community Of Place: The Planning Area and surrounding land uses do not interact sufficiently to provide the opportunity to achieve community of place attributes. The existing uses in the Planning Area are viable commercial uses and are not anticipated to convert to additional commercial space within the 20 year planning period.

II-6 Engineering/Financial Constraints: The costs associated with razing existing structures in good condition would be prohibitive and would qualify as a financial constraint to new development.

TIER III CRITERIA

III-1 Lack Of TDM/TCM Implementation: The opportunity to implement TDM/TCM programs would be highly problematic given the scale of the single land use that can be assigned to the Area.

III-2 Poor Relationship To Open Space\Recreation: The Area has an ineffective relationship to open space\recreation areas both within the HMD and in adjacent jurisdictions.

III-3 Capacity To Foster Cultural Facilities: The potential to foster the development of cultural facilities is not available given the small size and single use that can be applied to the Area.

D. Planning Recommendations

Based on the above exclusionary criteria this Planning Area N should be eliminated from further consideration. The presence of viable uses and the costs associated with replacing these businesses would be overly restrictive and financially unjustified. Given the existing physical conditions described above and the exclusionary criteria identified, it is not deemed appropriate or feasible to assign any other primary (office, residential) or secondary office/warehouse land uses to this Planning Area under the Highway Corridors or any other Land Management Alternative. Therefore, the Planning Area was eliminated from any consideration for further EIS evaluation.

17. Planning Area O

A. Existing Conditions

The Planning Area is located in the municipality of North Bergen and is 170 acres in size. It generally is bounded by the West Shore Line Freight Rail Line on the east; the NJ Transit Northeast Corridor Commuter Rail Line on the south; I-495 on the north; and Penhorn Creek on the west.

Surrounding land uses include out-of-district industrial development to the east; warehousing uses to the west and north; and warehouse and industrial uses to the south.

Access to this Planning Area is from I-495. There currently are no existing or proposed rail mass transit or bus service to the site. Bus service may be available from nearby regional routes.

Water and sewer facilities are available to the Area from the Hackensack Water Company and the North Bergen MUA, respectively.

B. <u>Projected Land Uses</u>

The screening document proposed 6,185,520 sq. ft. of primary office space and 609,840 sq. ft. of commercial space for this Planning Area.

C. <u>Planning Analysis</u>

The subject Planning Area is characterized by the following exclusionary criteria:

TIER I CRITERIA

I-2 <u>Ownership Difficulties\ HMDC Jurisdictional Issues:</u> The NJ Turnpike Authority, the Port Authority of NY & NJ, and the Town of North Bergen own property in this Planning Area totaling 78 acres.

TIER II CRITERIA

II-5 <u>Lack Of Synergistic Effects:</u>

c) <u>Poor Jobs To Housing Linkage:</u> The lack of possible linkages of the subject Area with other Planning Areas further limit opportunities to achieve meaningful jobs to housing linkages.

TIER III CRITERIA

III-2 <u>Poor Relationship To Open Space\Recreation:</u> The Area has an ineffective relationship to open space\recreation areas both within the HMD and in adjacent jurisdictions.

D. <u>Planning Recommendations</u>

Those parcels unaffected by Criteria I-2 should be retained and utilized in the development of a Hybrid Plan. However, based on the above exclusionary criteria, specifically the ownership issue, those parcels subject to Criteria I-2 should be eliminated as a Planning Area. (See the Planning Analysis for Planning Area G in the Dispersed Development Areas Land Management Alternative). Therefore, the 78 acres affected by Criteria I-2 have been eliminated and the remaining 92 acres are retained as a Planning Area for further EIS evaluation as part of the Hybrid Plan.

HIGHWAY CORRIDORS LAND MANAGEMENT ALTERNATIVE

6\15\95

PLANNING AREAS	A	B	C	D	E	F	G	H	I	J	K NORTH	K EAST	K WEST	L	M	N	O
EXCLUSIONARY CRITERIA																	
TIER I																	
I-1 Contaminated Land							x										
I-2 Ownership/Jurisdictional		x	x					x					x	x			x
I-3 Current Development							x	x	x					x	x	x	
TIER II																	
II-1 Poor Accessibility																	
a. Highway Capacity						x	x							x			
b. Direct Highway Impact					x	x	x						x	x			
c. Impact to Local Road									x								
d. Poor Mass Transportation	x	x															
II-2 Lack Of Public Services																	
II-3 Incompatible Land Uses																	
II-4 Insufficient Scale	x													x		x	
II-5 Lack Of Synergistic Effects																	
a. Community of Place	x			x				x	x					x		x	
b. Disproportionate Densities		x			x								x		x		
c. Poor Jobs/Housing Linkage		x															x
II-6 Engineering/Financial Constraints							x	x	x					x		x	
TIER III																	
III-1 Lack of TDM/TCM Implementation	x															x	
III-2 Poor Relationship to Open Space/Recreation	x			x	x	x	x			x			x		x	x	x
III-3 Capacity to Foster Cultural Facilities	x								x	x				x		x	
III-4 Lack of Visual Cohesiveness		x				x											
RECOMMENDATION *																	
Retain as a Primary Planning Area	x	x	x	x	x	x	x			x	x	x					x
Review as a Satellite Area																	
Secondary Office/Warehouse								x							x		
Eliminate from Further EIS Evaluation		x					x	x	x				x	x		x	x

* may include only a portion of a planning area

IV. PLANNING ANALYSIS OF SATELLITE AREAS

Satellite Areas are locations where the needs for secondary office/warehouse uses can be met. The secondary office/warehouse land use category is inclusive of much of the support services for the primary uses, but also provides for the storage, distribution and assembly of a wide variety of goods both manufactured and imported into the region. Secondary office uses provide the administrative function for the distribution network and in most cases, are located within close proximity to the distribution/assembly functions. This can be in the same building as the distribution activities or in separate buildings within distribution office parks where desirable.

The Satellite Areas are drawn from several groups within the hybridization process. First, several of the primary Planning Areas that were analyzed in each of the land management alternatives were determined to be unsuitable for use as primary office, commercial or residential uses. However, the analysis indicated that some of these areas should be considered for satellite status. Therefore, several of the Satellite Areas are derived from former Planning Areas.

In instances where wetland areas were not utilized for primary uses in the Hybrid Plan, these sites were again reviewed to determine their suitability for secondary office/warehouse use. Only wetland areas meeting the specific criteria established to support these uses were included in the Hybrid Plan.

Second, Satellite Areas may consist of smaller, isolated lots or undeveloped lots within existing subdivisions. These lots may be smaller infill lots or larger vacant parcels within the subdivision or "park". Several lots may have both upland and wetland on them in which some wetland fill is projected.

Where individual secondary office/warehouse sites were identified, wetland areas on these properties were protected if they adjoined substantial wetland areas, if they constituted open space areas on developed lots or if they adjoined future wetland preservation areas. There was a consistent and systematic attempt to recognize the importance of sensitive wetland areas within the District and to protect them from inclusion in the development analysis.

The third Satellite Area category consists of contaminated properties which can be utilized for the secondary office/warehouse component. The use or non-use of contaminated properties is an important issue with respect to realistically meeting the needs of the District. There are three Superfund properties located within the Meadowlands. The Hybrid Plan analyzes these sites and discusses the viability of future development of the sites. As described in previous analyses, those sites that have an approved remediation plan have been included for further development.

Contaminated sites also include properties with area or basin wide contamination. Properties along Berry's Creek, Peach Island Creek and Penhorn Creek have been contaminated through basin wide activities. Potential satellite parcels in these areas required additional discussion to determine whether they would realistically be available for development. The Plan approach is to stimulate clean up of these potentially contaminated sites by encouraging development of these upland parcels. In most cases, further site investigation is necessary in order to make final suitability determinations. The Hybrid Plan does recommend several of these sites as potentially usable for development.

The method of determining the suitability of the potential Satellite Areas is similar to the analysis of the Planning Areas. A specific set of exclusionary and planning criteria was developed to determine if individual Satellite Areas should be excluded or retained for future satellite development.

The Criteria specify three tiers of attributes for determination. Tier I Criteria concern environmental conditions and site availability and are identical to the Planning Area Tier I Criteria. Tier II, Potential Costs, Logistics and Technology Exclusionary and Limiting Criteria are similar to the Planning Area Tier II criteria. Tier III Exclusionary or Limiting Planning Criteria relate to services and relationships of District land uses with satellite locations.

The Satellite Area Criteria include;

TIER I EXCLUSIONARY CRITERIA (concerning environmental conditions and site availability)

I-1 Severe Land Contamination: Identified locations within the Satellite Area where reasonable certainty exists of hazardous material contamination, where no public program for remediation exists andthe extent of contamination is suspected to preclude development within the 20 year planning period.

I-2 Ownership Difficulties/HMDC Jurisdictional Issues: Land parcels within the Satellite Area that are publicly or quasi-publicly owned and where land development may be institutionally precluded (e.g. Teterboro Airport is under the jurisdiction of the Port Authority of New York and New Jersey). Similarly, land owned by certain entities (e.g. New Jersey Sports and Exposition Authority), where the HMDC regulatory jurisdiction is limited, would be included in this criteria as well as any land that is deed restricted from development.

I-3 Current Land Development: Land uses projected for the subject Satellite Area under this Land Management Alternative are no longer available either because development is underway or is imminent (i.e. received all government approvals) or existing development in the Planning Area is viable and would not meet redevelopment criteria.

TIER II POTENTIAL COSTS, LOGISTICS AND TECHNOLOGY EXCLUSIONARY AND LIMITING CRITERIA

II-1 Poor Accessibility:

a). Highway Capacity: The road and highway system within or adjacent to the Satellite Area cannot reasonably be improved to accommodate the extent of traffic projected from the Satellite Area. New roadway access and rights-of-way are not available or sufficient.

b). Proximate Location To Regional Highway System: The Area is not located within close proximity to the interstate highway system. Available route to the highway system would be circuitous and cause delay in delivery and distribution due to lack of such access.

c). Lack Of Available Rail Access: The area is not located in areas where convenient existing or potential freight rail transportation can serve the Area. This would cause the transfer and distribution of goods and materials to be transported only via truck surface transportation.

II-2 Lack of Efficient Public Services: Insufficient infrastructure capacity (sewerage or water) and the inability to support new infrastructure development within the projected 20 year planning period.

II-3 Engineering/Financial Constraints: Constraints to development in the Satellite Area that result from the projected costs of land preparation and building construction would render development impractical.

II-4 Insufficient Scale: The Area consists of parcels which are of insufficient size to accommodate secondary office/warehouse development and cannot be merged with adjacent similarly zoned parcels in order to achieve a regional distribution facility with minimum acceptable lot area in accordance with market demand and economic efficiencies.

TIER III EXCLUSIONARY OR LIMITING PLANNING CRITERIA

III-1 Absence of Services: The Area is not within proximity to the services necessary to support warehouse/distribution facilities i.e. truck/transport services, etc.

III-2 Incompatible Land Uses: The established pattern of land uses in or surrounding the Area relate poorly to the projected land uses proposed for this Satellite Area under this Land Management Alternative. Accordingly, implementation of secondary office/warehouse land uses would be impractical or seriously limited by market demand.

III-3 Scattered or Isolated Site/Not Part of a Planned Industrial Distribution Park: The Area is isolated and not associated with other compatible uses nor is it a component of existing or previously planned distribution or secondary office/warehouse Satellite Area Development.

Planning Areas/Satellite Areas

Satellite Areas that were formerly Planning Areas in the Land Management Alternatives are included in the following analysis;

North Bergen - Upland Growth Area A (shown as Area s on Hybrid Plan)

This Satellite Area is located in North Bergen in an area which is accessible only from Fairview Avenue. This road connects to Routes 1 and 9 outside the District. The surrounding land uses are industrially oriented. Land uses outside the District boundary along Fairview Avenue are mostly heavy industrial. The site area is 30.7 acres with no wetland fill proposed. The Satellite Area meets the following criteria;

TIER I CRITERIA

No Tier I criteria appear to be present

TIER II CRITERIA

II-1 Poor Accessibility:

a). Highway Capacity: Only one local roadway allows access into this Satellite Area. This road is only partially inside the HMDC District. Local business activities park vehicles along the roadway making the ability of large volumes of traffic to traverse this road difficult.

c). Lack Of Available Rail Access: No rail facilities are available to the satellite location.

II-3 Engineering/Financial Constraints: A portion of this land area was once an explosives/fireworks facility. A fire destroyed the facility and some questions remain concerning the ability to develop on the site because of residual materials which may be buried.

TIER II CRITERIA

III-1 Absence of Services: The remote location of this area does not lend itself to be easily accommodated by support businesses.

Planning Recommendation

This Satellite Area can be retained for use as secondary office/warehouse. Although some questions remain about the use of a portion of the property, the property may be used if properly managed and remediated. Satellite development on this property would yield approximately

669,000 sq. ft. of warehouse space.

Lyndhurst - Upland Growth Area H (shown as area z on Hybrid Plan)

This Satellite Area is located in Lyndhurst along the western boundary of the District. Access to the area is from Schuyler Avenue outside the District and generally through a heavily industrialized site to the rear of the parcel where the proposed Satellite Area is situated. Surrounding land uses in addition to the above include the BCUA landfill site. The site area is 20.8 acres with no wetland fill proposed. The Satellite Area meets the following criteria;

TIER I CRITERIA

I-3 Current Land Development: In the Planning Area analysis, this area was larger than the 20.8 acres now under consideration. It was presumed as a primary Planning Area that several older industrial storage buildings would be removed, which would not be done if secondary office/warehouse uses are implemented here.

TIER II CRITERIA

II-1 Poor Accessibility:

a). Highway Capacity: Access to this property is through an existing industrial facility. No public road access exists at this time and no road has been proposed for this area.

b). Proximate Location To Regional Highway System: The location of the site is not within close proximity to the regional highway system.

TIER III CRITERIA

No Tier III criteria appear to be present

Planning Recommendation

Although accessibility to the Area is somewhat difficult, it is recommended that it be retained for use as secondary office/warehouse. Satellite development on this property would yield approximately 453,000 sq. ft. of warehouse space.

Secaucus - Upland Growth Area K (shown as Area ag on Hybrid Plan)

This Satellite Area is located in the Secaucus warehouse area. Access to the site is from Enterprise Avenue and from Secaucus Road. Surrounding land uses include warehouse and distribution facilities. The site area is 36.5 acres with no wetland fill proposed. The Satellite Area meets the following criteria;

TIER I CRITERIA

No Tier I criteria appear to be present

TIER II CRITERIA

II-1 <u>Poor Accessibility:</u>

a). <u>Highway Capacity:</u> Both Secaucus Road and Enterprise Avenue are heavily travelled truck routes. The addition of approximately 800,000 square feet of space could significantly tax the roadway system at this location.

c). <u>Lack Of Available Rail Access:</u> No rail facilities exist to the satellite location.

TIER III CRITERIA

No Tier III criteria appear to be present

<u>Planning Recommendation</u>

This Area should be retained as a Satellite Area. Secondary office/warehouse is the most appropriate use for the Area. Satellite development on this property would yield approximately 795,000 sq. ft. of warehouse space.

<u>North Bergen - Upland Growth Area L (shown as Area ae and af on Hybrid Plan)</u>

This Satellite Area is located north of Secaucus Road near the eastern boundary of the District. It consists mainly of vacant land and has access to a secondary road which is in fair to poor condition. A PSE&G power line traverses the area. Surrounding land uses include a truck terminal, intermodal truck/rail facility and warehouses. The site area is 60.8 acres with no wetland fill proposed. The Satellite Area meets the following criteria;

This area currently lacks a sewerage collection system. Plans are being considered for a future collection system in this area.

TIER I CRITERIA

No Tier I criteria appear to be present

TIER II CRITERIA

II-1 <u>Poor Accessibility:</u>

a). <u>Highway Capacity:</u> Secaucus Road is a heavily travelled truck route. The addition of approximately 1.3 million square feet of space could significantly tax the roadway system at this location.

TIER III CRITERIA

No Tier III criteria appear to be present

Planning Recommendation

This Area should be retained as a Satellite Area. Secondary office/warehouse is the most appropriate use for the Area. Satellite development on this property would yield approximately 1.3 million sq. ft. of warehouse space.

Kearny - Upland Growth Area P (shown as Area aj on Hybrid Plan)

This Satellite Area consists of vacant land which is part of a early industrial subdivision. Access is through a local cul de sac to Belleville Turnpike. Surrounding land uses include warehouse and trucking uses in addition to the HMDC baler and landfill in Kearny. The site area is 27.1 acres with no wetland fill proposed. The Satellite Area meets the following criteria;

TIER I CRITERIA

No Tier I criteria appear to be present

TIER II CRITERIA

II-1 Poor Accessibility:

c). Lack Of Available Rail Access: No rail facilities exist to the satellite location.

II-2 Lack of Efficient Public Services: This area currently has no public sewerage system. Discussions are ongoing with the Kearny Municipal Utilities Authority to provide a collection system into this area.

TIER III CRITERIA

No Tier III criteria appear to be present

Planning Recommendation

This Area should be retained as a Satellite Area. Secondary office/warehouse is the most appropriate use for the Area. Satellite development on this property would yield approximately 590,000 sq. ft. of warehouse space.

North Bergen - Redevelopment Area C

This Satellite Area is located in North Bergen adjacent to Upland Growth Area A. It exhibits the same access constraints as Upland Growth Area A. In addition, the uses in this area are already warehouse oriented and would not meet the criteria necessary for redevelopment. The Satellite Area meets the following criteria;

TIER I CRITERIA

I-3 Current Land Development: Existing uses within this Satellite Area are warehouse oriented uses in reasonable condition such that redevelopment for secondary office/warehouse uses would not be feasible.

TIER II CRITERIA

II-1 Poor Accessibility:

a). Highway Capacity: Only one local roadway allows access into this Satellite Area. This road is only partially inside the HMDC District. Local businesses park vehicles along the roadway making the ability of large volumes of traffic to traverse this road difficult.

c). Lack Of Available Rail Access: No rail facilities exist to the satellite location.

TIER III CRITERIA

III-1 Absence of Services: The remote location of this area does not lend itself to be easily accommodated by support businesses.

Planning Recommendation

It is recommended that this Satellite Area be eliminated from further consideration for secondary office/warehouse uses. The existing warehouse uses satisfy the criteria for current development.

North Bergen - Redevelopment Area D

This Satellite Area is located in North Bergen on West Side Avenue. It is an existing warehouse/storage building with multiple tenants. The building is of older construction, but has recently been upgraded. Site and building improvements are continuing at the site. Access to West Side Avenue is available. The Satellite Area meets the following criteria;

TIER I CRITERIA

I-3 Current Land Developmen[illegible] Existing uses within the Satellite Area are warehouse oriented uses in reasonable condition such that redevelopment for secondary office/warehouse uses would not be feasible.

TIER II CRITERIA

II-1 Poor Accessibility:

c). Lack Of Available Rail Access: No rail facilities exist to the satellite location.

TIER III CRITERIA

III-1 Absence of Services: The remote location of this area does not lend itself to be easily accommodated by support businesses.

Planning Recommendation

It is recommended that this Satellite Area be eliminated from further consideration for secondary office/warehouse uses. The existing warehouse use satisfies the criteria for current development.

Secaucus - Redevelopment Area E (shown as Area ay on Hybrid Plan)

This Satellite Area is located in Secaucus and is a small triangular area along Wood Avenue. Wood Avenue is a short cul de sac off of Meadowlands Parkway. The area consists of several old industrial buildings and one vacant lot with the foundation of an old building. The site area is approximately 8 acres in size. The Satellite Area meets the following criteria;

TIER I CRITERIA

No Tier I criteria appear to be present

TIER II CRITERIA

II-1 Poor Accessibility:

c). Lack Of Available Rail Access: No rail facilities exist to the satellite location.

TIER III CRITERIA

III-1 Absence of Services: The remote location of this area does not lend itself to be easily accommodated by support businesses.

III-3 Scattered or Isolated Site/Not Part of a Planned Industrial Distribution Park: This area is somewhat removed from the larger warehouse areas and is essentially cut off visually from them by the east and west lanes in Route 3 which are north and south, respectively, of the immediate Satellite Area.

Planning Recommendation

This Area should be retained as a Satellite Area. Secondary office/warehouse is the most appropriate use for the Area. One of the lots included in this area has been redeveloped through private means and no longer is available for satellite development. Although the area is not sufficient for large scale development, it can be utilized for small to moderately sized secondary office/warehouse facilities. Therefore 3 ac. has been retained which will yield approximately 65,000 sq. ft. of secondary office/distribution space.

Secaucus/North Bergen - Redevelopment Area F (shown as Area az on Hybrid Plan)

This Satellite Area, situated in the two municipalities, is basically surrounded by the New Jersey Turnpike on the west, Route 3 on the north and I-495 on the south. Route 3 and I-495 converge just east of the site. The site area is 30.6 acres will no wetland fill proposed. The Satellite Area meets the following criteria;

TIER I CRITERIA

I-3 Current Land Development: The size of the area has been reduced from its Planning Area size due to the construction of a commercial use. The balance of the area is unaffected.

TIER II CRITERIA

II-1 Poor Accessibility:

c). Lack Of Available Rail Access: No rail facilities exist to the satellite location.

TIER III CRITERIA

No Tier III criteria appear to be present

Planning Recommendation

This area should be retained as a Satellite Area. Secondary office/warehouse is the most appropriate use for the area. Satellite development on this property would yield approximately 666,000 sq. ft. of warehouse space.

Secaucus - Redevelopment Area G (shown as Area ba on Hybrid Plan)

This Satellite Area is in Secaucus and is located along the north side of Secaucus Road between the New Jersey Turnpike eastern spur and the Northeast Corridor rail line. It consists of several old industrial buildings, several existing residential houses and several new industrial uses (refuse hauler). Surrounding uses include secondary office/warehouses to the south and vacant wetlands to the north. Access is directly to Secaucus Road. The site area is 26.4 acres with no wetland fill proposed. The Satellite Area meets the following criteria;

TIER I CRITERIA

No Tier I criteria appear to be present

TIER II CRITERIA

II-1 Poor Accessibility:

c). Lack Of Available Rail Access: No rail facilities exist to the satellite location.

TIER III CRITERIA

No Tier III criteria appear to be present

Planning Recommendation

This Area should be retained as a Satellite Area. Secondary office/warehouse is the most appropriate use for the Area. Satellite development on this property would yield approximately 575,000 sq. ft. of warehouse space.

Kearny - Redevelopment Area I (shown as area ak on Hybrid Plan)

This Satellite Area is located in the southwest corner of the District in Kearny. It is traversed by Newark-Jersey City Turnpike. The area uses consist of a newly constructed warehouse facility, old industrial buildings, and publicly owned property which are former landfill sites. The site area is 153 acres with no wetland fill proposed. The Satellite Area meets the following criteria;

TIER I CRITERIA

I-1 Severe Land Contamination: A portion of the Area is old landfill and the disposal materials placed in this area would make it difficult to assess the potential for redevelopment. This subarea has been removed from further consideration.

I-2 Ownership Difficulties/HMDC Jurisdictional Issues: A portion of the area is publicly owned landfill which is not environmentally closed.

I-3 Current Land Development: Existing uses within a portion of the Satellite Area are warehouse oriented uses in reasonable condition such that redevelopment for secondary office/warehouse uses would not be feasible.

TIER II CRITERIA

II-1 Poor Accessibility:

c). Lack Of Available Rail Access: No rail facilities exist to the satellite location.

Planning Recommendation

The portion of this Satellite Area not affected by any of the Tier I criteria should be retained as a Satellite Area. Secondary office/warehouse is the most appropriate use for the Area. Therefore, 32.3 acres have been retained which will yield approximately 703,000 sq. ft. of warehouse space.

Jersey City - Redevelopment Area J (shown as Area aq on Hybrid Plan)

This Satellite Area is located in the southeast portion of the District. It has access to the Newark-Jersey City Turnpike and a local road system within Jersey City. Uses within the area include the expansive PSE&G Jersey City Generating Station, heavy industrial uses, trucking terminals and several areas of residential development. The site area is 82.0 acres with no wetland fill proposed. As previously described, 11 acres were retained for residential use in the Hybrid Plan. The Satellite Area meets the following criteria;

TIER I CRITERIA

I-2 Ownership Difficulties/HMDC Jurisdictional Issues: The portion of the area which is controlled by PSE&G (38 acres) should be removed, PSE&G retains these areas for their own quasi-public uses.

I-3 Current Land Development: The existence of residential areas within this area precludes them from further consideration. Approximately 11 ac. has been removed from this satellite area for housing which is now identified as hybrid area 15. Several of the warehouse facilities are in relatively good condition such that they would not be removed for the construction of additional secondary office/warehouse facilities which would account for 2 acres of land area.

TIER II CRITERIA

II-1 Poor Accessibility:

a). Highway Capacity: Only one local roadway allows access into this Satellite Area. This road is only partially inside the HMDC District. Access to the Newark-Jersey City Tpke. is restricted with heavy traffic making ingress and egress from the area difficult.

c). Lack Of Available Rail Access: No rail facilities exist to the satellite location.

Planning Recommendation

The portion of this Satellite Area not affected by any of the Tier I criteria should be retained as a Satellite Area. Secondary office/warehouse is the most appropriate use for the Area. Therefore, 30.8 acres have been retained, which will yield approximately 671,000 sq. ft. of warehouse space.

Carlstadt - Upland Area N (shown as area n on Hybrid Plan)

This Satellite Area is located on the north side of Paterson Plank Road just east of Gotham Parkway. The surrounding land uses include office and industrial uses and the sports and Exposition Authority Race Track south of Paterson Plank Road. This satellite is known as Scientific Chemical Processing which is one of the Superfund sites in the District. A remediation plan is in place and remediation activity has commenced on the property the site area is 10 acres and does not include any wetland. The Satellite Area meets the following criteria:

TIER I CRITERIA

No Tier I criteria appear to be present

TIER II CRITERIA

II-1 Poor Accessibility:

c). Lack Of Available Rail Access: No rail facilities exist to the satellite location.

TIER III CRITERIA

No Tier III criteria appear to be present

Planning Recommendation

Assuming that the remediation plan will be fully implemented and that the site will become fully developable, this satellite area can be retained as secondary office/warehouse. Satellite development on this property would yield approximately 218,000 sq. ft. of warehouse space.

East Rutherford - Redevelopment Area A / Upland Growth D

A discussion of this area can be found in the individual satellite area section of this report under area i/j. This satellite area is expanded somewhat from the original designations in Planning Areas A and D and therefore were analyzed in the individual satellite section.

PLANNING AREAS ANALYZED FOR INCLUSION AS SATELLITE AREAS

6\15\95

ALTERNATIVE	UPLAND						REDEVELOPMENT						
PLANNING AREAS	A	H	K	L	N	P	C	D	E	F	G	I	J
EXCLUSIONARY CRITERIA													
TIER I													
I-1 Contaminated Land												X	
I-2 Ownership/Jurisdictional												X	X
I-3 Current Development		X					X	X		X		X	X
TIER II													
II-1 Poor Accessibility													
a. Highway Capacity	X	X	X	X			X						X
b. Location to Regional System		X											
c. Lack of Rail Access	X		X		X	X	X	X	X	X	X	X	X
II-2 Lack Of Public Services						X							
II-3 Engineering/Financial Constraints	X												
II-4 Insufficient Scale													
TIER III													
III-1 Absence of Support Services	X						X	X	X				
III-2 Incompatible Land Uses													
III-3 Isolated from Planned Industrial Park									X				
RECOMMENDATION *													
Retain as a Satellite Area													
Secondary Office/Warehouse	X	X	X	X	X	X			X	X	X	X	X
Eliminate from Further EIS Evaluation							X	X					

* may include only a portion of a planning area

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The total land area retained for secondary office/warehouse use from the Planning Areas is 309 acres. This land area will support 6.7 million square feet of space.

Individual Satellite Areas

The analysis for the individual Satellite Areas identities distinct infill site locations that are suitable for the development of secondary office/warehouse uses. This is contrasted by the Planning Areas' analyses which review larger multiple lot locations. This individual site analysis applies the Satellite Exclusionary and Planning Criteria to each of the potential site locations. The individual site locations are selected as a result of a comprehensive site inventory and a much broader assessment of individual properties to determine locations that would be most feasible for the analysis. Individual site locations that were tested as part of an overall individual site screening analysis were either considered for further analysis here or reserved because of their importance from an environmental perspective. In short, in the inventory of all possible individual site locations, only those which were determined to meet planning standards for potential development were included here.

During this screening analysis, for instance, the sites which adjoined protected wetlands were excluded from further consideration. Sites which were in close proximity to future wetland preservation areas were also excluded. Wetland areas included in predominately upland sites were not filled for secondary office/warehouse use. Wetland sites directly along the Hackensack River, except where they adjoined upland or redevelopment sites were excluded. This assessment allowed an initial selection of properties which would be important from an environmental perspective and would not require further analysis for secondary office/warehouse potential use.

The sites remaining subsequent to this screening analysis were then measured against the Satellite Exclusionary Criteria. This analysis is shown in the Satellite Areas Table.

The retained individual sites were then further assessed to determine the extent to which they can support secondary office/warehouse space. The results of this analysis are shown in the following analysis of the individual locations. The attached Table will also provide an indication of the degree of wetland utilization anticipated in the development of these sites.

The Land Management Alternatives analyzed in the Screening Document required the efficient utilization of a limited number of potential development areas available in the District. Given the inherent constraints, the number of locations and type of development was a function of each respective Alternative. This resulted in the placement of secondary office/warehouse uses in areas where it is more appropriate for the development of primary office, commercial, and residential uses.

Among all of the Alternatives were a total of 45 Satellite Areas with letter designations (a) through (as). Many of these were both Planning Areas and Satellite Areas within the various Alternatives. There are three Satellite Areas; (l) - Hybrid Area 3; (m) - Hybrid Area 4; and (ad)

- Hybrid Area 11; and a portion of area (aq) - Hybrid Area 15; that were retained as a Planning Area. Therefore, they are not described here. As a result of the analyses of Areas (a) through (aw) many were eliminated thus, creating a shortfall of land available for secondary office/warehouse development. To meet the identified need of 15.3 million sq. ft., additional areas were identified and are represented as Areas (at) through (bb).

Satellite Area (a)

A. Existing Conditions

Satellite Area (a) is located in Little Ferry and is approximately 3 acres in size. It generally is bounded by Industrial Avenue to the east; and existing development to the north, south and west. Currently, the site is unimproved vacant upland.

Surrounding land uses include existing residential development to the west and south; and existing industrial uses to the east and north. The BCUA Little Ferry Facility is also to the south of the site.

Access to the Area is available from Industrial Avenue. There are no existing or proposed freight rail facilities in proximity to this Area. However, the site is in close proximity to Route 46 which provides access to other major arterials in the area.

Water and sewer facilities are available from the Hackensack Water Company and the BCUA, respectively.

B. Projected Land Uses

The screening document analysis projected 65,340 sq. ft. of secondary office/warehouse space for this Area.

C. Planning Analysis

The subject Satellite Area is characterized by the following exclusionary criteria:

TIER I CRITERIA

No Tier I criteria appear to be present.

TIER II CRITERIA

II-1 Poor Accessibility:

c). Lack Of Available Rail Access: The area is not located where existing or potential freight rail transportation can serve the Area. This would cause the transfer and distribution of goods and materials to be transported only via truck surface transportation.

TIER III CRITERIA

No Tier III criteria appear to be present.

D. Planning Recommendation

Given the existing physical conditions described above and the exclusionary criteria identified, Satellite Area (a) should be retained as a Satellite Area. In addition, the site is compatible with current zoning and the dominant existing industrial development surrounding it, thereby completing the development patterns established in the area. Therefore, this 3 acre Area is retained for further EIS evaluation which will yield 65,340 sq. ft. of space.

Satellite Area (b)

A. Existing Conditions

Satellite Area (b) is located in Moonachie and is 2 acres in size. It is generally bounded by Carol Place to the west; Empire Boulevard to the south; State Street to the north; and existing development to the east. Currently, the site is unimproved vacant upland surrounded by existing development.

Surrounding land uses consist of existing industrial development to the west, east, south, and north. The BCUA Little Ferry Facility is also to the east.

Access to the Area is available from Carol Place. There are no existing or proposed freight rail facilities in proximity to this Area. However, the site is in close proximity to Washington Avenue and Moonachie Avenue which provide access to other major arterials in the area.

Water and sewer facilities are available from the Hackensack Water Company and the BCUA, respectively.

B. Projected Land Uses

The screening document analysis projected 43,560 sq. ft. of secondary office/warehouse space for this Area.

C. Planning Analysis

The subject Satellite Area is characterized by the following exclusionary criteria:

TIER I CRITERIA

No Tier I criteria appear to be present.

TIER II CRITERIA

II-1 Poor Accessibility:

c). Lack Of Available Rail Access: The area is not located where existing or potential freight rail transportation can serve the Area. This would cause the transfer and distribution of goods and materials to be transported only via truck surface transportation.

TIER III CRITERIA

No Tier III criteria appear to be present.

D. Planning Recommendation

Given the existing physical conditions described above and the exclusionary criteria identified, Satellite Area (b) should be retained as a Satellite Area. In addition, the site is compatible with current zoning and the dominant existing industrial development surrounding it, thereby completing the development patterns established in the area. Therefore, this 2 acre Area is retained for further EIS evaluation which will yield 43,560 of space.

Satellite Area (c)

A. Existing Conditions

Satellite Area (c) is located in Carlstadt and is 9.7 acres in size. It is generally bounded by Washington Avenue to the east; Commerce Boulevard to the south; and development to the north and west. Currently, the site is unimproved vacant upland surrounded by existing development.

Surrounding land uses consist of existing industrial development to the west, east, south, and north. Also, there are scattered commercial uses in the area.

Access to the Area is available from Washington Avenue. There are no existing or proposed freight rail facilities in proximity to this Area. However, the sites' frontage on Washington Avenue provides access to other major arterials in the area.

Water and sewer facilities are available from the Hackensack Water Company and the BCUA, respectively.

B. Projected Land Uses

The screening document analysis projected 211,266 sq. ft. of secondary office/warehouse space for this Area.

C. Planning Analysis

The subject Satellite Area is characterized by the following exclusionary criteria:

TIER I CRITERIA

No Tier I criteria appear to be present.

TIER II CRITERIA

II-1 Poor Accessibility:

c). Lack Of Available Rail Access: The area is not located where existing or potential freight rail transportation can serve the Area. This would cause the transfer and distribution of goods and materials to be transported only via truck surface transportation.

TIER III CRITERIA

No Tier III criteria appear to be present.

D. Planning Recommendation

Given the existing physical conditions described above and the exclusionary criteria identified, Satellite Area (c) should be retained as a Satellite Area. In addition, the site is compatible with current zoning and the dominant existing industrial development surrounding it, thereby completing the development patterns established in the area. Therefore, this 9.7 acre Area is retained for further EIS evaluation which will yield 211,266 sq. ft. of space.

Satellite Area (d)

A. Existing Conditions

Satellite Area (d) is located in Carlstadt and is approximately 4 acres in size. It is generally bounded by Washington Avenue to the west; Commerce Boulevard to the south; Terminal Lane to the north; and development to the east. Currently, the site is unimproved vacant land surrounded by existing development.

Surrounding land uses consist of existing industrial development and scattered commercial uses to the west; vacant land and existing industrial development to the east; and existing industrial development to the south and north.

Access to the Area is available from Washington Avenue and Commerce Road. There are no existing or proposed freight rail facilities in proximity to this Area. However, the sites' frontage on Washington Avenue provides access to other major arterials in the area.

Water and sewer facilities are available from the Hackensack Water Company and the BCUA, respectively.

B. Projected Land Uses

The screening document analysis projected 43,460 sq. ft. of secondary office/warehouse space for this Area.

C. Planning Analysis

The subject Satellite Area is characterized by the following exclusionary criteria:

TIER I CRITERIA

I-2 Ownership Difficulties/HMDC Jurisdictional Issues: This site is currently owned by the NJ Department of Transportation and is, therefore, unavailable for development purposes at this time.

TIER II CRITERIA

II-1 Poor Accessibility:

c). Lack Of Available Rail Access: The area is not located where existing or potential freight rail transportation can serve the Area. This would cause the transfer and distribution of goods and materials to be transported only via truck surface transportation.

TIER III CRITERIA

No Tier III criteria appear to be present.

D. Planning Recommendation

Given the existing physical conditions described above and the exclusionary criteria identified, Satellite Area (d) should be eliminated as a Satellite Area. Specifically, the TIER I ownership/ jurisdictional criteria precludes utilization of the property. Therefore, this 4 acre Area is eliminated from further EIS evaluation.

Satellite Area (e)

A. Existing Conditions

Satellite Area (e) is located in Carlstadt and is 12.4 acres in size. It is generally bounded by Grand Street to the west and south; West Commercial Avenue to the north; and development to the east. Currently, the site is unimproved vacant upland surrounded by existing development.

Surrounding land uses consist of existing industrial development to the west, east, south, and north. This site is located within the NJDEP Berry's Creek Mercury Contamination Study Area.

Access to the Area is available from Amor Avenue and Grand Street. There are no existing or proposed freight rail facilities in proximity to this Area. However, the site is in close proximity to Moonachie Avenue and Paterson Plank Road, providing access to other nearby major arterials in the area.

Water and sewer facilities are available from the Hackensack Water Company and the BCUA, respectively.

B. Projected Land Uses

The screening document analysis projected 270,072 sq. ft. of secondary office/warehouse space for this Area.

C. Planning Analysis

The subject Satellite Area is characterized by the following exclusionary criteria:

TIER I CRITERIA

I-1 Severe Land Contamination: It should be noted that this site is within the ongoing NJDEP Berry's Creek Mercury Contamination Study and may be subject to conclusions of a finalized remediation plan.

TIER II CRITERIA

II-1 Poor Accessibility:

c). Lack Of Available Rail Access: The area is not located where existing or potential freight rail transportation can serve the Area. This would cause the transfer and distribution of goods and materials to be transported only via truck surface transportation.

TIER III CRITERIA

No Tier III criteria appear to be present.

D. Planning Recommendation

Given the existing physical conditions described above and the exclusionary criteria identified, Satellite Area (e) should be retained as a Satellite Area. Consideration of the TIER I contamination criteria should not preclude the utilization of this site due to the unsubstantiation of contamination. In addition, the site is compatible with current zoning and the dominant existing industrial development surrounding it, thereby completing the development patterns established in the area. Therefore, this 12.4 acre Area is retained for further EIS evaluation which will yield 270,072 sq. ft. of space.

Satellite Area (f)

A. Existing Conditions

Satellite Area (f) is located in Carlstadt and is 13.0 acres in size. It is generally bounded by Berry's Creek to the east and north; the Pascack Valley rail line to the west; and Broad Street to the south. Currently, the site is unimproved vacant land of which 7.6 ac. of wetland exists.

Surrounding land uses consist of existing industrial development to the west and south; wetland and the Ventron/Velsicol Superfund site to the north; and wetland and existing industrial development to the east.

Access to the Area is available from 16th Street. The existing rail facilities in proximity to this Area are commuter oriented and no proposals exist for freight usage. However, the site is in close proximity to Route 17 and Paterson Plank Road, providing access to other nearby major arterials in the area.

Water and sewer facilities are available from the Hackensack Water Company and the BCUA, respectively.

B. Projected Land Uses

The screening document analysis projected 283,140 sq. ft. of secondary office/warehouse space for this Area.

C. Planning Analysis

The subject Satellite Area is characterized by the following exclusionary criteria:

TIER I CRITERIA

I-1 Severe Land Contamination: It should be noted that this site is located within the ongoing NJDEP Berry's Creek Mercury Contamination Study Area and may also be part of an approved remediation plan for the Ventron/Velsicol Superfund site. However, there are no finalized remediation plans to date.

TIER II CRITERIA

II-1 Poor Accessibility:

a). Highway Capacity: The road system adjacent to this Satellite Area may require new roadway access and rights-of-way to accommodate the extent of traffic projected from the Satellite Area. Adjacent roads are narrow and in need of repair.

c). Lack Of Available Rail Access: The area is not located where convenient existing or potential freight rail transportation can serve the Area. This would cause the transfer and distribution of goods and materials to be transported only via truck surface transportation.

II-3 Engineering/Financial Constraints: Constraints to development in the Satellite Area that result from the projected costs of roadway preparation and construction may render complete development of this Area impractical. Also, possible contamination may prohibit development.

TIER III CRITERIA

No Tier III criteria appear to be present.

D. Planning Recommendation

Given the existing physical conditions described above and the exclusionary criteria identified, Satellite Area (f) should be retained as a Satellite Area. Consideration of the TIER I contamination criteria should not preclude the utilization of this site due to the unsubstantiation of contamination. The TIER II criteria may be minimized due to the proposed redevelopment of nearby properties. In addition, the site is compatible with current zoning and the dominant existing industrial development surrounding it, thereby completing the development patterns established in the area. Therefore, this 13.0 acre Area is retained for further EIS evaluation which will yield 283,140 sq. ft. of space.

Satellite Area (g)

A. Existing Conditions

Satellite Area (g) is located in Carlstadt and is approximately 3 acres in size. It is generally bounded by 20th Street to the east; Broad Street to the south; and development to the north and west. Currently, the site is surrounded by existing development.

Surrounding land uses consist of existing industrial development to the west, east, and north; and existing commercial and industrial uses to the south.

Access to the Area is available from Broad Street. The existing rail facilities in proximity to this Area are commuter oriented and no proposals exist for freight usage. However, the site is in close proximity to Route 17 and Paterson Plank Road, providing access to other major arterials in the area.

Water and sewer facilities are available from the Hackensack Water Company and the BCUA, respectively.

B. Projected Land Uses

The screening document analysis projected 65,340 sq. ft. of secondary office/warehouse space for this Area.

C. Planning Analysis

The subject Satellite Area is characterized by the following exclusionary criteria:

TIER I CRITERIA

I-3 Current Land Development: Land uses projected for the subject Satellite Area are no longer available because development is imminent. The site has been cleared and is under preparation for the beginning phases of construction.

TIER II CRITERIA

II-1 Poor Accessibility:

c). Lack Of Available Rail Access: The area is not located where convenient existing or potential freight rail transportation can serve the Area. This would cause the transfer and distribution of goods and materials to be transported only via truck surface transportation.

TIER III CRITERIA

No Tier III criteria appear to be present.

D. Planning Recommendation

Given the existing physical conditions described above and the exclusionary criteria identified, Satellite Area (g) should be eliminated as a Satellite Area. Specifically, the TIER I current development criteria precludes utilization of the property. Therefore, this 3 acre Area is eliminated from further EIS evaluation.

Satellite Area (h)

A. Existing Conditions

Satellite Area (h) is located in Carlstadt and is approximately 18 acres in size. It is generally bounded by Berry's Creek to the east; Broad Street to the north; 20th Street to the west; and Paterson Plank Road to the south. Currently, the site is unimproved vacant land. Approximately 7.9 acres of this site are considered to be wetland.

Surrounding land uses consist of existing industrial development to the west and north; wetland to the east; and commercial uses and vacant land to the south. The NJSEA Complex is also to the south of this site.

Currently, access to the Area is available only from Broad Street however, additional access from Paterson Plank Road may be possible. The existing rail facilities in proximity to this Area are commuter oriented and no proposals exist for freight usage. However, the site is in close proximity to Route 17 and Paterson Plank Road, providing access to other major arterials in the area.

Water and sewer facilities are available from the Hackensack Water Company and the BCUA, respectively.

B. Projected Land Uses

The screening document analysis projected 222,156 sq. ft. of secondary office/warehouse space for this Area.

C. Planning Analysis

The subject Satellite Area is characterized by the following exclusionary criteria:

TIER I CRITERIA

I-1 Severe Land Contamination: It should be noted that this site is located within the ongoing NJDEP Berry's Creek Mercury Contamination Study Area and may also be part of an approved remediation plan for the Ventron/Velsicol Superfund site. However, there are no finalized remediation plans to date.

I-2 Ownership Difficulties/HMDC Jurisdictional Issues: A portion of this site is currently deed restricted by the NJDEP Tidelands Resource Council. They have retained a riparian claim that affects 8 acres of this Area which is, therefore, unavailable for development purposes at this time.

TIER II CRITERIA

II-1 Poor Accessibility:

c). Lack Of Available Rail Access: The area is not located where convenient existing or potential freight rail transportation can serve the Area. This would cause the transfer and distribution of goods and materials to be transported only via truck surface transportation.

II-3 Engineering/Financial Constraints: Constraints to development in the Satellite Area may result from the projected costs of site preparation if contamination is found.

TIER III CRITERIA

No Tier III criteria appear to be present.

D. Planning Recommendation

Given the existing physical conditions described above and the exclusionary criteria identified, Satellite Area (h) should be retained as a Satellite Area. Consideration of the TIER I contamination criteria should not preclude the utilization of this site due to the unsubstantiation of contamination. In addition, the site is compatible with current zoning and the dominant existing industrial development surrounding it, thereby completing the development patterns established in the area. However, the TIER I ownership/jurisdictional criteria precludes utilization of 8 acres of this site. Therefore, 10.2 acres of this Area are retained for further EIS evaluation. (It should be noted that, in the various Alternatives, this Satellite Area encompassed 27 acres however, 9 acres were retained for primary land uses within Hybrid Planning Area 1). This area will yield 222,156 sq. ft. of satellite space.

Satellite Area (i)

A. Existing Conditions

Satellite Area (i) is located in East Rutherford and is 30.8 acres in size. It is generally bounded by Berry's Creek to the east; existing development to the south and north; and Route 17 to the west. Currently, the site is vacant upland and is bisected by Murray Hill Parkway. It includes a portion of Upland Area D which was determined to be suitable for satellite usage.

Surrounding land uses include the NJSEA Complex and wetland to the east; existing industrial uses and vacant land to the south; existing out of District industrial development to the west; and commercial and industrial uses to the north.

Access to the Area is available from Murray Hill Parkway. The existing rail facilities in proximity to this Area are commuter oriented and no proposals exist for freight usage. However, the site is in close proximity to Route 17 and Paterson Plank Road which provide access to other major arterials in the area.

Water and sewer facilities are available from the Hackensack Water Company and the BCUA, respectively.

B. Projected Land Uses

The screening document analysis projected 670,824 sq. ft. of secondary office/warehouse space for this Area.

C. Planning Analysis

The subject Satellite Area is characterized by the following exclusionary criteria:

TIER I CRITERIA

I-1 Severe Land Contamination: It should be noted that this site is located within the ongoing NJDEP Berry's Creek Mercury Contamination Study Area and may be subject to conclusions of a finalized remediation plan. Also, a portion of this site is part of the Universal Oil Products Superfund site and is currently undergoing remediation activities.

TIER II CRITERIA

II-1 Poor Accessibility:

c). Lack Of Available Rail Access: The area is not located where convenient existing or potential freight rail transportation can serve the Area. This would cause the transfer and distribution of goods and materials to be transported only via truck surface transportation.

II-3 Engineering/Financial Constraints: Constraints to development in the Satellite Area may result from the projected costs of site preparation due to contamination.

TIER III CRITERIA

No Tier III criteria appear to be present.

D. Planning Recommendation

Given the existing physical conditions described above and the exclusionary criteria identified, Satellite Area (i) should be retained as a Satellite Area. Consideration of the TIER I contamination criteria should not preclude the utilization of this site due to the unsubstantiation of contamination east of Murray Hill Parkway and the approved remediation activities west of Murray Hill Parkway. In addition, the site is compatible with current zoning and the dominant existing industrial development surrounding it, thereby completing the development patterns established in the area. Therefore, this 30.8 acre Area is retained for further EIS evaluation and will yield 670,824 sq. ft. of space.

Satellite Area (j)

A. Existing Conditions

Satellite Area (j) is located in East Rutherford and is 49.1 acres in size. It is generally bounded by Berry's Creek to the east; existing development to the south and north; and Route 17 to the west. Currently, the site is vacant land and is bisected by Murray Hill Parkway. Approximately 34.1 acres of this site are considered to be wetland. It includes a portion of Redevelopment Area A which was determined to be suitable for satellite usage.

Surrounding land uses include the NJSEA Complex and wetland to the east; existing industrial uses and vacant land to the south; existing out of District industrial development to the west; and commercial and industrial uses to the north.

Access to the Area is available from Murray Hill Parkway. The existing rail facilities in proximity to this Area are commuter oriented and no proposals exist for freight usage. However, the site is in close proximity to Route 17 and Paterson Plank Road which provide access to other major arterials in the area.

Water and sewer facilities are available from the Hackensack Water Company and the BCUA, respectively.

B. Projected Land Uses

The screening document analysis projected 847,895 sq. ft. of secondary office/warehouse space for this Area. In the hybrid, the total land area was increased to add adjacent properties into the analysis.

C. Planning Analysis

The subject Satellite Area is characterized by the following exclusionary criteria:

TIER I CRITERIA

I-1 Severe Land Contamination: It should be noted that this site is located within the ongoing NJDEP Berry's Creek Mercury Contamination Study Area and may be subject to conclusions of a finalized remediation plan. Also, a portion of this site is part of the Universal Oil Products Superfund site and is currently undergoing remediation activities.

TIER II CRITERIA

II-1 Poor Accessibility:

c). Lack Of Available Rail Access: The area is not located where convenient existing or potential freight rail transportation can serve the Area. This would cause the transfer and distribution of goods and materials to be transported only via truck surface transportation.

II-3 Engineering/Financial Constraints: Constraints to development in the Satellite Area may result from the projected costs of site preparation due to contamination.

TIER III CRITERIA

No Tier III criteria appear to be present.

D. Planning Recommendation

Given the existing physical conditions described above and the exclusionary criteria identified, Satellite Area (j) should be retained as a Satellite Area. Consideration of the TIER I contamination criteria should not preclude the utilization of this site due to the unsubstantiation of contamination east of Murray Hill Parkway and the approved remediation activities west of Murray Hill Parkway. In addition, the site is compatible with current zoning and the dominant existing industrial development surrounding it, thereby completing the development patterns established in the area. Therefore, this 49.1 acre Area is retained for further EIS evaluation which will yield 1,069,398 sq. ft. of space.

Satellite Area (k)

A. Existing Conditions

Satellite Area (k) is located in Carlstadt and is 12.1 acres in size. It is generally bounded by Commerce Boulevard to the south; Central Boulevard to the west; the Hackensack River to the east; and Empire Boulevard to the north. Currently, the site is vacant land surrounded by existing development. Approximately 5.6 acres of this site are considered to be wetland.

Surrounding land uses consist of existing industrial development to the west and north; and vacant wetland to the east and south. The BCUA Little Ferry Facility is also to the north.

Access to the Area is available from Central Boulevard and Commerce Boulevard. There are no existing or proposed freight rail facilities in proximity to this Area. However, the site is in close proximity to Washington Avenue, providing access to other major arterials in the area.

Water and sewer facilities are available from the Hackensack Water Company and the BCUA, respectively.

B. Projected Land Uses

The screening document analysis projected 263,538 sq. ft. of secondary office/warehouse space for this Area.

C. Planning Analysis

The subject Satellite Area is characterized by the following exclusionary criteria:

TIER I CRITERIA

No Tier I criteria appear to be present.

TIER II CRITERIA

II-1 Poor Accessibility:

c). Lack Of Available Rail Access: The area is not located where existing or potential freight rail transportation can serve the Area. This would cause the transfer and distribution of goods and materials to be transported only via truck surface transportation.

TIER III CRITERIA

No Tier III criteria appear to be present.

D. Planning Recommendation

Given the existing physical conditions described above and the exclusionary criteria identified, Satellite Area (k) should be retained as a Satellite Area. In addition, the site is compatible with current zoning and the dominant existing industrial development surrounding it, thereby completing the development patterns established in the area. Therefore, this 12.1 acre Area is retained for further EIS evaluation which will yield 263,538 sq. ft. of space.

Satellite Area (l) - see Planning Analysis for Hybrid Area 3.

Satellite Area (m) - see Planning Analysis for Hybrid Area 4.

Satellite Area (o)

A. Existing Conditions

Satellite Area (o) is located in Carlstadt and is 1.7 acres in size. It is generally bounded by Veterans Boulevard to the west and north; Washington Avenue to the east; and development to the south. Currently, the site is unimproved vacant upland surrounded by existing development.

Surrounding land uses consist of existing industrial development to the west, east, and north; and wetland and industrial uses to the south. Also, there are scattered existing commercial uses to the east.

Access to the Area is available from Veterans Boulevard. There are no existing or proposed freight rail facilities in proximity to this Area. However, the site is in close proximity to Washington Avenue which provides access to other major arterials in the area.

Water and sewer facilities are available from the Hackensack Water Company and the BCUA, respectively.

B. Projected Land Uses

The screening document analysis projected 37,026 sq. ft. of secondary office/warehouse space for this Area.

C. Planning Analysis

The subject Satellite Area is characterized by the following exclusionary criteria:

TIER I CRITERIA

No Tier I criteria appear to be present.

TIER II CRITERIA

II-1 Poor Accessibility:

c). Lack Of Available Rail Access: The area is not located where existing or potential freight rail transportation can serve the Area. This would cause the transfer and distribution of goods and materials to be transported only via truck surface transportation.

TIER III CRITERIA

No Tier III criteria appear to be present.

D. Planning Recommendation

Given the existing physical conditions described above and the exclusionary criteria identified, Satellite Area (o) *should be retained* as a Satellite Area. In addition, the site is compatible with current zoning and the dominant existing industrial development surrounding it, thereby completing the development patterns established in the area. Therefore, this 1.7 acre Area is retained for further EIS evaluation which will yield 37,026 sq. ft. of space.

Satellite Area (p)

A. Existing Conditions

Satellite Area (p) is located in Carlstadt and is 10.2 acres in size. It is generally bounded by vacant land to the west; Washington Avenue to the east; and development to the north and south. Currently, the site is unimproved vacant land. Approximately 6.5 acres of this site are considered to be wetland.

Surrounding land uses consist of existing industrial development to the east, south and north; and wetland and industrial uses to the west. Also, to the north are existing scattered commercial uses.

Access to the Area is available from Washington Avenue. There are no existing or proposed freight rail facilities in proximity to this Area. However, the sites' frontage on Washington Avenue provides access to other major arterials in the area.

Water and sewer facilities are available from the Hackensack Water Company and the BCUA, respectively.

B. Projected Land Uses

The screening document analysis projected 50,094 sq. ft. of secondary office/warehouse space for this Area. In the hybrid, the total land area was increased to add adjacent properties into the analysis.

C. Planning Analysis

The subject Satellite Area is characterized by the following exclusionary criteria:

TIER I CRITERIA

No Tier I criteria appear to be present.

TIER II CRITERIA

II-1 Poor Accessibility:

c). Lack Of Available Rail Access: The area is not located where existing or potential freight rail transportation can serve the Area. This would cause the transfer and distribution of goods and materials to be transported only via truck surface transportation.

TIER III CRITERIA

No Tier III criteria appear to be present.

D. Planning Recommendation

Given the existing physical conditions described above and the exclusionary criteria identified, Satellite Area (p) should be retained as a Satellite Area. In addition, the site is compatible with current zoning and the dominant existing industrial development surrounding it, thereby completing the development patterns established in the area. Therefore, this 10.2 acre Area is retained for further EIS evaluation which will yield 222,156 sq. ft. of space. Approximately 6.5 acres of this site are considered to be wetland.

Satellite Area (q)

A. Existing Conditions

Satellite Area (q) is located in Carlstadt and is 3.1 acres in size. It is generally bounded by Washington Avenue to the west; Michele Place to the east; Paterson Plank Road to the south; and development to the north. Currently, the site is vacant land surrounded by existing development. Approximately 1.8 acres of this site is considered to be wetland.

Surrounding land uses include existing industrial and commercial development to the west; existing industrial uses and wetland to the east and north; and the NJSEA Brendan Byrne Arena to the south.

Access to the Area is available from Michele Place. There are no existing or proposed freight rail facilities in proximity to this Area. However, the site is in close proximity to Washington Avenue and Paterson Plank Road providing access to other major arterials in the area.

Water and sewer facilities are available from the Hackensack Water Company and the BCUA, respectively.

B. Projected Land Uses

The screening document analysis projected 67,518 sq. ft. of secondary office/warehouse space for this Area.

C. Planning Analysis

The subject Satellite Area is characterized by the following exclusionary criteria:

TIER I CRITERIA

No Tier I criteria appear to be present.

TIER II CRITERIA

II-1 Poor Accessibility:

c). Lack Of Available Rail Access: The area is not located where existing or potential freight rail transportation can serve the Area. This would cause the transfer and distribution of goods and materials to be transported only via truck surface transportation.

TIER III CRITERIA

No Tier III criteria appear to be present.

D. Planning Recommendation

Given the existing physical conditions described above and the exclusionary criteria identified, Satellite Area (q) should be retained as a Satellite Area. In addition, the site is compatible with current zoning and the dominant existing industrial development surrounding it, thereby completing the development patterns established in the area. Therefore, this 3.1 acre Area is retained for further EIS evaluation which will yield 67,518 sq. ft. of space.

Satellite Area (r)

A. Existing Conditions

Satellite Area (r) is located in Ridgefield and is 14.6 acres in size. It is generally bounded by Bellman's Creek to the south and west; Pleasant View Terrace to the north; and Railroad Avenue to the east. Currently, the site is vacant land surrounded by existing development. Approximately 14.4 acres is considered to be wetland.

Surrounding land uses consist of existing heavy industrial development to the west, east, and south; and light industrial uses and wetland to the north.

Access to the Area is available from Pleasant View Terrace. There are existing freight rail facilities in proximity to this Area but, no proposals allowing this site access.

Water and sewer facilities are available from the Hackensack Water Company and the BCUA, respectively.

B. Projected Land Uses

The screening document analysis projected 108,900 sq. ft. of secondary office/warehouse space for this Area. In the hybrid, the total land area was increased to add adjacent properties into the analysis

C. Planning Analysis

The subject Satellite Area is characterized by the following exclusionary criteria:

TIER I CRITERIA

a. Current Land Development: Subsequent to the selection of this satellite area for review, this site was set aside as wetland preservation in conjunction with a wetland permitting application on another site within the District. Therefore, this satellite area is no longer available.

TIER II CRITERIA

II-1 Poor Accessibility:

b). Proximate Location To Regional Highway System: The Area is not located within close proximity to the interstate highway system . Available routes to the highway system would be circuitous and cause delay in delivery and distribution due to lack of such access.

c). Lack Of Available Rail Access: Although the area is located in areas where existing or potential freight rail transportation can serve the Area, direct access is currently unavailable. This could require the transfer and distribution of goods and materials to be transported only via truck surface transportation.

TIER III CRITERIA

No Tier III criteria appear to be present.

D. Planning Recommendation

Given the existing conditions described above and the exclusionary criteria identified, Satellite Area (r) should be excluded as a Satellite Area.

Satellite Area (t)

A. Existing Conditions

Satellite Area (t) is located in North Bergen and is approximately 13 acres in size. It is generally bounded by Bellman's Creek to the west; West Side Avenue to the east and north; and development to the south. Currently, the site is an existing warehouse/distribution facility.

Surrounding land uses consist of existing industrial development to the east, south, and north; and wetland to the west.

Access to the Area is available from West Side Avenue. The West Shore freight line is adjacent to this Area to the east however, there currently is no direct access to the site.

Water and sewer facilities are available from the Hackensack Water Company and the North Bergen MUA, respectively.

B. Projected Land Uses

The screening document analysis projected 274,428 sq. ft. of secondary office/warehouse space for this Area.

C. Planning Analysis

The subject Satellite Area is characterized by the following exclusionary criteria:

TIER I CRITERIA

I-3 Current Land Development: This site was evaluated for redevelopment potential however, the analysis concluded that it is a viable operation and would not meet the necessary criteria for redevelopment. Therefore, the site is unavailable for development purposes at this time.

TIER II CRITERIA

No Tier II criteria appear to be present.

TIER III CRITERIA

No Tier III criteria appear to be present.

D. Planning Recommendation

Given the existing physical conditions described above and the exclusionary criteria identified, Satellite Area (t) should be eliminated as a Satellite Area. Specifically, the TIER I current land development criteria precludes utilization of the property. Therefore, this 13 acre Area is eliminated from further EIS evaluation.

Satellite Area (u)

A. Existing Conditions

Satellite Area (u) is located in North Bergen and is approximately 12 acres in size. It is generally bounded by the Conrail line to the south and west; the West Shore line to the east; and existing development to the north. Currently, the site is an existing warehouse/distribution facility.

Surrounding land uses consist of industrial development to the west, south, and north; and existing out of District industrial uses to the east.

Access to the Area is available from 91st Street which lies outside the District and connects to Routes 1&9.

Water and sewer facilities are available from the Hackensack Water Company and the North Bergen MUA, respectively.

B. Projected Land Uses

The screening document analysis projected 267,894 sq. ft. of secondary office/warehouse space for this Area.

C. Planning Analysis

The subject Satellite Area is characterized by the following exclusionary criteria:

TIER I CRITERIA

I-3 Current Land Development: This site was evaluated for redevelopment potential however, the analysis concluded that it is a viable operation and would not meet the necessary criteria for redevelopment. Therefore, the site is unavailable for development purposes at this time.

TIER II CRITERIA

II-1 Poor Accessibility:

a). Highway Capacity: The road system (91st Street) is only a two lane local road which is utilized for parking and turning areas for the existing warehousing and commercial uses. New rights-of-way needed to expand the road are not available. Also, there are no secondary access points available to this site.

TIER III CRITERIA

No Tier III criteria appear to be present.

D. Planning Recommendation

Given the existing physical conditions described above and the exclusionary criteria identified, Satellite Area (u) should be eliminated as a Satellite Area. Specifically, the TIER I current land development criteria precludes utilization of the property. Therefore, this 12 acre Area is eliminated from further EIS evaluation.

Satellite Area (v)

A. Existing Conditions

Satellite Area (v) is located in North Bergen and is 30.3 acres in size. It is generally bounded by the West Shore line to the east; existing development to the north and south; and PSE&G transmission towers to the west. Currently, the site is vacant land surrounded by existing development. Approximately 23.3 acres of this site is considered to be wetland.

Surrounding land uses consist of existing industrial development to the north and south; wetland to the west; and existing out of District industrial development to the east.

Access is available from West Side Avenue, which bisects the Area. The existing freight rail facilities may be utilized by this Area but, no proposals exist at this time. The site is in close proximity to Routes 1&9 which provide access to other nearby major arterials in the area.

Water and sewer facilities are available from the Hackensack Water Company and the North

Bergen MUA, respectively.

B. Projected Land Uses

The screening document analysis projected 675,180 sq. ft. of secondary office/warehouse space for this Area. In the hybrid, the total land area was decreased to reduce the amount of projected wetland fill.

C. Planning Analysis

The subject Satellite Area is characterized by the following exclusionary criteria:

TIER I CRITERIA

No Tier I criteria appear to be present.

TIER II CRITERIA

II-1 Poor Accessibility:

c). Lack Of Available Rail Access: Although the area is located in areas where existing or potential freight rail transportation can serve the Area, direct access is currently unavailable. This could require the transfer and distribution of goods and materials to be transported only via truck surface transportation.

TIER III CRITERIA

No Tier III criteria appear to be present.

D. Planning Recommendation

Given the existing physical conditions described above and the exclusionary criteria identified, Satellite Area (v) should be retained as a Satellite Area. In addition, the site is compatible with current zoning and the dominant existing industrial development surrounding it, thereby completing the development patterns established in the area. Therefore, 30.3 acres are retained for further EIS evaluation which will yield 659,934 sq. ft. of space.

Satellite Area (w)

A. Existing Conditions

Satellite Area (w) is located in East Rutherford and is 39.7 acres in size. It is generally bounded by Berry's Creek to the east; Berry's Creek and Route 3 to the south ; Madison Hill Circle to the west; and development to the north. Currently, the site is vacant land surrounded by existing development. Approximately 35 acres of this site is considered to be wetland.

Surrounding land uses consist of existing industrial development to the west, south, and north; and wetland and the NJ Sports Complex to the east. The site is within the NJDEP Berry's Creek Mercury Contamination Study Area.

Access to the Area is available from Madison Hill Circle and Murray Hill Parkway. There are no existing or proposed freight rail facilities in proximity to this Area. However, the site is in close proximity to Route 17, Route 3 and Paterson Plank Road, providing access to other major arterials in the area.

Water and sewer facilities are available from the Hackensack Water Company and the BCUA, respectively.

B. Projected Land Uses

The screening document analysis projected 790,614 sq. ft. of secondary office/warehouse space for this Area. In the hybrid, the total land area was increased to add adjacent properties into the analysis.

C. Planning Analysis

The subject Satellite Area is characterized by the following exclusionary criteria:

TIER I CRITERIA

I-1 Severe Land Contamination: It should be noted that this site is located within the ongoing NJDEP Berry's Creek Mercury Contamination Study Area. However, there are no finalized remediation plans at this time and the site may be subject to any conclusions within the study.

TIER II CRITERIA

II-1 Poor Accessibility:

c). Lack Of Available Rail Access: The area is not located where convenient existing or potential freight rail transportation can serve the Area. This would cause the transfer and distribution of goods and materials to be transported only via truck surface transportation.

TIER III CRITERIA

No Tier III criteria appear to be present.

D Planning Recommendation

Given the existing physical conditions described above and the exclusionary criteria identified, Satellite Area (w) should be retained as a Satellite Area Consideration of the TIER I contamination criteria should not preclude the utilization of this site due to the unsubstantiation of contamination of the site In addition, the site is compatible with current zoning and the dominant existing industrial development surrounding it, thereby completing the development patterns established in the area Therefore, this 39 7 acre Area is retained for further EIS evaluation which will yield 864,666 sq ft of space

Satellite Area (x)

A Existing Conditions

Satellite Area (x) is located in Lyndhurst and is approximately 46 2 acres in size It is generally bounded by Berry's Creek to the east, existing development and Route 3 to the north, Chubb Avenue and existing development to the west, and Valley Brook Avenue and existing development to the south Currently, the site is vacant land of which approximately 35 9 acres is considered to be wetland

Surrounding land uses consist of existing secondary office/ warehouse development to the west and south, wetland to the east, and primary office uses to the north

Access to the Area is available from Chubb Avenue There are no existing or proposed freight rail facilities in proximity to this Area However, the site is in close proximity to Route 3 which provides access to other major arterials in the area

Water and sewer facilities are available from the Hackensack Water Company and the BCUA, respectively

B Projected Land Uses

The screening document analysis projected approximately 1 million sq ft of secondary office/warehouse space for this Area In the hybrid, the total land area was increased to add adjacent properties into the analysis

C Planning Analysis

The subject Satellite Area is characterized by the following exclusionary criteria

TIER I CRITERIA

I-2 Ownership Difficulties/HMDC Jurisdictional Issues. A portion of this site is currently deed restricted by an agreement between the HMDC and the property owner affecting approximately 8 acres

TIER II CRITERIA

II-1 Poor Accessibility.

c) Lack Of Available Rail Access. The area is not located where existing or potential freight rail transportation can serve the Area This would cause the transfer and distribution of goods and materials to be transported only via truck surface transportation

TIER III CRITERIA

No Tier III criteria appear to be present

D Planning Recommendation

Given the existing physical conditions described above and the exclusionary criteria identified, Satellite Area (x) should be retained as a Satellite Area In addition, the site is compatible with current zoning and the dominant existing secondary office/warehouse development surrounding it, thereby completing the development patterns established in the area The 8 acres affected by the TIER I ownership/jurisdictional criteria are eliminated from further evaluation Therefore, 46 2 acres of this Area are retained for further EIS evaluation which will yield 1,006,454 sq ft of space

Satellite Area (y)

A Existing Conditions

Satellite Area (y) is located in Lyndhurst and is approximately 27 acres in size It is generally bounded by Valley Brook Avenue to the north, development to the east and west, and vacant land to the south Currently, the site is unimproved vacant land surrounded by existing development

Surrounding land uses include existing secondary office/warehouse development to the west and east, secondary office/warehouse and radio towers to the north, and the Lyndhurst, BCUA, and Avon landfills to the south

Access to the Area is available from Valley Brook Avenue There are no existing or proposed freight rail facilities in proximity to this Area However, the site is in close proximity to Route 3 which provides access to other major arterials in the area

Water and sewer facilities are available from the Hackensack Water Company and the BCUA, respectively

B. Projected Land Uses

The screening document analysis projected 596,772 sq. ft. of secondary office/warehouse space for this Area.

C. Planning Analysis

The subject Satellite Area is characterized by the following exclusionary criteria:

TIER I CRITERIA

I-1 Severe Land Contamination: A 23 acre portion of this site is part of the Town of Lyndhurst municipal landfill. Although this landfill has not accepted solid waste materials for years, it has not been closed in accordance with NJDEPE Solid Waste Regulations. There are no proposals to do so.

TIER II CRITERIA

II-1 Poor Accessibility:

c). Lack Of Available Rail Access: Although the area is located in areas where existing or potential freight rail transportation can serve the Area, direct access is currently unavailable. This could require the transfer and distribution of goods and materials to be transported only via truck surface transportation.

TIER III CRITERIA

No Tier III criteria appear to be present.

D. Planning Recommendation

Given the existing physical conditions described above and the exclusionary criteria identified, the landfill portion (23 acres) of Satellite Area (y) should be eliminated. However, the remainder of the site (4 acres) is compatible with current zoning and the dominant existing industrial development surrounding it, thereby completing the development patterns established in the area. Therefore, 4 acres are retained for further EIS evaluation which will yield 87,120 sq. ft. of space.

Satellite Area (aa)

A. Existing Conditions

Satellite Area (aa) is located in North Bergen and is approximately 17 acres in size. It is generally bounded by the West Shore rail line to the east; West Side Avenue to the west; and development to the north and south. Currently, the site is vacant land surrounded by existing development. Approximately 9.5 acres are considered to be wetland.

Surrounding land uses consist of existing industrial development to the west, south, and north; and existing out of District development to the east.

Access to the Area is available from West Side Avenue. There are existing freight rail facilities in proximity to this Area however, no proposals for direct access exist at this time. The sites' frontage on West Side Avenue provides access to other major arterials in the area.

Water and sewer facilities are available from the Hackensack Water Company and the North Bergen MUA, respectively.

B. Projected Land Uses

The screening document analysis projected 370,260 sq. ft. of secondary office/warehouse space for this Area.

C. Planning Analysis

The subject Satellite Area is characterized by the following exclusionary criteria:

TIER I CRITERIA

I-3 Current Land Development: A 4 acre portion of this site was evaluated for redevelopment potential however, the analysi concluded that it is a viable operation and would not meet the necessary criteria for redevelopment. Therefore, the 4 acres are unavailable for development purposes at this time.

TIER II CRITERIA

II-1 Poor Accessibility:

c). Lack Of Available Rail Access: Although the area is located in areas where existing or potential freight rail transportation can serve the Area, direct access is currently unavailable. This could require the transfer and distribution of goods and materials to be transported only via truck surface transportation.

TIER III CRITERIA

No Tier III criteria appear to be present.

D. Planning Recommendation

Given the existing physical conditions described above and the exclusionary criteria identified, Satellite Area (aa) should be retained as a Satellite Area. In addition, the site is compatible with current zoning and the dominant existing industrial development surrounding it, thereby completing the development patterns established in the area. However, the 4 acre portion unable to meet the necessary redevelopment criteria is eliminated. Therefore, 13.2 acres are retained for further EIS evaluation which will yield 287,496 sq. ft. of space.

Satellite Area (ab)

A. Existing Conditions

Satellite Area (ab) is located in North Bergen and is 7.5 acres in size. It is generally bounded by the West Shore rail line to the east; West Side Avenue to the west; and development to the north and south. Currently, the site is vacant land surrounded by existing development.

Surrounding land uses consist of existing industrial development to the south, and north; wetland to the west; and existing out of District development to the east.

Access to the Area is available from West Side Avenue. There are existing freight rail facilities in proximity to this Area however, no proposals for direct access exist at this time. The sites' frontage on West Side Avenue provides access to other major arterials in the area.

Water and sewer facilities are available from the Hackensack Water Company and the North Bergen MUA, respectively.

B. Projected Land Uses

The screening document analysis projected 163,350 sq. ft. of secondary office/warehouse space for this Area.

C. Planning Analysis

The subject Satellite Area is characterized by the following exclusionary criteria:

TIER I CRITERIA

No Tier I criteria appear to be present.

TIER II CRITERIA

II-1 Poor Accessibility:

c). Lack Of Available Rail Access: Although the area is located in areas where existing or potential freight rail transportation can serve the Area, direct access is currently unavailable. This could require the transfer and distribution of goods and materials to be transported only via truck surface transportation.

TIER III CRITERIA

No Tier III criteria appear to be present.

D. Planning Recommendation

Given the existing physical conditions described above and the exclusionary criteria identified, Satellite Area (ab) should be retained as a Satellite Area. In addition, the site is compatible with current zoning and the dominant existing industrial development surrounding it, thereby completing the development patterns established in the area. Therefore, the 7.5 acre Area is retained for further EIS evaluation which will yield 163,350 sq. ft. of space.

Satellite Area (ac)

A. Existing Conditions

Satellite Area (ac) is located in North Bergen and is 4.4 acres in size. It is generally bounded by the West Shore rail line to the east; West Side Avenue to the west; and development to the north and south. Currently, the site is vacant land surrounded by existing development. Approximately 2.9 acres are considered to be wetland.

Surrounding land uses consist of existing industrial development to the south, and north; wetland to the west; and existing out of District development to the east.

Access to the Area is available from West Side Avenue. There are existing freight rail facilities in proximity to this Area however, no proposals for direct access exist at this time. The sites' frontage on West Side Avenue provides access to other major arterials in the area.

Water and sewer facilities are available from the Hackensack Water Company and the North Bergen MUA, respectively.

B. Projected Land Uses

The screening document analysis projected 95,832 sq. ft. of secondary office/warehouse space for this Area.

C. Planning Analysis

The subject Satellite Area is characterized by the following exclusionary criteria:

TIER I CRITERIA

No Tier I criteria appear to be present.

TIER II CRITERIA

II-1 Poor Accessibility:

c). Lack Of Available Rail Access: Although the area is located in areas where existing or potential freight rail transportation can serve the Area, direct access is currently unavailable. This could require the transfer and distribution of goods and materials to be transported only via truck surface transportation.

TIER III CRITERIA

No Tier III criteria appear to be present.

D. Planning Recommendation

Given the existing physical conditions described above and the exclusionary criteria identified, Satellite Area (ac) should be retained as a Satellite Area. In addition, the site is compatible with current zoning and the dominant existing industrial development surrounding it, thereby completing the development patterns established in the area. Therefore, the 4.4 acre Area is retained for further EIS evaluation which will yield 95,832 sq. ft. of space.

Satellite Area (ad) - see Planning Analysis for Hybrid Area 11.

Satellite Area (ah)

A. Existing Conditions

Satellite Area (ah) is located in Secaucus and is 8.1 acres in size. It is generally bounded by Castle Road to the north; New County Road to the east; the New Jersey Transit Main line to the south; and development to the west. Currently, the site is unimproved vacant upland surrounded by existing development.

Surrounding land uses consist of existing industrial development to the west, east, south, and north.

Access to the Area is available from Castle Road. There are existing freight rail facilities in proximity to this Area however, no proposals for direct access exist at this time.

Water and sewer facilities are available from the Hackensack Water Company and the Secaucus MUA, respectively.

B. Projected Land Uses

The screening document analysis projected 176,418 sq. ft. of secondary office/warehouse space for this Area.

C. Planning Analysis

The subject Satellite Area is characterized by the following exclusionary criteria:

TIER I CRITERIA

No Tier I criteria appear to be present.

TIER II CRITERIA

II-1 Poor Accessibility:

b). Proximate Location To Regional Highway System: The Area is not located within close proximity to the interstate highway system. Available routes to the highway system would be circuitous and cause delay in delivery and distribution due to lack of such access.

c). Lack Of Available Rail Access: Although the area is located in areas where existing or potential freight rail transportation can serve the Area, direct access is currently unavailable. This could require the transfer and distribution of goods and materials to be transported only via truck surface transportation.

TIER III CRITERIA

No Tier III criteria appear to be present.

D. Planning Recommendation

Given the existing physical conditions described above and the exclusionary criteria identified, Satellite Area (ah) should be retained as a Satellite Area. The TIER II-1b) criteria will be alleviated with proposed road improvements to both the local and regional system near the site. In addition, the site is compatible with current zoning and the dominant existing industrial development surrounding it, thereby completing the development patterns established in the area. Therefore, this 8.1 acre Area is retained for further EIS evaluation which will yield 176,418 sq.

ft. of space.

Satellite Area (ai)

A. Existing Conditions

Satellite Area (ai) is located in Jersey City and is approximately 17 acres in size. It is generally bounded by Penhorn Creek to the north and west; a US Postal Facility to the east; and County Road to the south. Currently, the site is a trucking terminal surrounded by existing development.

Surrounding land uses consist of the Conrail Croxton Rail Yard to the south; the US Postal Service Jersey City Bulk Mail Facility to the east; wetland and existing industrial uses to the north and west.

Access to the Area is available from County Avenue. Although no existing rail facilities serve the site directly, its' proximity to Conrail and the Postal facility create synergistic characteristics for this area. Also, there is a proposal to develop an intermodal rail facility nearby.

Water and sewer facilities are available from the City of Jersey City.

B. Projected Land Uses

The screening document analysis projected 370,260 sq. ft. of secondary office/warehouse space for this Area.

C. Planning Analysis

The subject Satellite Area is characterized by the following exclusionary criteria:

TIER I CRITERIA

I-3 Current Land Development: This site was evaluated for redevelopment potential however, the analysis concluded that it is a viable operation and would not meet the necessary criteria for redevelopment. Therefore, the site is unavailable for development purposes at this time.

TIER II CRITERIA

No Tier II criteria appear to be present.

TIER III CRITERIA

No Tier III criteria appear to be present.

D. Planning Recommendation

Given the existing physical conditions described above and the exclusionary criteria identified, Satellite Area (ai) should be eliminated as a Satellite Area. Although the site is compatible with current zoning and the adjacent existing industrial development, the existing business operation is viable and would not meet the criteria necessary for redevelopment actions. Therefore, this 17 acre Area is eliminated from further EIS evaluation.

Satellite Area (al)

A. Existing Conditions

Satellite Area (al) is located in Kearny and is approximately 19 acres in size. It is generally bounded by the Amtrak Northeast Corridor rail line to the south; the NJ Turnpike to the west; the Newark-Jersey City Turnpike to the north; and existing development to the east. Currently, the site is unimproved vacant land.

Surrounding land uses consist of existing industrial development and the 1-A landfill to the north; the 1-D landfill to the west; wetland and the New Jersey Transit rail yard to the south; and the US Postal Service Kearny Bulk Mail Facility to the east.

Access to the Area is available from the Newark-Jersey City Turnpike. The existing rail facilities in proximity to this Area are commuter oriented and no proposals exist for freight usage. However, the sites' frontage on the Newark-Jersey City Turnpike provides access to other nearby major arterials in the area.

Water facilities are available from the Passaic Valley Water Commission. There is no sewer service in this area.

B. Projected Land Uses

The screening document analysis projected 413,820 sq. ft. of secondary office/warehouse space for this Area.

C. Planning Analysis

The subject Satellite Area is characterized by the following exclusionary criteria:

TIER I CRITERIA

I-2 Ownership Difficulties/HMDC Jurisdictional Issues: This site is currently owned by the Town of Kearny and is, therefore, unavailable for development purposes at this time.

TIER II CRITERIA

II-1 Poor Accessibility:

c). Lack Of Available Rail Access: Although the area is located in areas where existing or potential freight rail transportation can serve the Area, direct access is currently unavailable. This could require the transfer and distribution of goods and materials to be transported only via truck surface transportation.

II-2 Lack of Efficient Public Services: Insufficient infrastructure capacity (sewerage or water) and the inability to support new infrastructure development within the projected 20 year planning period.

II-3 Engineering/Financial Constraints: Constraints to development in the Satellite Area that result from the projected costs of installation of public services may render development impractical.

TIER III CRITERIA

III-3 Scattered or Isolated Site/Not Part of a Planned Industrial Distribution Park: The Area is isolated and not associated with other compatible uses nor is it a component of existing or previously planned distribution or secondary office/warehouse Satellite Area Development.

D. Planning Recommendation

Given the existing physical conditions described above and the exclusionary criteria identified, Satellite Area (al) should be eliminated as a Satellite Area. Specifically, the TIER I ownership/jurisdictional issues criteria precludes utilization of the property. Therefore, this 19 acre Area is eliminated from further EIS evaluation.

Satellite Area (am)

A. Existing Conditions

Satellite Area (am) is located in Kearny and is 5.0 acres in size. It is generally bounded by the Amtrak Northeast Corridor rail line to the east; the Belleville Turnpike to the south and west; and vacant land to the north. Currently, the site is vacant upland.

Surrounding land uses consist of existing industrial development and wetland to the east; existing heavy industrial uses to the south; radio towers and wetland to the north; and wetland and the 1-A landfill to the west. Also, near this site are; two drum dumps that have been remediated; chromium contamination which is under an approved remediation plan; and another contaminated site that has no approved remediation plan.

Access to the Area is available from Belleville Turnpike. There are existing freight rail facilities in proximity to this Area but, no proposals for direct access have been made. However, the location of the site near Belleville Turnpike provides access to other major arterials in the area.

Water facilities are available from the Passaic Valley Water Commission. There is no sewer service to this area.

B. Projected Land Uses

The screening document analysis projected 108,900 sq. ft. of secondary office/warehouse space for this Area.

C. Planning Analysis

The subject Satellite Area is characterized by the following exclusionary criteria:

TIER I CRITERIA

No Tier I criteria appear to be present.

TIER II CRITERIA

II-1 Poor Accessibility:

c). Lack Of Available Rail Access: Although the area is located in areas where existing or potential freight rail transportation can serve the Area, direct access is currently unavailable. This could require the transfer and distribution of goods and materials to be transported only via truck surface transportation.

II-2 Lack of Efficient Public Services: Insufficient infrastructure capacity (sewerage or water) and the inability to support new infrastructure development within the projected 20 year planning period.

II-3 Engineering/Financial Constraints: Constraints to development in the Satellite Area that result from the projected costs of installation of public services may render development impractical.

TIER III CRITERIA

III-1 Absence of Services: The Area is not within proximity to the services necessary to support warehouse/distribution facilities i.e. truck/transport services, etc.

III-3 Scattered or Isolated Site/Not Part of a Planned Industrial Distribution Park: The Area is isolated and not associated with other compatible uses nor is it a component of existing or previously planned distribution or secondary office/warehouse Satellite Area Development.

D. Planning Recommendation

Given the existing physical conditions described above and the exclusionary criteria identified, Satellite Area (am) should be retained as a Satellite Area. Consideration of the Tier II and Tier III criteria are not overriding factors for the elimination of this particular site. Therefore, this 5.0 acre Area is retained for further EIS evaluation which will yield 108,900 sq. ft. of space.

Satellite Area (an)

A. Existing Conditions

Satellite Area (an) is located in Kearny and is approximately 21 acres in size. It is generally bounded by the Hackensack River to the east; the Amtrak Northeast Corridor rail line to the north; Belleville Turnpike to the west; and existing development to the south. Currently, the site is unimproved vacant land.

Surrounding land uses consist of existing industrial development and contaminated land to the south; wetland and contaminated land to the east; existing industrial development, wetland, and unimproved vacant land to the north; and existing industrial development and the 1-A landfill to the west.

Access to the Area is available from Belleville Turnpike. There are no existing or proposed freight rail facilities in proximity to this Area. However, Belleville Turnpike provides access to other major arterials in the area.

Water facilities are available from the Passaic Valley Water Commission. There is no sewer service to the area.

B. Projected Land Uses

The screening document analysis projected 457,380 sq. ft. of secondary office/warehouse space for this Area.

C. Planning Analysis

The subject Satellite Area is characterized by the following exclusionary criteria:

TIER I CRITERIA

I-1 Severe Land Contamination: This site has been identified by the NJDEP as highly contaminated from a variety of chemical constituents and there are no finalized remediation plans to date.

TIER II CRITERIA

II-1 Poor Accessibility:

c). Lack Of Available Rail Access: The area is not located where existing or potential freight rail transportation can serve the Area. This would cause the transfer and distribution of goods and materials to be transported only via truck surface transportation.

II-2 Lack of Efficient Public Services: Insufficient infrastructure capacity (sewerage or water) and the inability to support new infrastructure development within the projected 20 year planning period.

II-3 Engineering/Financial Constraints: Constraints to development in the Satellite Area that result from the projected costs of installation of public services and remediation activities may render development impractical.

TIER III CRITERIA

III-1 Absence of Services: The Area is not within proximity to the services necessary to support warehouse/distribution facilities i.e. truck/transport services, etc.

III-3 Scattered or Isolated Site/Not Part of a Planned Industrial Distribution Park: The Area is isolated and not associated with other compatible uses nor is it a component of existing or previously planned distribution or secondary office/warehouse Satellite Area Development.

D. Planning Recommendation

Given the existing physical conditions described above and the exclusionary criteria identified, Satellite Area (an) should be eliminated as a Satellite Area. Specifically, the TIER I contamination criteria precludes the utilization of this site.Therefore, this 21 acre Area is eliminated from further EIS evaluation.

Satellite Area (ao)

A. Existing Conditions

Satellite Area (ao) is located in Kearny and is approximately 42 acres in size. It is generally bounded by the Hackensack River to the east; the Amtrak Northeast Corridor rail line to the north; Belleville Turnpike to the west; and existing development to the south. Currently, the site is unimproved vacant land.

Surrounding land uses consist of existing industrial development to the south; wetland and contaminated land to the east; existing industrial development and contaminated land to the north; and existing industrial development and the 1-A landfill to the west.

Access to the Area is available from Belleville Turnpike. There are no existing or proposed freight rail facilities in proximity to this Area. However, Belleville Turnpike provides access to other major arterials in the area.

Water facilities are available from the Passaic Valley Water Commission. There is no sewer service to the area.

B. Projected Land Uses

The screening document analysis projected 914,760 sq. ft. of secondary office/warehouse space for this Area.

C. Planning Analysis

The subject Satellite Area is characterized by the following exclusionary criteria:

TIER I CRITERIA

I-1 Severe Land Contamination: This site has been identified by the NJDEP as highly contaminated from a variety of chemical constituents and there are no finalized remediation plans to date.

TIER II CRITERIA

II-1 Poor Accessibility:

c). Lack Of Available Rail Access: The area is not located where existing or potential freight rail transportation can serve the Area. This would cause the transfer and distribution of goods and materials to be transported only via truck surface transportation.

II-2 Lack of Efficient Public Services: Insufficient infrastructure capacity (sewerage or water) and the inability to support new infrastructure development within the projected 20 year planning period.

II-3 Engineering/Financial Constraints: Constraints to development in the Satellite Area that result from the projected costs of installation of public services and remediation activities may render development impractical.

TIER III CRITERIA

III-3 Scattered or Isolated Site/Not Part of a Planned Industrial Distribution Park: The Area is isolated and not associated with other compatible uses nor is it a component of existing or previously planned distribution or secondary office/warehouse Satellite Area Development.

D. Planning Recommendation

Given the existing physical conditions described above and the exclusionary criteria identified, Satellite Area (ao) should be eliminated as a Satellite Area. Specifically, the TIER I contamination criteria precludes the utilization of this site. Therefore, this 42 acre Area is eliminated from further EIS evaluation.

Satellite Area (ap)

A. Existing Conditions

Satellite Area (ap) is located in Kearny and is approximately 38 acres in size. It is generally bounded by the Hackensack River to the east and north; unimproved vacant land to the west; and existing development to the south. Currently, the site is unimproved vacant land.

Surrounding land uses consist of existing industrial development to the south; wetland and contaminated land to the west; contaminated land and the Hackensack River to the north; and existing industrial development to the east in Jersey City.

Access to the Area is available from an access road off of Fishhouse Road. There are no existing or proposed freight rail facilities in proximity to this Area. However, Fishhouse Road provides access to other major arterials in the area.

Water facilities are available from the Passaic Valley Water Commission. There is no sewer service to the area.

B. Projected Land Uses

The screening document analysis projected 827,640 sq. ft. of secondary office/warehouse space for this Area.

C. Planning Analysis

The subject Satellite Area is characterized by the following exclusionary criteria:

TIER I CRITERIA

I-1 Severe Land Contamination: This site is part of the Koppers' Coke site which is contaminated from a variety of coking residues and petroleum by-products. At this time there are no finalized remediation plans.

II-2 Ownership Difficulties/HMDC Jurisdictional Issues: The site is currently owned by the Hudson County Improvement Authority and was at one time proposed for the Hudson County Solid Waste Resource Recovery Facility.

TIER II CRITERIA

II-1 Poor Accessibility:

c). Lack Of Available Rail Access: The area is not located where existing or potential freight rail transportation can serve the Area. This would cause the transfer and distribution of goods and materials to be transported only via truck surface transportation.

II-2 Lack of Efficient Public Services: Insufficient infrastructure capacity (sewerage or water) and the inability to support new infrastructure development within the projected 20 year planning period.

II-3 Engineering/Financial Constraints: Constraints to development in the Satellite Area that result from the projected costs of installation of public services and remediation activities may render development impractical.

TIER III CRITERIA

III-1 Absence of Services: The Area is not within proximity to the services necessary to support warehouse/distribution facilities i.e. truck/transport services, etc.

III-3 Scattered or Isolated Site/Not Part of a Planned Industrial Distribution Park: The Area is isolated and not associated with other compatible uses nor is it a component of existing or previously planned distribution or secondary office/warehouse Satellite Area Development.

D. Planning Recommendation

Given the existing physical conditions described above and the exclusionary criteria identified, Satellite Area (ap) should be eliminated as a Satellite Area. Specifically, the TIER I contamination and ownership criteria preclude the utilization of this site. Therefore, this 38 acre Area is eliminated from further EIS evaluation.

Satellite Area (ar)

A. *Existing Conditions*

Satellite Area (ar) is located in Moonachie and is 14.9 acres in size. It is generally bounded by Losen Slote Creek to the north and east; and State Street to the west and south. Currently, it is vacant upland surrounded by existing development.

Surrounding land uses consist of existing industrial development to the west and south; existing residential development and the Little Ferry Losen Slote Creek Park to the north; and the BCUA Little Ferry Facility to the east.

Access to the Area is available from State Street. There are no existing or proposed freight rail facilities in proximity to this Area. Although the site is not directly accessible to any arterial roadway, it is near enough so as not to be negatively affected or constrained by its' location.

Water and sewer facilities are available from the Hackensack Water Company and the BCUA, respectively.

B. Projected Land Uses

The screening document analysis projected 324,522 sq. ft. of secondary office/warehouse space for this Area.

C. Planning Analysis

The subject Satellite Area is characterized by the following exclusionary criteria:

TIER I CRITERIA

No Tier I criteria appear to be present.

TIER II CRITERIA

II-1 Poor Accessibility:

c). Lack Of Available Rail Access: The area is not located where existing or potential freight rail transportation can serve the Area. This would cause the transfer and distribution of goods and materials to be transported only via truck surface transportation.

TIER III CRITERIA

No Tier III criteria appear to be present.

D. Planning Recommendation

Given the existing physical conditions described above and the exclusionary criteria identified, Satellite Area (ar) should be retained as a Satellite Area. In addition, the site is compatible with current zoning and the dominant existing industrial development surrounding it, thereby completing the development patterns established in the area. Therefore, this 14.9 acre Area is retained for further EIS evaluation which will yield 324,522 sq. ft. of space.

Satellite Area (as)

A. Existing Conditions

Satellite Area (as) is located in Jersey City and Secaucus and is 81.5 acres in size. It is generally bounded the Amtrak Northeast Corridor rail line to the west; Secaucus Road to the north; and existing development to the east and south. Currently, the site is vacant land bisected by Penhorn Creek and surrounded by existing development. Approximately 64.4 acres are considered to be wetland.

Surrounding land uses consist of existing industrial development, trucking facilities, and an intermodal facility to the north; existing trucking facilities and the Conrail Croxton Yard to the south; the NJ Turnpike eastern spur and a mix of residential and commercial development to the west; and the US Postal Service Jersey City Bulk Mail Facility to the east.

Access to the Jersey City portion of this Area is from Secaucus Road and potentially from County Road. The Secaucus portion is accessible from Penhorn Avenue. There are no existing freight rail facilities currently serving the site. However, the site was identified by an applicant as the only location available for an intermodal rail facility and was recently rezoned to reflect this proposal.

Water facilities would be available from either the Hackensack Water Company or the City of Jersey City. Sewer facilities would be available from either the North Bergen MUA or the City of Jersey City.

B. Projected Land Uses

The screening document analysis projected 217,800 sq. ft. of secondary office/warehouse space for this Area. This represents development associated with the intermodal rail facility which is land intensive but does not yield a substantial building coverage for this use. In the hybrid, the total land area was increased to add adjacent properties into the analysis.

C. Planning Analysis

The subject Satellite Area is characterized by the following exclusionary criteria:

TIER I CRITERIA

No Tier I criteria appear to be present.

TIER II CRITERIA

No Tier II criteria appear to be present.

TIER III CRITERIA

No Tier III criteria appear to be present.

D. Planning Recommendation

Given the existing physical conditions described above and the exclusionary criteria identified, Satellite Area (as) should be retained as a Satellite Area. In addition, the site is compatible with current zoning and the dominant existing industrial development surrounding it, thereby completing the development patterns established in the area.

Due to the shortfall of space required to meet the secondary office/warehouse need (described below), and the uniqueness of this Satellite Area (proposed for an intermodal facility), this site has been separated in two. The Jersey City portion (81.5 acres) will remain as site (as) incorporating the intermodal facility with 392,040 sq. ft. of associated secondary office/warehouse space. The Secaucus portion (10 acres) will be included in the expanded Satellite Area (aw) described in detail below.

Satellite Area (at)

A. Existing Conditions

Satellite Area (at) is located in Carlstadt and is 1.7 acres in size. It is generally bounded by Berry's Creek to the west and south; and Grand Street and development to the east and north, respectively. Currently, the site is unimproved vacant upland surrounded by existing development.

Surrounding land uses consist of existing industrial development to the north, east and south; and wetland to the south and west. Also, to the west of this site is the Ventron/Velsicol Superfund site.

Access to the Area is available from Purcell Court. The existing rail facilities in proximity to this Area are commuter oriented and no proposals exist for freight usage. However, the site is in close proximity to Moonachie Road providing access to other nearby major arterials in the area.

Water and sewer facilities are available from the Hackensack Water Company and the BCUA, respectively.

B. Projected Land Uses

Projected for this Area is 36,808 sq. ft. of secondary office/warehouse space.

C. Planning Analysis

The subject Satellite Area is characterized by the following exclusionary criteria:

TIER I CRITERIA

I-1 Severe Land Contamination: It should be noted that this site is located within the ongoing NJDEP Berry's Creek Mercury Contamination Study Area and may also be part of an approved remediation plan for the Ventron/Velsicol Superfund site. However, there are no finalized remediation plans to date.

TIER II CRITERIA

II-1 Poor Accessibility:

c). Lack Of Available Rail Access: Although the area is located in areas where existing or potential freight rail transportation can serve the Area, direct access is currently unavailable. This could require the transfer and distribution of goods and materials to be transported only via truck surface transportation.

II-3 Engineering/Financial Constraints: Constraints to development in the Satellite Area may result from the any conclusion reached through an approved remediation plan for the Superfund site rendering complete development of this Area impractical.

TIER III CRITERIA

No Tier III criteria appear to be present.

D. Planning Recommendation

Given the existing physical conditions described above and the exclusionary criteria identified, Satellite Area (at) should be retained as a Satellite Area. Consideration of the TIER I contamination criteria should not preclude the utilization of this site due to the unsubstantiation of contamination of the site. In addition, the site is compatible with current zoning and the dominant existing industrial development surrounding it, thereby completing the development patterns established in the area. Therefore, this 1.7 acre Area is retained for further EIS evaluation which will yield 36,808 sq. ft. of space.

Satellite Area (au)

A. Existing Conditions

Satellite Area (au) is located in Secaucus and is approximately 4 acres in size. It is generally bounded by the Hackensack River to the west; the NJT Main rail lines to the south; development to the north; and Meadowlands Parkway and development to the east. Currently, the site is vacant land.

Surrounding land uses consist of existing industrial development and wetland to the north; existing industrial development to the east; and wetland to the south and west.

Access to the Area is available from Meadowlands Parkway. There are no existing or proposed freight rail facilities in proximity to this Area.

Water and sewer facilities are available from the City of Jersey City and the Secaucus MUA, respectively.

B. Projected Land Uses

Projected for this Area is 79,061 sq. ft. of secondary office/warehouse space.

C. Planning Analysis

The subject Satellite Area is characterized by the following exclusionary criteria:

TIER I CRITERIA

I-3 Current Land Development: This site lies between the NJT Bergen and Main commuter rail lines. A portion of this site will be utilized for the connection of the two rail lines in conjunction with the proposed Allied Junction/Secaucus Transfer Station project. Therefore, it is not available for development.

TIER II CRITERIA

II-1 Poor Accessibility:

b). Proximate Location To Regional Highway System: The Area is not located within close proximity to the interstate highway system. Available routes to the highway system would be circuitous and cause delay in delivery and distribution due to lack of such access.

c). Lack Of Available Rail Access: The area is not located where existing or potential freight rail transportation can serve the Area. This would cause the transfer and distribution of goods and materials to be transported only via truck surface transportation.

TIER III CRITERIA

No Tier III criteria appear to be present.

D. Planning Recommendation

Given the existing physical conditions described above and the exclusionary criteria identified, Satellite Area (au) should be eliminated as a Satellite Area. Specifically, the TIER I current land development criteria precludes the utilization of this site. Therefore, this 4 acre Area is eliminated from further EIS evaluation.

Satellite Area (av)

A. Existing Conditions

Satellite Area (av) is located in Carlstadt and is 5.3 acres in size. It is generally bounded by Berry's Creek to the west; Penhorn Creek to the south; Gotham Parkway to the east; and Grand Street to the north. Currently, the site is vacant land surrounded by existing development. Approximately 2.5 acres are considered to be wetland.

Surrounding land uses consist of existing industrial development and wetland to the west; existing industrial development to the north and east; and wetland and existing development to the south. It should be noted that this site is within the NJDEP Berry's Creek Mercury Contamination Study Area.

Access to the Area is available from Grand Street. There are no existing or proposed freight rail facilities in proximity to this Area. However, the sites' frontage on Grand Street provides access to other major arterials in the area.

Water and sewer facilities are available from the Hackensack Water Company and the BCUA, respectively.

B. Projected Land Uses

Projected for this Area is 114,563 sq. ft. of secondary office/warehouse space.

C. Planning Analysis

The subject Satellite Area is characterized by the following exclusionary criteria:

TIER I CRITERIA

I-1 Severe Land Contamination: It should be noted that this site is located within the ongoing NJDEP Berry's Creek Mercury Contamination Study Area however, there are no finalized remediation plans to date.

TIER II CRITERIA

II-1 Poor Accessibility:

c). Lack Of Available Rail Access: The area is not located where existing or potential freight rail transportation can serve the Area. This would cause the transfer and distribution of goods and materials to be transported only via truck surface transportation.

II-3 Engineering/Financial Constraints: Constraints to development in the Satellite Area may result from any conclusion reached through an approved remediation plan for the Superfund site rendering complete development of this Area impractical.

TIER III CRITERIA

No Tier III criteria appear to be present.

D. Planning Recommendation

Given the existing physical conditions described above and the exclusionary criteria identified, Satellite Area (av) should be retained as a Satellite Area. Consideration of the TIER I contamination criteria should not preclude the utilization of this site due to the unsubstantiation of contamination of the site. In addition, the site is compatible with current zoning and the dominant existing industrial development surrounding it, thereby completing the development patterns established in the area. Therefore, this 5.3 acre Area is retained as secondary office/ warehouse development for further EIS evaluation which will yield 114,563 sq. ft. of space.

Satellite Area (aw)

A. Existing Conditions

Satellite Area (aw) is located in Secaucus and is approximately 18.3 acres in size. It is generally bounded by Penhorn Creek to the east; the Amtrak Northeast Corridor rail line to the west; Secaucus Road to the north; and County Road to the south. Currently, the site is unimproved vacant upland surrounded by existing development. This site includes the 10 acre Secaucus portion of Area (as) which was transferred to area (aw).

Surrounding land uses consist of existing industrial development and trucking terminals to the north; trucking terminals and wetland to the south; the NJ Turnpike eastern spur and mixed residential and commercial development to the west; and the US Postal Service Jersey City Bulk Mail Facility and wetland to the east.

Access to the Area is available from Penhorn Avenue. There are no existing freight rail facilities in proximity to this Area. However, a proposal for an intermodal rail facility has been made for adjacent property (see analysis for area (as)). Also, the site is in close proximity to Secaucus Road, providing access to other nearby major arterials in the area.

Water and sewer facilities are available from the Hackensack Water Company and the Secaucus MUA, respectively.

B. <u>Projected Land Uses</u>

Projected for this Area is 398,574 sq. ft. of secondary office/warehouse space.

C. <u>Planning Analysis</u>

The subject Satellite Area is characterized by the following exclusionary criteria:

TIER I CRITERIA

I-1 <u>Severe Land Contamination:</u> A portion of this site is contaminated with chromium which has been stockpiled at one end. However, the exact extent of contamination is unknown. There is evidence that suggests Penhorn Creek and possibly the surrounding areas may be affected. There are no finalized remediation plans or proposed studies at this time.

TIER II CRITERIA

No Tier II criteria appear to be present.

TIER III CRITERIA

No Tier III criteria appear to be present.

D. <u>Planning Recommendation</u>

Given the existing physical conditions described above and the exclusionary criteria identified, Satellite Area (aw) should be retained as a Satellite Area. Consideration of the TIER I contamination criteria should not preclude the utilization of this entire site due to the unknown extent of contamination. In addition, the site is compatible with current zoning and the dominant existing industrial development surrounding it, thereby completing the development patterns established in the area. Therefore, this 18.3 acre Area is retained for further EIS evaluation which will yield 398,574 sq. ft. of space.

Satellite Area (bb)

A. Existing Conditions

Satellite Area (bb) is located in North Bergen and is 11.5 acres in size. It is generally bounded by Bellman's Creek to the west; West Side Avenue to the east and north; and development to the south. Currently the site is vacant land of which 11.5 acres are considered to be wetland.

Surrounding land uses consist of existing industrial development to the east, south, and north; and wetland to the west.

Access to the Area is available from West Side Avenue. The West Shore freight line is adjacent to this Area to the east however, there currently is no direct access to the site.

Water and sewer facilities are available from the Hackensack Water Company and the North Bergen MUA, respectively.

B. Projected Land Uses

Projected for this Area is 247,856 sq. ft. of secondary office/warehouse space for this Area.

C. Planning Analysis

The subject Satellite Area is characterized by the following exclusionary criteria:

TIER I CRITERIA

No Tier I criteria appear to be present.

TIER II CRITERIA

No Tier II criteria appear to be present.

TIER III CRITERIA

No Tier III criteria appear to be present.

D. Planning Recommendation

Given the existing physical conditions described above and the exclusionary criteria identified, Satellite Area (bb) should be retained as a Satellite Area. In addition, the site is compatible with current zoning and the dominant existing industrial development surrounding it, thereby completing the development patterns established in the area. Therefore, this 11.4 acre Area is retained for further EIS evaluation which will yield 247,639 sq. ft. of space.

Conclusion

The overall individual satellite areas have a total land area of 449 acres which create approximately 8.4 million sq. ft. of secondary office/distribution space. The total wetland utilization of the individual satellite areas encompasses 244 acres.

Together with the Planning Areas that were designated as satellite areas, the total land area for satellite development totals 758 acres which will yield 15.1 million sq. ft. of secondary office/distribution space. The total wetland utilization is 251 acres. The total yield is consistent with the "needs" documentation of the Meadowlands District.

SATELLITE AREAS ANALYZED FOR FURTHER EIS EVALUATION

6\15\95

SATELLITE AREAS	a	b	c	d	e	f	g	h	i	j	k	o	p	q	r	t	u	v	w
EXCLUSIONARY CRITERIA																			
TIER I																			
I-1 Contaminated land					x	x		x	x	x									x
I-2 Ownership/Jurisdictional				x				x											
I-3 Current Development							x								x	x	x		
TIER II																			
II-1 Poor Accessibility																			
a. Highway Capacity						x											x		
b. Location to Regional System															x				
c. Lack of Rail Access	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x			x	x
II-2 Lack Of Public Services																			
II-3 Engineering/Financial Constraints						x		x	x	x									
II-4 Insufficient Scale																			
TIER III																			
III-1 Absence of Support Services																			
III-2 Incompatible Land Uses																			
III-3 Isolated from Planned Industrial Park																			
RECOMMENDATION																			
Retain as a Satellite Area																			
Secondary Office/Warehouse	x	x	x		x	x		x	x	x	x	x	x	x				x	x
Eliminate from Further EIS Evaluation				x			x								x	x	x		

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SATELLITE AREAS ANALYZED FOR FURTHER EIS EVALUATION

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SATELLITE AREAS	x	y	aa	ab	ac	ah	ai	al	am	an	ao	ap	ar	as	at	au	av	aw	bb
EXCLUSIONARY CRITERIA																			
TIER I																			
I-1 Contaminated land		x								x	x	x			x		x	x	
I-2 Ownership/Jurisdictional	x							x				x							
I-3 Current Development			x				x									x			
TIER II																			
II-1 Poor Accessibility																			
a. Highway Capacity																			
b. Location to Regional System						x										x			
c. Lack of Rail Access	x	x	x	x	x	x		x	x	x	x	x	x		x	x	x		
II-2 Lack Of Public Services								x	x	x	x	x							
II-3 Engineering/Financial Constraints								x	x	x	x	x			x		x		
II-4 Insufficient Scale																			
TIER III																			
III-1 Absence of Support Services									x	x		x							
III-2 Incompatible Land Uses																			
III-3 Isolated from Planned Industrial Park								x	x	x	x	x							
RECOMMENDATION																			
Retain as a Satellite Area																			
Secondary Office/Warehouse	x	x	x	x	x	x			x				x	x	x		x	x	x
Eliminate from Further EIS Evaluation			x*				x	x		x	x	x				x			

* 4 acre portion unable to meet necessary development criteria; 13.2 acres are retained

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V. DEVELOPMENT OF THE HYBRID PLAN

Thus far, this document has analyzed the five land management alternatives described in the EIS screening analysis. Within each of the alternatives, individual Planning Areas were assessed to determine if they met Tier I, II, or III of the exclusionary and limiting planning criteria. These individual planning areas were then retained as Planning Areas in the Hybrid Plan, relegated to Satellite Areas to be further assessed for secondary office/warehouse utilization or eliminated from further consideration for any development.

The Areas that were retained were then reassessed according to the results of the screening analysis. This portion of the analysis resulted in merging and assembling the individual Planning Areas into a Hybrid Plan. Table IV-1 indicates the Planning Areas from each of the land management alternatives that were retained and that are to be incorporated into the Hybrid Plan. Each of these Planning Areas will then be assessed in the Environmental Impact Statement evaluation.

Other Planning Areas not retained for primary uses (i.e. office, commercial or residential uses) were further analyzed as secondary office/warehouse areas.

Finally, some Planning Areas were excluded from any further consideration based on their identification of Tier I Planning Criteria. These Planning Areas are either contaminated with no approved remediation program, outside the jurisdiction of the HMDC, owned by public entities, or were in the process of constructing uses not anticipated by the planning analysis which would render them unavailable for further review.

In the process of merging the individual Planning Areas, decisions were made concerning the use of the Areas as they related to other Planning Areas, compatible surrounding land uses, and to the principals of comprehensive planning. Several Planning Areas were included in more than one land management alternative and different land use designations were given to them in each of the land management alternatives. Some degree of reconciliation with the basic planning criteria was necessary to select the most feasible use in development of the Hybrid Plan. These decisions, in part, were a function of how the land management alternative is perceived in its contribution toward achieving a comprehensive plan for the District. The other consideration concerned how the use selected for the individual Planning Area related to the surrounding uses and developed environment.

Contaminated lands and Superfund sites have been extensively reviewed. Where final remediation plans are expected within the 20 year planning period, possibly allowing site development, they have been included in the Hybrid Plan. However, many of the known landfill sites were eliminated based on costs, logistics and technology constraints that make their reuse impractical.

One of the long-term goals of the Environmental Improvement Program is to remediate the orphan landfills in the District. However, the successful remediation of these sites will not result in an increase in the developable land reserve. The remediation of these landfills does not render the sites clean. In fact, the landfills will continue to produce methane gas and leachate for the life of the landfills.

The depth of solid waste at the orphan landfills varies between 20 and 120 feet; the area of the sites vary between 40 and 120 acres. The geology beneath the sites consists of a layer of meadowmat underlain by sands and silts underlain by a thick layer of impervious varved clay. The clay is present at depths between 20 and 45 feet. The ground water table at all of these sites is essentially at the surface. The methodology used to place the solid waste at these sites was also similar. In the 1950's and 60's as the landfills expanded horizontally into the marshland, a backhoe would excavate the meadowmat and use it for daily cover for the day's waste, which was being pushed into the trench. This technique resulted in waste sometimes being placed 15 feet below the elevation of the ground water table.

Once placed, these landfills produced leachate plumes from the infiltrating precipitation, as well as the lateral movement of the ground water through the waste. In addition to the leachate, the wastes above the ground water table decompose releasing methane and carbon dioxide into the atmosphere. Finally, as these landfills digest, they experience large differential settlements which exacerbate ponding and erosion problems on the landfill.

There remains today tens of millions of tons of uncontrolled solid waste in these orphan landfills. Each year millions of gallons of leachate and millions of cubic feet of gas are released into the District's ecosystem. It should also be noted that these landfills were filled at a time when hazardous and solid waste were routinely disposed of together. Many of the orphan landfills were privately operated and accepted waste from one of the most industrialized areas in the region. Historically, the waste stream in this area is comprised of fifty (50) percent industrial and commercial waste. The probability of uncovering hazardous waste during the excavation of utility trenches or driving piles is very high. The unknown characteristic of the waste coupled with the enormous volume eliminates total excavation as a method of remediating the sites.

Therefore, since the threat from these landfills cannot be eliminated, they must be controlled instead. The best available technology is a two-pronged approach which couples active methane collection with the creation of a hydraulic liner around the perimeter of the site. The hydraulic liner is possible due to the unique geologic and hydrogeologic conditions found in the District. The liner consists of an impervious clay bentonite wall, which is constructed around the perimeter of the site. The wall extends from the existing surface to the clay layer 20 to 40 feet below. The bentonite wall is keyed three feet into the clay to insure a water tight seal.

Once completed, the landfill sits inside a bathtub filled with leachate. To prevent the bathtub from overflowing, a leachate collection pipe is constructed parallel to the inside face of the wall at a depth several feet below the elevation of the ground water. The leachate is then collected and sent to a treatment plant. By maintaining the elevation of the leachate below that of the ground water, gravity will force the ground water into the bathtub. Therefore, the purpose of the impervious wall is not to keep leachate from exiting the site but to keep the ground water out of the leachate collection system. This hydraulic liner and collection system has been used successfully in the District since 1985. As long as the leachate level in the pipe remains below the elevation of the ground water, leachate cannot escape from the site.

Although the landfill is now environmentally secure, it is still unavailable for development. Driving piles through the waste and the underlying natural clay layer would short circuit the hydraulic system described earlier. Additionally, driving the hundreds of piles necessary for development would be tantamount to punching holes in the bottom of a lined landfill. Structures and utilities must be supported on piles because of the enormous settlement rates experienced in the District. Although the buildings are supported on piles, the infrastructure supporting the building is not. This will result in broken utilities, buckled parking lots and a constant battle to maintain the grade around the building as the landfill settles. Landfills have settled more than fifty (50) feet in a ten-year period. It is because of these settlements that even park uses such as Sky Mound and portions of DeKorte Park had to be put on hold.

It is not a lack of technology in the field of building construction which inhibits development on landfills. Rather, it is the inability to prevent the decomposition and settlement of the surrounding landfill that precludes successful development. The financial liabilities associated with these sites is measured in hundreds of millions of dollars. No private developer would ever assume these massive liabilities in order to construct a commercial project. Even if a developer were interested, it is unlikely that a lending institution would ever loan the money for the project knowing that it might end up with the responsibility for the clean-up and long-term maintenance.

The highest and best use for these landfills is as passive upland habitat. Access to this habitat will be limited for man, yet our studies to date indicate that wildlife usage will be significant. This is based upon the fact that very little isolated uplands habitat exists adjacent to large expanses of wetlands. These landfills, if properly remediated and revegetated, represent an uplands habitat reserve which will become increasingly rare and for which no real alternative exists.

Through the exclusionary and limiting criteria, the development of the Hybrid Plan sought to be sensitive to the environmental character of the District. To this extent, the use of upland and redevelopment land areas was highly scrutinized in order to maximize their usage. All possible upland and redevelopment areas suitable for primary land uses were utilized. Several areas met Tier II criteria and were determined to be unsuitable for primary uses but not necessarily unsuitable for secondary office/warehouse uses. Those upland and redevelopment areas that were not considered suitable for primary uses were again analyzed for use as secondary office/warehouse locations. The principal objective in conducting this rigorous analysis was to avoid the use of wetlands to the greatest extent possible in meeting the growth and development needs of the District.

In initially reviewing wetland areas within the District, wetland areas that have received some level of protection and wetland locations that were considered to be highly valuable to the

Meadowlands ecology were not included in the initial selection of wetland areas for development. Areas such as the Sawmill Creek Wildlife Management Area, Kearny Marsh, and wetland areas immediately adjacent to the Hackensack River were excluded from screening analysis review and remained as open space/wetland preservation areas. This narrowed the availability of wetland locations where the development needs of the District could be implemented.

Density factors and intensity of individual uses was discussed early in the process. The initial land management alternatives included densities that were extremely high in some instances, this being necessary because of the scarcity of available land in the alternatives. Housing densities of over 100 dwelling units per acre and floor area ratios of 1.0 to 5.0 were utilized in the Screening Analysis.

In development of the Hybrid Plan, these factors were adjusted to reflect current and historical development patterns in the District and projected market conditions, with the intent of increasing the intensity of use to maximize the utilization of upland and minimizing the degree to which wetlands needed to be displaced. For office intensity, the hybrid floor area ratio of 0.75 was reassessed to determine if planning area intensities could be increased, thereby further increasing the intensity of this use in upland locations and reducing wetland fill. In some cases an expanded FAR of 1.0 was utilized.

Housing densities were tiered at 15 units per acre, 20 units per acre and 40 units per acre. The lower density was determined to be utilized for housing development principally along the Hackensack River to incorporate open space and recreational requirements relative to the physical environment in these areas.

Housing densities of 20 units acre were utilized in large scale housing developments in order to permit housing diversity and appropriate scale within these areas. A greater amount of housing development was planned at a density of 40 units per acre, the highest density permitted by HMDC regulation and the most difficult to implement. This was done in order to provide a housing program that would promote well planned affordable and market based communities within the District and maximize the use of available land areas, both upland and wetland.

The housing need was also revisited in the hybrid process. Initially, housing need was premised upon the rehabilitation and construction of low and moderate income housing units outside the District in Jersey City. Market based residential construction would finance the development of the affordable housing in conformance with the N.J. Council on Affordable Housing guidelines. A HMDC study found that potential in-District rehabilitation and new construction of affordable housing in Jersey City within the District was possible and that this approach would be the basis for market based units, rather than Out-of-District housing development. It was concluded that the in-District construction of 450 new dwelling units and 80 rehabilitated units was achievable in the HMDC portion of Jersey City. This new estimate reduced the total housing need in Jersey City from 4800 units to 2200 market units in the District. This analysis also resulted in the development of hybrid area 15 in Jersey City.

Similarly, the Satellite Areas analyzed for use as secondary office/warehouse locations were tested using exclusionary and limiting criteria. The Satellite Areas are derived from two separate analyses. Planning Areas that were eliminated for commercial and residential uses were reconsidered in this category. Many of the former Planning Areas are retained for satellite use.

In addition, individual site locations throughout the District were measured against the exclusionary criteria to determine their acceptance as Satellites. These sites are predominantly smaller in nature and privately owned parcels which essentially reflect infill development in built up areas of the District and completion of subdivisions and industrial parks previously approved by the HMDC.

These Satellite Areas are incorporated into the Hybrid Plan and reflect those needs previously established in the Needs Document. This plan, which includes both the Planning Areas and Satellite Areas, will be utilized to determine direct and indirect environmental impacts in the SAMP Environmental Impact Statement.

The Planning Areas retained for the Hybrid Plan are described below. The total development potential of these areas generally meet the development objectives and needs of the HMDC as discussed in the "Needs Assessment Document". Table IV-1A provides information concerning the identification of each Hybrid Planning Area and the type and amount of growth assigned to each of the Areas.

Hybrid Area 1 - Paterson Plank Road/Carlstadt-E. Rutherford

This Planning Area consists of portions of Redevelopment Area A and Upland Growth Area D and is situated along Paterson Plank Road in Carlstadt and East Rutherford. The Area was designated in the Screening document for office and commercial use. The commercial use was retained for use in the Hybrid Plan. This is due to the location of the Planning Area in proximity to major warehouse/distribution employment centers and the major service roadway bisecting it (Paterson Plank Road.)

Of the total of 86 original acres in this Planning Area, portions were eliminated because of contaminated lands with no apparent remediation program and the absence of blight criteria necessary for redevelopment status. There is also an isolated wetland area of approximately 2.3 acres in size which is impacted in this Planning Area.

In order to maximize the utilization of upland areas, a coverage factor of 50% was projected in this Planning Area. Therefore, as described in the analysis a total of 40 acres was retained for development. This results in 871,000 square feet of commercial space being projected for this Area.

Hybrid Area 2 - Old Mill/ Secaucus

This Planning Area is derived from the Upland Growth Alternative Area F and is situated at the terminus of a local unimproved road along the Hackensack River in northern Secaucus. The Area was designated in the Screening document for residential use. The total land area of seven (7) acres is unchanged from the original Screening analysis. In order to maximize the usage of upland areas, a density of 15 dwelling units per acre is projected for this Area. Therefore, 105 residential units are planned for this Planning Area. No wetlands are impacted by this Area.

Hybrid Area 3 - Carlstadt North/Carlstadt

This Planning Area is derived from the Dispersed Development Area A and Growth Center Area A West. It is located at the eastern end of Empire Boulevard west of the New Jersey Turnpike western spur. The Area was designated in the Screening document for residential use. The Growth Center Planning Area A called for the utilization of 220 acres of land for 7,700 housing units in this area. In the hybridization process, this acreage was reduced to 166 acres. This was accomplished through implementation of HMDC's open space criteria, through the maximization of housing density within portions of the project of 40 dwelling units per acre and through a reduction in total housing need.

These adjustments allowed a reduction in acreage to 166 acres to 5,240 housing units. Of the total acreage, 96 acres are planned at a residential density of 40 units per acre and 70 acres are planned at 20 units per acre. This will allow for a diversity of housing types and densities which are consistent with present HMDC zoning regulations and maximize the density of housing wherever possible. This approach also minimizes the total wetland area disturbed.

Hybrid Area 4 - Carlstadt South/Carlstadt

This Planning Area is derived from merging the Growth Center Area A west, Dispersed Development Area B and Highway Corridor Area A. It is located on the north side of Paterson Plank Road just west of the New Jersey Turnpike western spur. Land uses identified in the Screening document included office, residential and commercial uses which are maintained in the Hybrid Plan. The total area of this Planning Area was originally 154 acres of wetland and is projected to support approximately 3 million square feet of office space and approximately 1.3 million square feet of commercial development. The initial floor area ratios of 0.75 for the office and 0.5 for the commercial use are consistent with HMDC zoning regulations and current development experience in the District. However, the commercial FAR was increased to 1.0 which permitted wetland fill reduction of 30 acres.

This was due to the planning of multiple office and commercial land uses, in this case, which provided the opportunity to minimize the displacement of wetland areas. The office and commercial facilities utilize one central parking area thus reducing the total amount of parking required for the site. The "shared parking" arrangement cannot be accomplished in areas where single land uses are implemented and would require significantly more impervious area for parking than the "shared parking" approach. Therefore, the land area utilized in hybrid area 4 totals 124 acres.

Hybrid Area 5 - Paterson Plank Road East/Carlstadt

This Planning Area is derived from the Growth Center Planning Areas A East, Dispersed Development Area C, Upland Growth Area C and Highway Corridor Area B. It is located both North and South of Paterson Plank Road just east of the New Jersey Turnpike western spur and west of the Hackensack River. Land Uses designated in the Screening document for this area included residential uses which are retained in the Hybrid Plan. The total area of this Planning Area is 31 acres of which 15 areas are classified as wetland. Only 10 wetland acres are included for development due to the housing need adjustment. This Planning Area actually consists of several marinas, a restaurant (currently closed), a golf driving range, open vacant upland and 15 acres of wetland.

The Planning Area is projected to support 715 residential units. Of the total acreage, 10 acres is planned at a residential density of 40 units per acre and 21 acres is planned at 15 units per acre in order to allow for a diversity of housing types and densities and to reflect waterfront development sensitivity along the Hackensack River which requires more open space and public areas. This is also consistent with present HMDC existing land use and development trends providing for a maximum housing density of 15 units per acre along the waterfront. The residential development in wetland areas is planned at 40 units per acre to maximize the density of housing and avoid additional wetland fill.

Hybrid Area 6 - New Jersey Sports Authority/East Rutherford

This Planning Area is derived from the Upland Growth Area B and the Highway Corridor Area C. It is located on the south side of Paterson Plank Road between the New Jersey Turnpike western spur and Route 120 and is the site of the Brendan Byrne Arena. Because of the existing development on the site, 12 acres of upland were calculated to be available for development purposes. This acreage was determined to be available from extensive discussions with the New Jersey Sports & Exposition Authority. This area was designated in the Screening document for office development. The screening analysis projected an FAR of 0.75. The hybrid plan anticipates a FAR of 1.0 for this site which would yield 522,720 square feet of office space. A 13 acre wetland parcel on the Arena property is not utilized for development purposes in this plan.

Hybrid Area 7 - Kingsland North/East Rutherford

This Planning Area is derived from the Growth Center Area C, Dispersed Development Areas D and E, Highway Corridor Areas E, F and G and Upland Growth Area J. It is located on the south side of Route 3 north of the New Jersey Transit Bergen Line. Land uses identified in the Screening document included office, residential and commercial uses. The discussion in the Hybrid Analysis documentation suggests that residential uses may not be appropriate considering the locational criteria for non-residential uses.

Therefore, this Planning Area has been designated for office land uses in the Hybrid Plan. The total area of this Planning Area is 115 acres of land, of which 72.7 are considered to be wetland. This Area is projected to support approximately 3.8 million square feet of office space. A floor area ratio of 0.75 for the office space is used which is consistent with HMDC zoning regulations but at a higher intensity than current development experience in the District. A reduction in the total screening analysis acreage (193 ac.) was attainable due to the increase in FAR in other Planning Areas allowing a reduction in the wetland utilization in this Planning Area.

This Planning Area is dominated by wetland with the exception of a small area adjacent to Route 3 at the northern most area and an area south of the Bergen Line Rail. The identification of 115 acres of land for the Hybrid results from fulfilling need requirements for growth and open space /preservation requirements and FAR increases elsewhere. A significant portion of wetland area originally proposed for development in the screening analysis will remain as wetland in the Hybrid Plan, thus minimizing the utilization of wetland in this Planning Area.

Hybrid Area 8 - Kingsland South/Rutherford

This Planning Area is derived from the Growth Center Area C, Dispersed Development Area E, and Highway Corridor Area G alternatives. It is located south of the New Jersey Transit Bergen Line and north of Berry's Creek. Land uses identified in the alternatives included both office and residential land uses in this Area. The analysis suggests that both office and residential uses would be appropriate for this Planning Area and was originally designated in the Hybrid Plan. Residential land areas within the District are the most difficult to locate because of the intensity of non-residential uses and historical development patterns of infrastructure and utility related uses. Therefore, this Planning Area was determined to be suitable for residential development in the Hybrid due to the absence of the above uses in the general vicinity of the site and generally its more isolated location.

The total area of the Planning Area constitutes 40 acres of wetland and is protected to support 1,600 residential units. The Screening analysis projected the use of approximately 70 to 90 acres of land which was subsequently reduced to 40 acres. However, due to the reduction in housing need discussed above, this hybrid area can be eliminated from the hybrid plan. A reduction of 2600 total units was necessary, therefore, this hybrid area is not proposed for development.

Hybrid Area 9 - Howmedica/Rutherford

This Planning Area is derived from the Highway Corridor Area D alternative. It is located on the Route 3 West service road just west of Berry's Creek and north of Route 3. Office use was designated for this Area and is affirmed in the Hybrid Plan. The total land area is 15 acres which is projected to support 653,400 square feet of office space. This Planning Analysis initially included the displacement of 7 acres of wetland located between buildings on the site. However, a FAR increase from 0.75 to 1.0 enabled the elimination of all wetland in this Planning Area.

Although the site is developed, it was determined that the current use would be displaced during the 20 year planning period. This site was not determined to be eligible for redevelopment since it does not exhibit blight conditions, however, it is projected that market conditions will support the conversion to office. The use of this site as a Planning Area also supports the efforts to minimize the use of wetland areas for the implementation of the HMDC's growth and development needs.

Hybrid Area 10 - Mill Creek/Secaucus

This Planning Area is derived from the Growth Center Area B west, Dispersed Development Area F west, and Highway Corridor Area J Alternatives. It is located north of Route 3 and to the west of the New Jersey Turnpike eastern spur. Land uses designated for this area included residential and office uses which are affirmed in the Hybrid Plan. The total land area is 75 acres, of which 65 acres are considered wetland. The 10 acres of upland is located within the Mill Creek development and currently has temporary uses. It is projected that approximately 435,000 square feet of office space can be accommodated in this Area at an increased FAR of 1.0. The balance of the Planning Area consists of wetland area north of the Mill Creek development also known as IR-2. A total of 97 acres of development was originally proposed for this area. The Hybrid Plan has reduced the land area utilized to 65 acres which will support 2,015 residential units at 31 units per acre.

Upland areas were maximized by using the 10 acres of upland within the Mill Creek development which have been marginally developed. However, HMDC determined that these use could be displaced by uses consistent with the surrounding office and commercial development. In addition, the use of wetland areas is minimized as reflected by the permit deliberations for IR-2 with the Federal agencies. These discussions have resulted in the proposed wetland fill on this site being reduced from 97 acres to 65 acres. The total residential units in the permit discussions have been used and the housing density adjusted appropriately to 31 units per acre. This is consistent with HMDC's requirement for development of this area between 15 and 40 dwelling units per acre.

Hybrid Area 11 - Harmon Meadow/Secaucus

This Planning Area is derived from the Growth Center Area B east, Dispersed Development Area F east, Upland Growth Area G and Highway Corridor Area K Alternatives. It is located north of Route 3 and to the east of the New Jersey Turnpike eastern spur. Land uses designated for this area included office, residential and commercial uses. Two distinct subareas comprise the Planning Area. One area is located adjacent to the New Jersey Turnpike eastern spur and is 30 acres in size. This area has for the most part been recommended for office development and is affirmed as such in the Hybrid Plan. A total of 980,000 square feet of space is supported by this subarea.

The other area is located along the east side of the existing Harmon Meadow office park and just to the west of West Side Avenue in North Bergen. This Area has been proposed for office, commercial and residential uses in various alternatives. An analysis of this Area concluded that residential uses should not be further considered and that non-residential uses would be most appropriate because of the dominance of non-residential uses on the adjacent site and industrial development to the east. This subarea has been projected to support approximately 435,000 square feet of commercial space and 980,000 square feet of office area.

The intensity of use in the Planning Area also supports the objective of maximizing the utilization of upland areas. As discussed above the projection of 0.75 FAR for office development and 0.50 for commercial development is higher than development trends in the District.

Hybrid Area 12 - Special Use Area 2/North Bergen

This Planning Area is derived from the Highway Corridor Area O alternative. It is located south of Route I-495, west of the Northeast Corridor Rail Line and east of the New Jersey Turnpike eastern spur. The land use identified for this Area is office which is maintained in the Hybrid Plan. The total area of this Planning Area is 50 acres of wetland and is projected to support approximately 1.6 million square feet of office space. The acreage of this Area was reduced from the Screening document because of public land ownership and open space requirements in conformity with HMDC zoning regulations. The floor area ratio of 0.75 is consistent with HMDC zoning regulations and higher than current development experience in the District.

The reduction of the wetland acreage in this Planning Area is a result of maximizing the use of upland locations outside this Planning Area and an attempt to utilize only the degree of wetland necessary to achieve the developmental needs of the District. The reduction of this Planning Area from 92 acres to 50 acres directly reflects this effort. Utilizing the Floor Area Ratio of 0.75 also supports the objective of developing within the District at the highest practicable densities.

Hybrid Area 13 - Secaucus Transfer/Secaucus

This Planning Area is derived from the Redevelopment Area H, Dispersed Development Area L and the Growth Center Area D alternatives. It is located south of County Road and east of New County Road. The Planning Area also includes the intersecting rail lines from Northeast Corridor, New Jersey Transit Main Line and Bergen Line. Office use was designated for the Area and is affirmed in the Hybrid Plan. A total land area of 53 acres includes 20 acres within the intersection of the rail lines and 33 acres of surrounding land area within proximity to the rail facilities. Of the total land area, 9.1 acres is considered to be wetland. The wetland area is within the property encompassing the intersection of the rail lines. A total of approximately 5.8 million square feet of office space is proposed for this Area. Within the immediate area of the rail lines, a floor area ratio of 5.4 was utilized to reflect the special locational and land use advantages of this site. In the balance of the Planning Area a more conventional, but still increased 0.75 FAR was utilized.

The development of the 33 acres of surrounding land will be accomplished as a result of redevelopment of this area. This is upland area and to a large extent, development will be created through private efforts related to the construction of the rail station in this Area. Utilizing the FAR of 0.75 was determined to be reasonable and the maximum FAR possible based on the potential impact of the overall development in this Area to the road and infrastructure systems. It was determined that use of a higher FAR would result in unacceptable impacts to these facilities. In addition, the development of Hybrid Area 14 will also impact these same facilities supporting the concern that the infrastructure would be overtaxed by an increased FAR.

Hybrid Area 14 - Laurel Hill/Secaucus

This Planning Area is derived from the Upland Growth Area O, Dispersed Development Area H and the Growth Center Area D alternatives. It is located at the southern terminus of New County Road just west of the New Jersey Turnpike eastern spur and along the east side of the Hackensack River. Residential uses were designated for this Area and are affirmed in the Hybrid Plan. A total land area of 152 acres is projected to support 5405 residential units. The housing density is established by utilizing densities consistent with HMDC zoning and design regulations. There are no wetlands proposed to be utilized in the Planning Area.

This Planning Area was reduced in size from the Screening Analysis from 169 acres to 152 acres. The difference in the acreage results from an analysis of the rock outcrop area and extremely steep slopes on the geologic formation known as Snake Hill. The graduated housing densities projected in this Area result from HMDC's regulations and planning objectives of housing diversity and scale of development, particularly along the Hackensack River. Directly adjacent to the River, housing would be planned at 15 dwelling units per acre. Further from the River an increased density of 20 units per acre would be planned. The higher density of 40 units per acre would be reserved for the balance of the site and for the majority of the Planning Area. This allows the maximum use of this upland area and also permits a sensitivity to the planning and visual objectives to be maintained.

Hybrid Area 15 - St. Pauls Ave.\Jersey City

This built up area of Jersey City, within the District, had initially been included in the screening analysis as a portion of Redevelopment Land Management Area J. Existing housing in this area was planned to be removed and was consistent with the current zoning plan for the District. During the hybrid analysis, additional analyses and field investigations indicated that this housing should be retained and that additional infill housing would be possible within this neighborhood.

It was determined that approximately 80 existing dwelling units were present which could qualify for rehabilitation status. Between these smaller neighborhoods, an additional 440 new infill low and moderate income or affordable units could be realized at a density of 40 units per acre. Therefore, a total of approximately 11 acres are available for meeting the total District housing need, which would equate to 440 new residential units. There is no wetland area within this

Planning Area.

Conclusion

The hybrid plan has a total of 15 hybrid planning areas. The total land acreage consumed by the planing areas totals 931 acres of which 498.5 acres are considered to be wetlands. The hybrid land use projections based on this acreage now equates to 17.7 million sq. ft. of office space, 2.7 million sq. ft. of commercial space and 13,920 residential units. This Plan reflects the documented needs requirements for the Hackensack Meadowlands Development Commission. The hybrid plan will be used in the environmental impact statement analysis to determine the impacts of this development scenario on the Meadowlands area.

PLANNING AREAS

Area	Location	Acreage	FAR/ Density *	Office (sq. ft.)	Commercial (sq. ft.)	Residential (dwelling units)	Wetland Fill (acres)
HYBRID 1	Carls/E. Ruth	40.0	0.50		871,200		2.3
HYBRID 2	Secaucus	7.0	15.00			105	
HYBRID 3	Carlstadt	96.0	40.00			3,840	95.0
		70.0	20.00			1,400	70.0
HYBRID 4	Carlstadt	92.0	0.75	3,005,640			87.6
		32.0	1.00		1,393,920		32.0
HYBRID 5	Carls/E. Ruth	14.0	15.00			210	5.0
		10.0	40.00			400	10.0
		7.0	15.00			105	
HYBRID 6	E. Ruth	12.0	1.00	522,720			
HYBRID 7	E. Ruth.	115.0	0.75	3,757,050			72.7
HYBRID 8	Rutherford	0.0	40.00			0	0.0
HYBRID 9	E. Ruth	15.0	1.00	653,400			0.0
HYBRID 10	Secaucus	10.0	1.00	435,600			
		65.0	31.00			2,015	65.1
HYBRID 11	Secaucus	30.0	0.75	980,100			
		20.0	0.50		435,600		
		30.0	0.75	980,100			
HYBRID 12	North Bergen	50.0	0.75	1,633,500			49.7
HYBRID 13	Secaucus	20.0	5.40	4,704,480			9.1
		33.0	0.75	1,078,110			
HYBRID 14	Secaucus	15.0	15.00			225	
		15.0	20.00			300	
		122.0	40.00			4,880	
HYBRID 15	Jersey City	11.0	40.00			440	

	Acreage		Office	Commercial	Residential	Wetland Fill	
PLANNING AREA SUBTOTAL	931.0	AC.	17,750,700	2,700,720	13,920	498.5	AC.
SATELLITE AREA SUBTOTAL	757.9	AC.	See table 4-21			251.3	AC.
PLANNING AND SATELLITE TOTAL	1688.9	AC.				749.8	AC.

* FAR = Floor Area Ratio for office & commercial use. Density is in dwelling units per acre for residential use.

SATELLITE AREAS

Area	Municipality	Proposed for Development (acres)	Projected Facility Size 0.5 FAR (sq. ft.)	Wetland Fill (acres)
a	LITTLE FERRY	3.0	65,340	0.0
b	MOONACHIE	2.0	43,560	0.0
c	CARLSTADT	9.7	211,266	0.0
e	CARLSTADT	12.4	270,072	0.0
f	CARLSTADT	13.0	283,140	7.1
h	CARLSTADT	10.2	222,156	7.8
i	E RUTHERFORD	30.8	670,824	0.0
j	E RUTHERFORD	49.1	1,069,396	37.5
k	CARLSTADT	12.1	263,538	5.6
o	CARLSTADT	1.7	37,026	0.0
p	CARLSTADT	10.2	222,156	6.5
q	CARLSTADT	3.1	67,518	1.8
v	N. BERGEN	30.3	659,934	23.3
w	E.RUTHERFORD	39.7	864,666	35.0
x	LYNDHURST	46.2	1,006,236	35.9
y	LYNDHURST	4.0	87,120	0.0
aa	N.BERGEN	13.2	287,496	9.5
ab	N.BERGEN	7.5	163,350	0.0
ac	N.BERGEN	4.4	95,832	2.9
ah	SECAUCUS	8.1	176,418	0.0
am	KEARNY	5.0	108,900	0.0
ar	MOONACHIE	14.9	324,522	0.0
as*	JERSEY CITY	81.5	392,040	64.4
at	CARLSTADT	1.7	37,026	0.0
av	CARLSTADT	5.3	115,434	2.5
aw	SECAUCUS	18.3	398,574	0.0
bb	N.BERGEN	11.5	250,470	11.5
	SUBTOTAL	448.5	8,394,012	251.3

PLANNING AREAS RETAINED AS SATELLITE AREAS

AREA	Municipality	Proposed for Development (acres)	Projected Facility Size 0.5 FAR (sq. ft.)	Wetland Fill (acres)
n	CARLSTADT (upland area N)	10.0	217,800	0.0
s	N. BERGEN (upland area A)	30.7	668,646	0.0
z	LYNDHURST (upland area H)	20.8	453,024	0.0
aa/af	N. BERGEN (upland area L)	60.8	1,324,224	0.0
ag	SECAUCUS (upland area K)	36.5	794,970	0.0
aj	KEARNY (upland area F)	27.1	590,238	0.0
ak	KEARNY (redevelopment I)	32.3	703,494	0.0
aq	JERSEY CITY (redevelopment J)	30.8	670,824	0.0
ay	SECAUCUS (redevelopment E)	3.0	65,340	0.0
az	SEC/N.BERGEN (redevelopment F)	30.6	666,468	0.0
ba	SECAUCUS (redevelopment G)	26.4	574,992	0.0
	SUBTOTAL	309.0	6,730,020	0.0
	SATELLITE AREA SUBTOTAL	757.5	15,124,032	251.3
	PLANNING AREA SUBTOTAL	931.0		498.50
	PLANNING AND SATELLITE TOTAL	1688.5		749.80

* represents the development of an intermodal rail facility with associated warehouse space.

TABLE IV-1
ORIGIN OF HYBRID PLANNING AREAS

Hybrid Area 1 -	Redevelopment area "A" / Upland Growth area "D"
Hybrid Area 2 -	Upland Growth area "F"
Hybrid Area 3 -	Growth Centers area "A (west)" / Dispersed Development Areas area "A"
Hybrid Area 4 -	Growth Centers area "A (west)" / Dispersed Development Areas area "B"/ Highway Corridors area "A"
Hybrid Area 5 -	Upland Growth area "C" / Growth Centers area "A (east)" / Dispersed Development Areas area "C" / Highway Corridors area "B"
Hybrid Area 6 -	Upland Growth area "B" / Highway Corridors area "C"
Hybrid Area 7 -	Upland Growth area "J" / Growth Centers area "C"/ Dispersed Development Areas areas "D", "E" / Highway Corridors areas "E","F", "G"
Hybrid Area 9 -	Highway Corridors area "D"
Hybrid Area 10 -	Growth Centers area "B (west)" / Dispersed Development Areas area F (west)" / Highway Corridors area "J"
Hybrid Area 11 -	Upland Growth areas "G" / Growth Centers area "B (east)" / Dispersed Development Areas area "F (east)"/ Highway Corridors areas "K (north)", "K (east)"
Hybrid Area 12 -	Dispersed Development Areas area "G" / Highway Corridors area "O"
Hybrid Area 13 -	Redevelopment area "H" / Growth Center area "D" / Dispersed Development Areas area "L"
Hybrid Area 14 -	Upland Growth area "O" / Growth Center area "D" / Dispersed Development Areas area "H"
Hybrid Area 15 -	Redevelopment area "J"

Appendix M

APPENDIX M

INDICATOR VALUE ASSESSMENT METHOD FIELD TESTING STUDY REPORT

HACKENSACK MEADOWLANDS DISTRICT SAMP/EIS

Appendix Prepared by:

CAMP DRESSER & McKEE

FEBRUARY 1995

PROJECT REPORT

INDICATOR VALUE ASSESSMENT METHOD
FIELD TESTING STUDY

HACKENSACK MEADOWLANDS DISTRICT SPECIAL AREA MANAGEMENT PLAN
ENVIRONMENTAL IMPACT STATEMENT

HACKENSACK MEADOWLANDS DISTRICT, NEW JERSEY

Camp Dresser & McKee
Edison, NJ

February 1995

DRAFT

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1.0 PROJECT BACKGROUND

The wetland field investigation was conducted in support of an Environmental Impact Statement (EIS) for the development and implementation of a Special Area Management Plan (SAMP) for the Hackensack Meadowlands District. The SAMP will be a comprehensive plan providing for natural resource protection and reasonable economic growth in the District. The purpose of the EIS is to determine the environmental impacts resulting from implementation of the SAMP. The purpose of this study is to collect field data, specifically regarding wetland indicators and functions, to support the environmental impact measurement methods used in the EIS, as well as implementation mechanisms to be used in the SAMP.

Implementation of the SAMP is expected to result in changes to regulatory processes for fill and construction activities under Section 10 of the Rivers and Harbors Act of 1899 and Section 404 of the Clean Water Act. These regulations are administered by the US Army Corps of Engineers (USACE) as the permitting authority and the Environmental Protection Agency (EPA) as the Section 404 oversight agency. Some of the regulatory changes being considered include: general permits (under Section 404(e) of the CWA), abbreviated permit processes, and establishment of permanent prohibitions on activities in certain wetland areas. These products would increase predictability in acquiring federal permits, reduce burdens upon developers and regulators, and restrict development or ensure proper mitigation measures in important wetland areas.

Given the nature of the action, the EIS has been prepared using a programmatic format. As such, it addresses regional issues, and the analysis is conducted at a regional scale. The function of the EIS for the SAMP is to identify management plan alternatives, assess the potential environmental, social, and economic consequences of each alternative, and identify the preferred alternative.

1.1 PROJECT SETTING

The Hackensack Meadowlands District (District) is located less than five miles west of Manhattan, in Bergen and Hudson Counties. The Meadowlands District contains approximately 8,000 acres of wetlands, and 12,000 acres of upland. Most of the upland areas are developed, and host primarily industrial, institutional, and commercial land uses.

The District includes portions of 14 municipalities in Bergen and Hudson Counties, New Jersey. Within the District, HMDC is responsible for land use planning, zoning decisions, issuance of building permits, regional solid waste management, and protection of the environment. Remaining undeveloped areas within the District are primarily wetlands, and these areas are under intense developmental pressure.

The wetlands system which exists in the Meadowlands District today has evolved in response to hydrologic alterations over time. The construction of the Oradell dam across the Hackensack River (north of the District) in 1922 impeded fresh water flow, and promoted salt water intrusion. By the mid-1920's common reed (*Phragmites australis*) dominated the remaining marshes once covered by Atlantic white cedar (US EPA, 1989).

In 1969, the 32-square mile Meadowlands region laid substantially abused and under-utilized. The development and ecological preservation potential of this area was visibly and regularly undermined. The result was a rapid quantitative and qualitative erosion of some of the most significant tidal wetlands in the Metropolitan region.

At present, HMDC is preparing to revise its Master Plan and the regulations through which it controls the use of land in the District. Revisions to the Plan must seek to resolve a number of policy issues, the most important of which is identifying the proper balance among the goals of economic development, wetland preservation, and solid waste disposal in the public interest.

1.2 MEMORANDUM OF UNDERSTANDING

In recognition of the environmental and economic needs of the District, and the need for additional coordination of regional planning and regulatory process, EPA and USACE entered into a Memorandum of Understanding (MOU) on September 14, 1988 with HMDC, the New Jersey Department of Environmental Protection (NJDEP), and the National Oceanic and Atmospheric Administration (NOAA) that calls for the preparation and implementation of a SAMP for the District. The SAMP facilitates compliance of future development activities with applicable environmental statues and regulations. In particular, certain regulatory presumptions for future activities, including those identified in the MOU, result from the SAMP and will be used by the EPA and USACE in administering their authorities pursuant to Section 404 of the CWA. As noted previously, the SAMP is invaluable to the HMDC's ongoing effort to revise its Master Plan.

1.3 SPECIAL AREA MANAGEMENT PLANS (SAMPs)

The Hackensack Meadowlands District is located within New Jersey's Coastal Zone. The 1980 Amendments to the Coastal Zone Management Act define a Special Area Management Plan as a "comprehensive plan providing for natural resource protection and reasonable coastal-dependent economic growth containing a detailed and comprehensive statement of policies, standards and criteria to guide public and private uses of lands and waters; and mechanisms for timely implementation in specific geographical areas within the coastal zone". The USACE provides additional detail and guidance regarding the development of SAMPs in Regulatory Guidance Letter (RGL) No. 92-03, issued August 19, 1992. (RGL 92-03 extended RGL 86-10, originally issued October 2, 1986.)

A SAMP also establishes an area-wide basis for regulatory actions, founded on an understanding of the cumulative effects of changes in the environment. A SAMP can conclude with definitive regulatory products that include streamlined permit processing procedures and Section (404)c restrictions for undesirable activities.

All the factors that motivate preparation of a Special Area Management Plans are present for the Hackensack Meadowlands SAMP: the extensive wetlands in the District are under significant development pressure; a regional planning agency (HMDC) is present to coordinate the local needs elements and to help implement the plan; the SAMP/EIS includes a full public participation process; and the SAMP/EIS Memorandum of Understanding commits all participants to implementing regulatory enhancements. Furthermore, the Advanced Identification (AVID) of wetlands (conducted by USACE and EPA, in concert with NOAA, USFWS, NJDEP and HMDC, between 1986 and 1991), has been integrated into the SAMP and the EIS. The data collected during the AVID study has been invaluable in the evaluation of potential impacts to wetlands, as well as potential gains to the quality of the wetland ecosystem through enhancement of existing wetlands.

1.4 EPA/USACE MEMORANDUM OF AGREEMENT

The EPA and USACE signed a Memorandum of Agreement (MOA) in February 1990 that provides clarification and general guidance regarding the level of mitigation necessary to demonstrate compliance with the Clean Water Act Section 404(b)(1) Guidelines. To achieve this goal the MOA interprets and provides guidance and procedures for the USACE and EPA in implementing existing Section 404 regulations. The MOA is significant in that it mandates a sequential review for most project evaluations, starting with avoidance of impacts, minimization of impacts, and finally the requirement that compensatory mitigation be provided for unavoidable impacts. The MOA also recognizes that mitigation consistent with an EPA- and USACE-approved comprehensive plan, such as a SAMP, is considered to satisfy the avoidance, minimization, and compensatory mitigation requirements. The overall goal of the MOA is to achieve no net loss of wetland values in the United States.

1.5 INDICATOR VALUE ASSESSMENT METHOD FIELD TESTING STUDY

In support of the EIS, a method has been developed, based on previous work conducted in the District (the AVID conducted by EPA between 1986 and 1991), which computes a relative score for wetlands in the District for three wetland attributes: water quality improvement, wildlife habitat, and social significance. This method, termed the indicator value assessment (IVA) method, is based on assigning importance to specific indicators of wetland quality, and calculating a "score" for each wetland based on the indicators present in that wetland. The IVA method, while based on professional judgement, provides a mechanism to systematize that professional judgement, along with empirical data, into an estimate of the relative value of a wetland. The IVA method is used in the EIS to determine the existing condition of wetlands in the District, to assess direct and indirect wetland impacts from development, and to determine appropriate mitigation actions to ensure no net loss of wetlands value.

This study consists of field testing that was conducted to gain additional information on selected representative wetland areas that may potentially be impacted under HMDC's hybrid development plan (the "preferred alternative" for the EIS). Wetlands with less than 15 acres of direct fill, but more than 5 acres, were targeted, because larger sites typically have more complicated ecosystems. One major purpose is to compare the "value" obtained for these areas using the IVA against the field team's best professional judgement (BPJ) of wetland quality. This comparison is being done to assess the differences between the two methods of estimating existing conditions: using the IVA method and using best professional judgement.

Because wetland areas might be permanently lost due to development, this assessment will help to determine if the value predicted to be lost (by using the IVA to assess impacts) agrees with best professional judgement of the wetland quality. The information on the quality of wetlands impacted will ultimately aid in selecting appropriate mitigation and enhancement measures to assure no net loss of wetland values in the District.

2.0 OBJECTIVES

2.1 STUDY OBJECTIVES

This study has five basic objectives. These objectives are discussed below.

- *Collect data on habitat quality in more accurate, site-specific detail to support the issuance of a general permit (GP).* A GP may be issued as part of the SAMP for fill activities of less than 15 acres that are consistent with the SAMP. Because larger sites typically have more complex ecosystems, this study targeted SAMP Preferred Alternative development sites with between 5 and 15 acres of fill proposed in wetlands.

- *Use best professional judgement (BPJ) assessments of wetland quality to verify use of the indicator value assessment (IVA) method to relatively score wetland impacts.* The IVA method computes the "score" of a wetland for three important wetland attributes—water quality improvement (WQ), wildlife habitat (WH), and social significance (SS)—on a scale of 0 to 100, based on a semi-quantitative ranking of the importance of many wetland indicators. While the "baseline" IVA scores obtained to date agree with professional judgements of overall distributions of wetland quality in the District, additional testing of the method needed to be performed to gauge the effectiveness of the method at site-specific levels.

- *Collect data to provide a quality control check on the WET/AVID field data collected in 1986.* The measure of existing wetland value and impacts to existing wetlands are based on data collected during the AVID (Advanced Identification of Wetlands). These data were collected in the form of answers to a questionnaire, which was based on the contemporaneous WET (Wetland Evaluation Technique) questionnaire. One objective of this study is to review whether any differences exist between the field responses to the AVID questionnaire and the responses collected as part of this field investigation, and to assess the reasons for any differences.

- *Collect data at subsample locations within an impact area to test for geographic variability.* It may be important to assess impacted wetlands by looking at specific sites within the wetland, and by evaluating only the areas that are to be impacted. Data were collected in this study at various locations throughout the projected impact area to determine the efficacy of looking at only the impacted area, and the importance of looking at several locations within the site.

- *Determine the variability introduced by individual evaluators, by having independent evaluators respond to wetland questionnaire individually, rather than* *via consensus.* Another objective of this study was to determine how differently individual evaluators would respond to the WET questionnaire, and how these differences would effect the IVA score.

2.2 DATA QUALITY OBJECTIVES

Two forms of data were collected, measurements of site conditions and evaluation of site characteristics. Evaluation of site characteristics comprised the majority of the data collected in this wetland study. These data were, by their nature, subjective, because they rely on interpretations of field conditions, rather than simple observation. The objective measurements taken were of general site conditions, such as ambient air temperature, weather, and species presence. Quality review of this limited objective data consisted of a review for obvious errors.

Because of the subjective nature of the majority of data collected in this study, specific data quality objectives are difficult to quantify. Data collected, and specific measures taken to assure data quality include:

- *Answers to wetland questionnaire.* The field team consisted of five wetland professionals who, to the extent practical, independently responded to the wetland questionnaire. Resumes for the individuals comprising the field team are included as Attachment 1. This data collection effort was made to confirm previous data collection for the site, and to try to determine the variability introduced by having different persons answering the questionnaire. Also, the field team visited two or three different locations in each wetland site to assess the effects of spatial variability on previous wetland valuation, and assure that the project data set accurately represents the subject wetland.

- *Determination of avian resources of the wetland site.* A survey of birds was taken at each site. Where sufficient data were collected, estimates of bird densities were calculated. For all sites, data on species observations were tabulated. The purpose of this effort was to determine the species present at each site.

- *Determination of aquatic resources of the wetland site.* For wetland sites that include open water, a survey of fish usage was conducted. Where sufficient open water was present, fish sampling was conducted. The fish captured were identified and counted. The purpose of this effort was to determine the species present at each site.

3.0 STUDY AREA DESCRIPTION

The study area consists of five wetland "test" sites potentially subject to fill (under the Preferred Alternative), all less than 15 acres in size, and two high-quality "reference" wetlands. The selected sites range from 1.8 to 9.5 acres. Figure 1 shows the locations of the five "test" sites and the two "reference" sites in the District. Issues such as accessibility, known contamination and ability to sample a variety of wetland habitats influenced the selection of the wetland test sites. In addition, in order to accurately characterize each test site, two or more locations (termed "subsample" locations) were visited at each site. Figure 1 also shows the locations of the subsample locations.

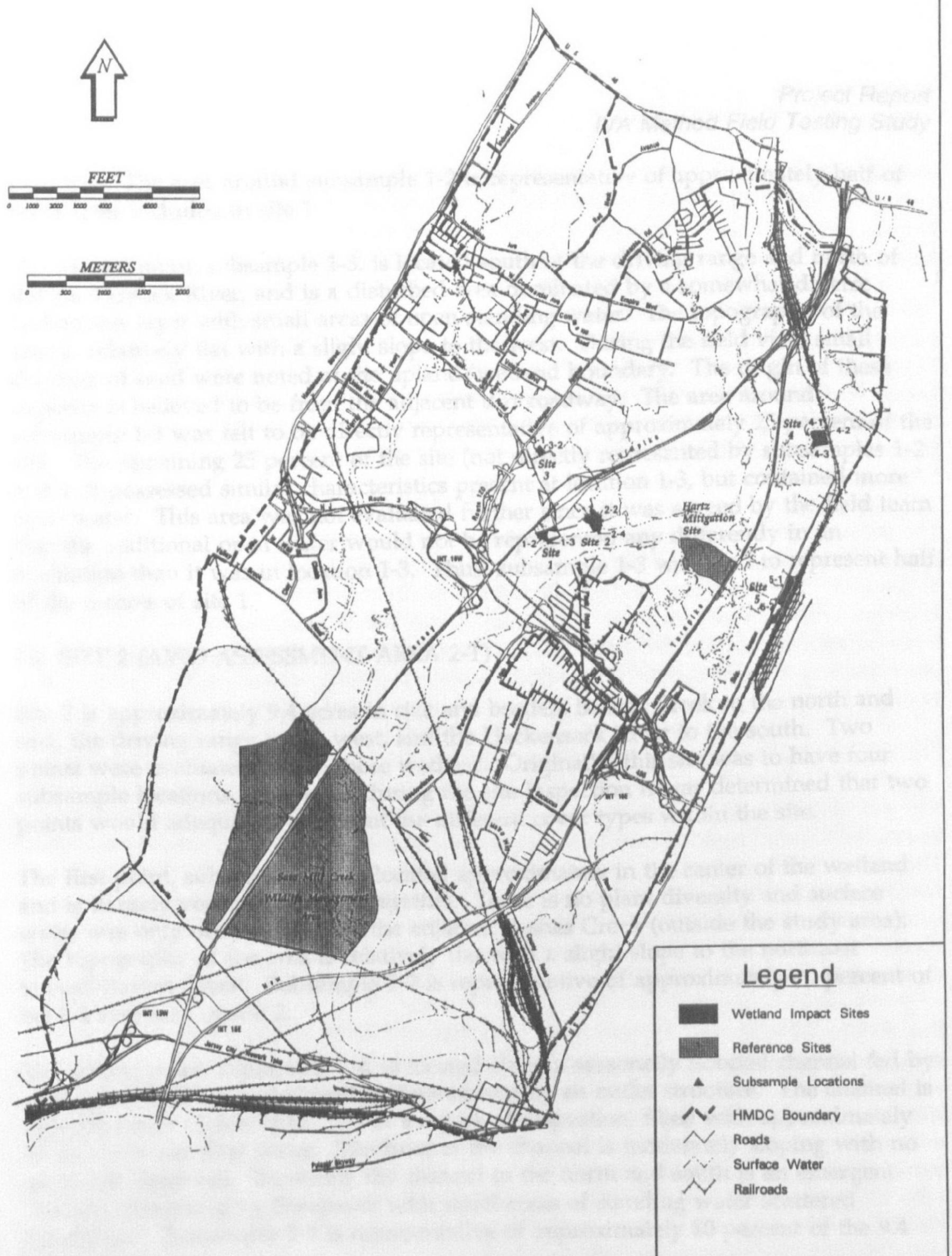
The purpose of sampling multiple points in each wetland was to ensure that characteristics that may be exhibited only locally within a wetland are measured, and to help confirm that the AVID answers to the "overall" wetland questions, such as the spatially dominant hydroperiod, and the primary water depth, can be verified to be appropriate for the entire wetland. Sampling points were selected prior to the field visits, based on aerial photography and knowledge of the sites. However, the survey teams were given the latitude to revise recommended sampling locations merited by field conditions; any changes made to the sampling locations, and the circumstances and reasons dictating these changes, were documented in detail by the field personnel. Anticipated reasons for changing sampling sites in the field included lack of access, lack of visibility, or similarity of the selected site to other sites within the same wetland. The various sampling sites were selected to capture all significant habitats and hydrologic regimes across the site.

Following is a description of the sites and subsample locations investigated in this study.

3.1 SITE 1 (AVID ASSESSMENT AREA 2-V)

Site 1 is approximately 6 acres in size, and is bounded by a driving range to the east, the Hackensack River to the south, and Cedar Creek to the west and north. Neither the river nor the creek are within the study area. Two points were evaluated within this wetland. Originally, three points were identified for subsampling. However, during the field inspection it was determined that only two observation points were necessary to adequately represent the site.

The first point, subsample 1-2, is located north of the Hackensack River and east of Cedar Creek. The wetlands in the area of subsample 1-2 are characterized by a strip of *Phragmites* which borders the river and widens as it extends north along Cedar Creek. During the field visit, several piles of debris (tires, wood, steel, clothing, mattresses, etc.) as well as rats (*Ratus norvegieus*) were observed throughout the area. The adjacent upland area is disturbed and contains an abandoned boat house and dirt



* D R A F T *

October 26, 1994

Figure 1
Study Area Locations

CDM
environmental engineers, scientists, planners & management consultants

IVA Method Field Testing Study

roadway. The area around subsample 1-2 is representative of approximately half of the 6 acres included in site 1.

The second point, subsample 1-3, is located south of the driving range and north of the Hackensack River, and is a disturbed area dominated by a somewhat diverse herbaceous layer with small areas of open standing water. The topography of the area is relatively flat with a slight slope to the west. During the field visit, small deposits of sand were noted at the upland/wetland boundary. The origin of these deposits is believed to be from the adjacent dirt roadway. The area around subsample 1-3 was felt to be directly representative of approximately 25 percent of the site. The remaining 25 percent of the site (not directly represented by subsamples 1-2 and 1-3) possessed similar characteristics present at location 1-3, but contained more open water. This area was not evaluated further since it was agreed by the field team that the additional open water would not be represented any differently in an evaluation than it was in location 1-3. Thus, subsample 1-3 was used to represent half of the 6 acres of site 1.

3.2 SITE 2 (AVID ASSESSMENT AREA 2-T)

Site 2 is approximately 9.4 acres in size and borders Bashes Creek to the north and east, the driving range to the west, and the Hackensack River to the south. Two points were evaluated within these wetland. Originally, this site was to have four subsample locations. However, during the site inspection it was determined that two points would adequately represent the different cover types within the site.

The first point, subsample 2-2, is located approximately in the center of the wetland and is densely vegetated with *Phragmites*. There is no plant diversity and surface water was only observed within the adjacent Bashes Creek (outside the study area). The topography of the area is relatively flat with a slight slope to the northeast toward Bashes Creek. Subsample 2-2 is representative of approximately 90 percent of the 9.4 acre area of site 2.

The second point, subsample 2-4, is located along a seasonally flooded channel fed by stormwater and controlled further downstream by an outlet structure. The channel is approximately 20 feet wide, and at the time of inspection, filled with approximately 10 inches of standing water. The bank of the channel is moderately sloping with no undercuts observed. Bordering the channel to the north and south is an emergent wetland dominated by *Phragmites* with small areas of standing water scattered throughout. Subsample 2-4 is representative of approximately 10 percent of the 9.4 acre area of site 2.

3.3 SITE 3 (AVID ASSESSMENT AREA 201)

Site 3 is approximately 1.8 acres in size and is surrounded by industrial properties. The site can be described as a small irregularly shaped pond, approximately 1 acre in size, bordered by a fringe of *Phragmites* to the north and west, and a broad-leaved deciduous forested wetland to the east. The site has no inlet but has an outlet. During times of heavy storm flow, water is carried to catch basins located in the adjacent road and flow to the southeast. Two points were evaluated within the site.

The first point, subsample 3-1, is located in the northwest corner of the site. The area surrounding this subsample location includes a portion of the pond and a thin strip of *Phragmites* which borders the open water. The upland/wetland boundary is an abrupt transition from a *Phragmites* swamp to a well-manicured grassy area. During the field visit, a painted turtle (*Chrysemys picta*) was observed approximately 30 feet from the water's edge. Subsample 3-1 is representative of approximately half of the 1.8 acre area of site 3.

The second point, subsample 3-2, is located along the southern boundary of the site. The area surrounding this subsample includes part of the pond and the wooded area to the east. The pond has moderately sloping banks, undercuts, and protruding branches with diverse emergent vegetation and an abrupt wetland/upland edge. The wooded area adjacent to the pond contains a diverse herbaceous shrub and tree layer. No surface water was observed within the wooded swamp. Subsample 3-2 is representative of approximately half of the 1.8 acre area of site 3.

3.4 SITE 4 (AVID ASSESSMENT AREA 2-M)

Site 4 is approximately 9 acres in size and is bordered by an industrial area to the south, the Conrail right-of-way to the east, and Bellman's Creek to the north and west. The site is tidally influenced and contains several small channels which drain the wetland towards Bellman's Creek during an outgoing tide. Three points were evaluated within the site. Originally, this site was to have four subsample locations. However, during the field visit it was determined that three points would adequately represent the different cover types within the site.

Subsample 4-1 is located approximately 300 feet west of Bellman's Creek. The area around subsample 4-1 is an emergent marsh with exposed mud flats and diverse vegetation. The mud flats are sparsely vegetated with salt marsh cordgrass (*Spartina alterniflora*) and black grass (*Juncus gerardii*) and border a *Phragmites* wetland mixed with sparse woody shrubs. There is a distinct break in topography at this edge. The bank which separates these two cover types is approximately two to four feet high with deep undercuts. The *Phragmites* swamp contains small channels, which at the time of the inspection was flowing in a westerly direction toward Bellman's Creek. Subsample 4-1 represents approximately 25 percent of the 9 acre area of site 4.

Subsample 4-2 is located in the eastern portion of the site, approximately 500 feet from the road and the adjacent railroad. This area is small in size, less than 1 acre, but contains a diverse herbaceous layer and a homogeneous shrub layer. At the time of the inspection, there was no evidence that the area was regularly inundated by water. The elevation appeared to be much higher at this point than anywhere else on this site. Subsample 4-2 is representative of approximately 5 percent of the 9 acre area of site 4.

Subsample 4-3 is located in the southern portion of the site. The area surrounding subsample 4-3 can be described as a densely vegetated *Phragmites* intertidal wetland. At the time of the field visit, the majority of the site was inundated with water to a depth of 3 to 6 inches. Small pockets of open water were scattered throughout the area. These depressions held approximately 8 to 10 inches of water and contained stunted *Phragmites,* interspersed with a diverse herbaceous understory. Subsample 4-3 is representative of approximately 70 percent of the 9 acre area of site 4.

3.5 SITE 5 (AVID ASSESSMENT AREA 39)

Site 5 is approximately 9.5 acres in size, and is surrounded by an industrial area which is highly populated, roadways which are heavily travelled, and railroads. Two sites were evaluated within this wetland. Originally, this site was to have four evaluation points. However, during the site visit it was determined that two points would adequately represent the different cover types within the site.

Subsample 5-1 is located in the northern portion of the site, and is characterized by a densely vegetated *Phragmites* swamp with areas of open water. The *Phragmites* within this area are approximately 6 to 8 feet tall with little diversity in vegetation and a gradual upland/wetland boundary. Subsample 5-1 is representative of approximately half of the 9.5 acre area of site 5.

Subsample 5-2 is located towards the center of the site, and contains channels, areas of ponded open water, and a *Phragmites* swamp. The *Phragmites* within this area are dense and approximately 8 to 12 feet tall. Little to no plant diversity exists within this emergent swamp. There are distinct wetland edges between the resources identified. This area seems to be experiencing impacts from the surrounding human activities. Subsample 5-2 represents approximately half of the 9.5 acre area of site 5.

3.6 REFERENCE SITE R1 (HARTZ MITIGATION SITE, AVID ASSESSMENT AREA 301)

Reference site R1 is a tidally influenced salt-marsh which was enhanced by human activities, and occupies approximately 58 acres. It is bounded by the eastern spur of the New Jersey Turnpike to the east, Chromakill Creek to the north, and Mill Creek to the west and south. There are several meandering stream channels throughout the site ranging in size from 10 to 30 feet wide. Only one point was evaluated within this reference site, which was chosen to best represent the entire reference wetland.

The field evaluation occurred at a point located just east of Mill Creek. The area surrounding the sample location can be described as salt marsh vegetated with

Spartina and *Phragmites*. The area is regularly flooded and contains small intermittent channels, approximately 3 to 6 feet wide, which are connected to Mill Creek. At the time of the field visit, mud flats were exposed during an incoming tide. Upgradient of the marsh are areas of scattered shrub-scrub wetland and small isolated upland islands. The upland islands are sparsely vegetated with evergreen and broad-leaved deciduous saplings. The interspersion of different cover types, irregular edges, and recreational access points makes this site ecologically diverse and highly valued among the wetlands in the District.

3.7 REFERENCE SITE R2 (SAWMILL CREEK WILDLIFE MANAGEMENT AREA, AVID ASSESSMENT AREA 2-8)

Reference site R2 is a tidally-influenced salt-marsh, approximately 870 acres in size. Several stream channels were observed throughout the site, ranging in size from 20 to 50 feet wide. Only one point was evaluated, and can be described as a salt marsh vegetated with salt marsh cordgrass and *Phragmites*. The area is regularly flooded and contains small intermittent channels with exposed mud flats at low tide. Upgradient of the marsh are small areas of scattered scrub-shrub wetland. Thus, in many ways, reference site R2 is similar to reference site R1. The major differences between the two sites are: (1) site R2 is much bigger than R1; (2) conditions at R2 have evolved through unplanned human-induced changes to regional hydrology while R1 has been intentially directly altered by humans (through a carefully planned mitigation effort); and (3) no upland islands were visible at site R2, where many islands were present at R1.

4.0 DATA COLLECTION METHODS AND MATERIALS

The field testing occurred between May 16 and 18, 1994. The field team visited a number of locations at each wetland site (as described above), and answered a subset of questions from the WET (excluding all "generic" District-wide questions and wetland size-related questions) for each of the sampling points in each wetland. Each field team member was provided with a copy of the QA/QC plan developed for this study (see Attachment 2), which detailed the data collection methods anticipated for this project, as well as the quality assurance and quality control methods to be employed.

An attempt was made to answer all relevant questions in the Wetland Evaluation Technique (WET), in order to determine whether any questions not answered in the initial WET assessment might influence the way in which the wetland is valued. Surveys of wetland fauna (including birds and fish) were conducted.

In addition to visiting each wetland test site, the field team also visited two "reference" wetlands, in order to give a reference point for developing the individual BPJ value estimates. This step is necessary because the IVA method measures values relative to high quality wetlands in the District. One of the reference wetlands was the Hartz mitigation site, which, when scored using the IVA method based on its mitigated set of wetland indicators, scored the highest among the wetlands in the District. The other reference wetland was the Sawmill Creek Wildlife Management Area, which is considered a valuable natural resource, and scored highly in the IVA. There is a substantial amount of existing data for these sites, thus the detailed investigations of fauna (fish netting and bird surveying) were not conducted at these sites. Data from existing studies were used, where necessary, to characterize the fauna at the Hartz mitigation site and the Sawmill Creek Wildlife Management Area.

The field team prepared a BPJ evaluation of the quality/value of each test wetland for the three wetland attributes (wildlife habitat, water quality improvement, and social significance), relative to the reference wetlands. This assessment was, of necessity, qualitative in nature, but were be supported by detailed comments as to reasoning behind the quality judgement, as well as the answers to the WET questions (especially level 3 and 4 questions).

4.1 WETLAND EVALUATION

Field personnel responded to a series of questions about each wetland sampling location (see Attachment 3). These questions were culled from the WET questionnaire, and supplemented by additional questions aimed at guiding the BPJ estimate toward the desired result—an estimate of relative wetland value (compared to the reference wetland) for each of the three wetland attributes (water quality improvement, wildlife habitat, and social significance). Data was collected from each member of the field team, for each wetland sampling location. The field team were provided with the relevant sections of the WET method, to assist in responding to the WET questions.

4.1.1 FISH SAMPLING

Field personnel collected, identified, and counted fish populations at evaluation sites that exhibited sufficient open water to support fish. At each site where fish were collected, species collected were identified, counted, and released in the field. Representative samples were preserved for storage and future reference. Based on specific site conditions, one of the following fish collection methods were used.

4.2.1 Seines

Seines were used to collect fish in open water areas which are relatively deep, with stable bottom sediment, and relatively free of debris and large boulders. The seine net was approximately 30 feet long, 8 feet high, and constructed of 3/16-inch mesh. Seining was conducted in an upstream direction for approximately 25 feet (or the length of the channel, whichever is smaller). Two hauls were performed for each sampling location.

4.2.2 Fish Traps

Fish traps were used to collect fish in open water areas where seining was not feasible (because of soft bottom sediment or presence of debris), and where there was sufficient space and flow for the fish trap. The fish trap was approximately 3 feet by 6 feet, with 20 foot-long wing walls, and constructed of 1/2-inch mesh. The fish trap was placed in the channel so that netting is perpendicular to the direction of flow. Fish traps were set for approximately 24 hours.

4.3 BIRD SURVEYS

4.3.1 Visual Avifauna Survey

Whenever field teams were visiting a study site, notations of bird sightings were taken on the "Daily Bird List" (see Attachment 4).

4.3.2 Circular-plot Songbird Counts

In addition to the general avifauna surveys noted above, the 60-meter radius circular plot method was used to estimate densities of songbirds. Sampling occurred at each subsample location. This method consisted of standing at a sampling point for a ten- to twenty-minute period, and recording all visual and vocal observations during that time. The bird species and numbers were recorded on a "Circular Plot - Bird Density Measurement" form (see Attachment 5).

The data collected were analyzed to determine an estimate of bird density within each site. The number of breeding pairs was calculated by first assuming that only territorial males were vocalizing and recorded. The number of observed birds during each ten- to twenty-minute survey was converted to pairs per hectare for each species, using the size of the 60-meter radius circular plot (2.8 acres or 1.13 hectares), or portion thereof. For all but one subsample location (subsample 3-2, which was very close to subsample 3-1), two recordings (one ten-minute and one twenty-minute) were made at each sampling location.

5.0 RESULTS AND DISCUSSION

5.1 WETLAND EVALUATION RESULTS

The answers to the WET questions collected on the wetland evaluation form were entered into a computer database and analyzed with several different tests, to determine differences in responses among evaluators, differences in responses among subsample locations, and difference in responses from the previous WET data collection effort (collected during the 1987 AVID study).

The data collected on wetland indicators consisted of the field evaluators responses to 167 different yes/no questions. Due to the nature of the WET questionnaire, these 167 questions represent 84 different wetland indicators, because several groups of yes/no questions are used to identify indicators with more than two possibilities (for example, there are three different questions for the one category of "vegetation/water interface"—solid, intermediate, or checkerboard, and there are 13 questions on the data form for the one category of "dominant vegetation"). In most cases, the questions in a "group" are mutually exclusive. However, certain "groups" are not mutually exclusive (for example, a single wetland can have more than one "secondary water depth"). Thus, it is possible for one questionnaire to have more than 84 "yes" answers. In counting differences among questionnaire results, all WET questions that were not part of a group were counted as one "question" each, questions within a mutually exclusive group were treated as one "question", and questions in a non-mutually exclusive group that at least one evaluator answered "yes" to were counted as individual "questions". Therefore, not all samples have the same number of "questions", but all samples have between 85 and 96 "questions".

5.1.1 Evaluation Methods

Data collected during the field study were analyzed in two primary ways: they were compared among the five different evaluators conducting the field work for this study, and they were compared against the data collected during the previous WET data collection effort conducted in 1987 during the AVID study.

<u>Differences Among Field Responses</u>

Comparisons among evaluators were made in two steps. The first step was to tabulate the number of similar responses to each question. For this analysis, any response that was not a "Yes" was treated as a "No". (Many questions were responded to with "Inappropriate", "Unknown", or simply left blank. All of these non-positive results were treated as "No"s in this analysis.) For each question, four different cases resulted:

All the same - all evaluators responded similarly (either all "Yes" or all "No");

4 the same - one evaluator responded differently from the other four;

3 the same - two evaluators responded differently from the other three;

2 the same - for questions consisting of at least three mutually exclusive choices, two evaluators responded one way, two evaluators responded another way, and the fifth evaluator responded a third way.

The second step in analyzing differences among evaluators was to tabulate how many questions had all the same, 4, 3, and 2 of the same answers from the five evaluators. These results were then presented graphically. Locations that have more "All the same" questions represent locations that all evaluators characterized similarly, while locations that have more "3 (or more) the same" questions represent locations that a majority of the evaluators characterized similarly. The results of this analysis are discussed in Section 5.1.2.

Field Responses Different from AVID

The analysis reported in Section 5.1.3 compares the data collected in this field study with that collected during the 1987 AVID study. It must be noted that the data collected during the AVID study was for an entire "assessment area", which in all but one case is larger than the study area identified for this study. It must also be noted that in that one case (site 3, which is AVID assessment area 201), a WET assessment was not performed in 1987.

The analysis comparing data collected during this study to the AVID data was conducted similarly to the analysis of difference among evaluators discussed above. As discussed above, to simplify the analysis, all "non-positive" responses were treated as a "No" answer. Similar to the above analysis, this analysis consisted of tabulating the number of questions responded to the same as the AVID responses by either all five, four, three, two, one, or none of the evaluators.

"Composite" Site Evaluations

In addition to comparing the raw data collected for each of the subsamples, the subsamples were "composited" to attempt to characterize the entire site. Subsample data from each individual evaluator were combined (e.g., for each evaluator, a "composite" evaluation for site 1 was obtained by combining the evaluations for subsamples 1-2 and 1-3). For WET questions which asked about presence or absence (e.g., presence of a permanent inlet, or presence of a channel), or the presence of "secondary" features (e.g., secondary vegetation or secondary water depths), a "yes" response for any subsample was taken as indicative of presence for the entire site.

However, for other questions pertaining to dominant, or primary features (e.g., dominant vegetation, wetland classification, or peak flow velocity), data pertaining to the representativeness of each subsample (in terms of percentage of the whole site, presented above in Section 3) was used to guide the selection of the appropriate response for the entire site. For example, if the response of one evaluator to WET question 12 ("What is the dominant vegetation of the site?") was "emergent and persistent" at subsample 2-2 (which represents approximately 90 percent of site 2), while the same evaluator characterized the dominant vegetation at subsample 2-4 (which represents the remaining 10 percent of the site) as "aquatic bed and floating vascular," then the dominant vegetation at site 2 should be "emergent and persistent." The results of this compositing (the "composite" result for the site) were also compared among evaluators, and with the previous AVID results.

Differences Among Subsamples

To characterize the variability of wetland conditions across a single site, the responses to the wetland questions for the different subsamples were compared to each other. Similar to the analyses described above, this analysis consisted of comparing each evaluator's responses among the two or three subsample locations in each site. The number of questions receiving the same responses across subsample locations, and the numbers with one difference (the only other possibility for sites with only two subsamples) or two differences (only for site 4 which had three subsamples) were calculated and graphed. The results of this analysis are discussed in Section 5.1.4

Consensus Questionnaire

In order to compare one data set for each subsample location, an "artificial consensus" questionnaire was built. Although no actual discussion occurred among evaluators to arrive at this consensus, the results of the differences in responses among the five evaluators (see Section 5.1.2) were used to derive a "consensus" answer to each question. The consensus answer was that which the most evaluators answered similarly. Where no clear majority was evident, an attempt was made to "split the difference" between conflicting responses, or to arrive at a "conservative" consensus (that which indicated higher functions for the wetland). The results of the consensus questionnaires were compared among subsample locations as described above.

5.1.2 Differences Among Field Responses

Figure 2 presents the results of the analysis of differences among field responses for the subsample locations and the composite evaluations for the five test sites and the two reference sites. For most of the subsample locations, all five evaluators gave identical responses to approximately half of the questions. For an additional twenty to thirty percent of the questions, four of the five evaluators responded the same (i.e., one evaluator responded differently from all the others). For the remaining twenty to thirty percent of the questions, only two or three of the evaluators gave the same

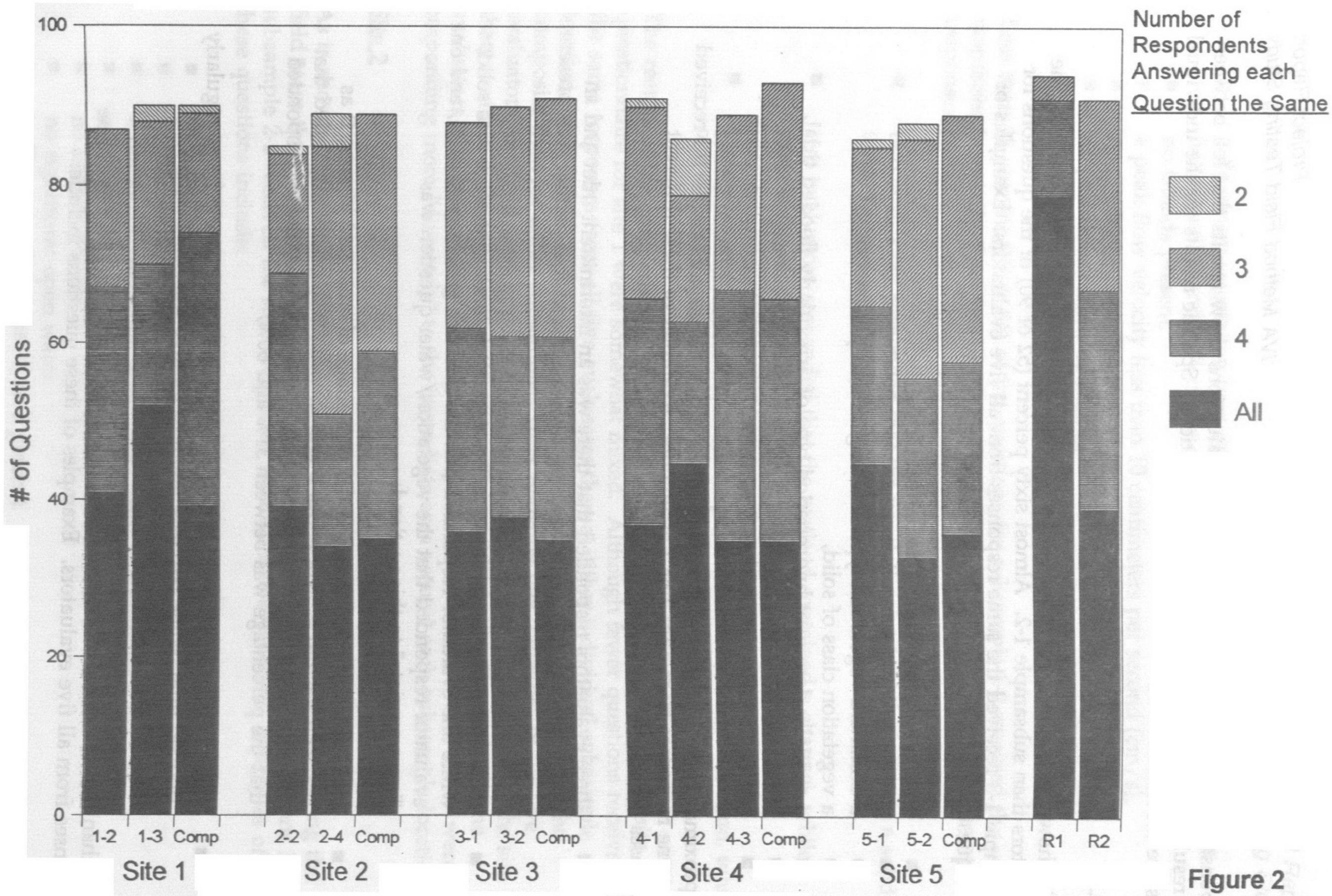


Figure 2
Differences Among Field Responses

response. For the most part, the composite evaluations show results that fell between the results from the individual subsample locations. Specific results for the individual sites are discussed below.

Site 1

As is shown in Figure 2, subsample 1-3 was evaluated more consistently among the evaluators than subsample 1-2. Almost sixty percent (52 of 90) of the questions for subsample 1-3 received the same responses from all five evaluators. Examples of these questions include:

- wetland classification of estuarine,
- no islands present,
- a dominant vegetation type of emergent and persistent,
- a vegetation class of solid,
- a spatially dominant hydroperiod type of irregularly flooded tidal,
- no fish cover,
- buffer zone slopes less than 5 percent.

Approximately twenty percent (20 of 90) of the questions for subsample 1-3 received the same responses from only 2 or 3 evaluators. Examples of these different responses include:

- three evaluators responded that there was an intermittent inlet and an intermittent outlet, while the other two responded that neither was present;

- three evaluators responded that the vegetation/water interface was solid, while one evaluator responded that the interface was intermediate, and one evaluator responded that the vegetation/water question was "inappropriate" to this wetland;

- two evaluators characterized the percentage of emergent in zone B as between 1% and 30% of zones B and C, while two others responded that the percentage was between 61% and 99% and one evaluator responded that the percentage was between 31% and 60%;

- three evaluators responded that the permanent hydroperiod was regularly flooded tidal, while two evaluators responded that the permanent hydroperiod was irregularly flooded tidal.

Less than half (41 of 86) of the questions for subsample 1-2 received the same responses from all five evaluators. Examples of these questions include:

- a dominant vegetation type of emergent and persistent (and covering between 61% and 99% of the emergent and open water areas),
- no islands present,
- a peak flow velocity less than 10 centimeters per second (cm/s),
- no nearby impoundments,
- no permanent inlets or outlets,
- a wetland classification of estuarine.

Less than 25 percent (19 or 86) of the questions for subsample 1-2 received the same responses from only three out of the five evaluators. Examples of these different responses include:

- two evaluators responded that the vegetation/water interface was a solid form, while three indicated that the interface was intermediate;

- two evaluators responded that the wetland contained a channel, while three responded that it did not;

- three evaluators responded that the predominant substrate was mud, while one indicated that it was muck and one indicated that it was peat.

The results of the comparison of differences among evaluators for the composite questionnaire for site 1 were somewhat mixed. Although fewer questions received the same responses from all five evaluators than at either individual subsample location, more questions had one or fewer differences among evaluators for the composite than for either subsample. Thus, allowing one "outsider" of the five evaluators, the field team appears to agree more on the overall condition of the site than at either discrete subsample location. This result could indicate that some evaluators were responding more "holistically" to the entire site, while others were responding more "discretely" to the immediate area around each subsample location.

Site 2

As is shown in Figure 2, subsample 2-2 was evaluated more consistently among the field team than subsample 2-4. More than 45 percent (39 of 84) of the questions for subsample 2-2 received the same responses from all five evaluators. Examples of these questions include:

- primary source of sediment is sheetflow,
- no permanent inlet,
- a dominant vegetation type of emergent and persistent,
- a vegetation class of solid,
- no islands present,
- no significant open water,
- buffer zone slopes less than 5 percent.

Less than 20 percent (16 of 84) of the questions for subsample 2-2 received the same responses from only 2 or 3 evaluators. Examples of these different responses include:

- two evaluators responded that there was an intermittent inlet, while the other three responded that no intermittent inlet was present;

- three evaluators responded that the average width of erect vegetation in zones A and B was greater than 500 foot, while the other two responded that this indicator was not present;

- two evaluators characterized the percentage of emergent in zone B as between 61% and 99% of zones B and C, while two others responded that the percentage was 100% and one evaluator responded that the percentage was between 1% and 30%;

- three evaluators indicated that the plant productivity was greater than 1500 grams per square meter per year, while the other two did not.

Less than 40 percent (34 of 89) of the questions for subsample 2-4 received the same responses from all five evaluators. Examples of these questions include:

- a solid form vegetation to water interface,
- no islands present,
- a peak flow velocity less than 10 cm/s,
- a solid vegetation class,
- a permanent inlet but no permanent outlet,
- no riffles present.

More than 40 percent (38 or 89) of the questions for subsample 2-4 were responded the same by only two or three out of the five evaluators. Examples of these different responses include:

- two evaluators responded that the area was channelized, while three evaluators responded that the area was not channelized;

- three evaluators responded that there was a nutrient source in the buffer zone, while two responded that there was no nutrient source;

- two evaluators responded that emergents in zone B represented between 1% and 30% of zones B and C, while two evaluators responded that the percentage was between 31% and 60%, and one evaluator responded that the percentage was between 61% and 99%;

- two evaluators responded that the permanent and spatially dominant hydroperiod were semipermanently flooded nontidal, while two evaluators responded both hydroperiods were saturated nontidal, and one evaluator responded that both hydroperiods were seasonally flooded nontidal.

The results of the comparison of differences among evaluators for the composite questionnaire for site 2 were similar to the results from subsample 2-4, which indicates that many of the discrepancies from subsample 2-4 were carried into the composite, even though subsample 2-4 represents only 10 percent of site 2. Thus, the composite questionnaire for site 2 may not be entirely representative of site 2.

Site 3

As is shown in Figure 2, the two subsamples at site 3 were nearly identical in terms of the number of differences among the evaluator's responses. Approximately 40 percent (36 of 88) of the questions for subsample 3-1 received the same responses from all five evaluators. Examples of these questions include:

- palustrine wetland classification,
- no islands present,
- consisting of, or part of, a fringe or island wetland,
- no channels present,
- spatially dominant hydroperiod type is permanently flooded nontidal,
- area of zone B more than 10 percent of the area,
- average width of erect vegetation in zone B less than 500 feet.

Less than 30 percent (26 of 88) of the questions for subsample 3-1 were responded the same by only 2 or 3 evaluators. Examples of these different responses include:

- three evaluators responded that the physical habitat interspersion was uniform, while two responded that it was intermediate;

- three evaluators responded that the predominant substrate type was muck, while one evaluator responded that it was mud, and one that it was sand;

- three evaluators characterized the percentage of emergents in zone B as between 1% and 30% of zones B and C, while the other two responded that the percentage between 31% and 60%;

- two evaluators indicated that the area had been directly altered, while three indicated that it had not;

- two evaluators classified the vegetation/water interface as intermediate, while one classified it as solid and one as intermediate;

- three evaluators identified the dominant vegetation type as forested and broad-leaved deciduous, while the other two responded that the dominant vegetation type was emergent and persistent.

More than 40 percent (38 of 90) of the questions for subsample 3-2 received the same responses from all five evaluators. Examples of these questions include:

- palustrine wetland classification,
- no islands present,
- no permanent or intermittent inlet,
- no channels present,
- a dominant vegetation type of emergent and persistent,
- spatially dominant hydroperiod type of permanently flooded nontidal,
- emergents in zone B between 1% and 30% of zones B and C,
- average width of erect vegetation in zone B less than 500 feet.

Approximately 30 percent (29 of 90) of the questions for subsample 3-2 received the same responses from only 2 or 3 evaluators. Examples of these different responses include:

- three evaluators responded that the physical habitat interspersion was intermediate, while two responded that it was uniform;

- three evaluators responded that the predominant substrate type was muck, while one evaluator responded that it was mud, and one did not indicate a predominant substrate type;

- three evaluators responded that the area of zone A was more than 10 percent of zones B and C, while two responded that it was not more than 10 percent;

- two evaluators indicated that the area had been directly altered, while three indicated that it had not;

- three evaluators indicated that a permanent outlet was present, while two indicated that no permanent outlet was present.

The results of the comparison of differences among evaluators for the composite questionnaire for site 3 were very similar to the results from both subsamples. This is most likely reflective of the small area of site 3 (1.8 acres).

Site 4

As is shown in Figure 2, subsample 4-2 had the most consistent responses. Also, subsamples 4-1 and 4-3 were very similar in the number of questions answered differently. Approximately 40 percent (37 of 91) of the questions for subsample 4-1 received the same responses from all five evaluators. Examples of these questions include:

- estuarine wetland classification,
- no islands present,
- area of zone B greater than zone A, and greater than 10 percent of the total area,
- no local impoundments,
- spatially dominant and permanent hydroperiod types of regularly flooded tidal,
- predominant substrate type is muck,
- migrating or wintering geese, black duck, and group 1 waterfowl present.

Less than 30 percent (25 of 91) of the questions for subsample 4-1 were responded the same by only 2 or 3 evaluators. Examples of these different responses include:

- two evaluators responded that the physical habitat interspersion was intermediate, while one responded that it was uniform, and one responded that it was mosaic;

- three evaluators responded that the dominant water depth was between 40 and 59 inches, while one responded that the dominant depth was between 21 and 39 inches, and one responded that the dominant depth was between 5 and 8 inches;

- three evaluators characterized the percentage of emergents in zone B as between 31% and 60% of zones B and C, while the other two responded that the percentage between 61% and 99%;

- two evaluators indicated that the area had been directly altered, while three indicated that it had not;

- three evaluators classified the vegetation/water interface as intermediate, while two classified it as solid;

- two evaluators identified that the peak flow velocity was less than 10 cm/s, one indicated that the peak flow velocity was greater than 30 cm/s, and the other two that the peak flow velocity was between 10 and 30 cm/s.

More than 50 percent (45 of 86) of the questions for subsample 4-2 received the same responses from all five evaluators. Examples of these questions include:

- buffer zone slopes less than 5 percent,
- no islands present,
- no permanent or intermittent inlet or outlet,
- no channels present,
- no local impoundments,
- not subject to frequent human disturbance,
- no substantial open water,
- area of zone A and zone B greater than zone C.

Approximately 25 percent (23 of 86) of the questions for subsample 4-2 received the same responses from only 2 or 3 evaluators. Examples of these different responses include:

- two evaluators responded that the dominant vegetation type was scrub-shrub and broad-leaved deciduous, one responded that it was scrub-shrub and needle-leaved deciduous, one that it was emergent and persistent, and one that it was emergent and non-persistent;

- three evaluators responded that the vegetation/water interface was solid, while two responded that it was intermediate;

- two evaluators responded that the emergents in zone B were 0% of zones B and C, one responded that it was between 1% and 30%, one that it was between 31% and 60%, and one that it was 100% of zones B and C or not present;

- two evaluators indicated that the area had been directly altered, while three indicated that it had not;

- two evaluators indicated that the average width of erect vegetation in zones A and B was greater than 500 feet, while the other three indicated that the average width was less than 500 feet.

Approximately 40 percent (35 of 89) of the questions for subsample 4-3 received the same responses from all five evaluators. Examples of these questions include:

- estuarine wetland classification,
- dominant vegetation type of emergent and persistent,
- area of zone B greater than zone A, and greater than 10 percent of the total area,
- no local impoundments,
- vegetation class is solid,

- zone B not shaded,
- no intermittent outlet.

Less than 25 percent (22 of 89) of the questions for subsample 4-3 received the same responses from only 2 or 3 evaluators. Examples of these different responses include:

- three evaluators responded that the physical habitat interspersion was uniform, while the other two responded that it was intermediate;

- three evaluators responded that the primary source of toxics was channel flow, while the other two responded that the primary source was sheetflow;

- two evaluators indicated that the area was channelized, while three responded that it was not channelized;

- two evaluators indicated that the area was part of a fringe or island wetland, while three indicated that it was not;

- three evaluators responded that the plant productivity was greater than 1500 grams per square meter per year, while the other two responded that it was not this high, or that they were unsure.

The results of the comparison of differences among evaluators for the composite questionnaire for site 4 were similar to the results from subsamples 4-1 and 4-3, but different from subsample 4-2. This may be indicative of the rather small area that subsample 4-2 represents (approximately 5 percent of the entire site 4).

<u>Site 5</u>

As is shown in Figure 2, subsample 5-1 was evaluated more consistently than subsample 5-2. More than half (45 of 86) of the questions for subsample 5-1 received the same responses from all five evaluators. Examples of these questions include:

- estuarine wetland classification,
- dominant vegetation type of emergent and persistent,
- no islands present,
- vegetation class is solid,
- nutrient and toxic sources in buffer zone,
- area of zone B more than zone A, and more than 10 percent of the area,
- low local impoundments,
- no special habitat features.

Less than 25 percent (21 of 86) of the questions for subsample 5-1 received the same responses from only 2 or 3 evaluators. Examples of these different responses include:

- three evaluators indicated that the spatially dominant hydroperiod type was irregularly flooded tidal, while one indicated that it was irregularly exposed tidal, and one indicated that it was regularly flooded tidal;
- three evaluators responded that the plant productivity was greater than 1500 grams per square meter per year, while the other two responded that it was not this high, or that they were unsure.
- two evaluators responded that the emergents in zone B were 100% of zones B and C, while two responded that it was between 61% and 99%, and one responded that is was between 31% and 60%;
- three evaluators indicated that the primary source of toxics was sheet flow, while the other two indicated that the primary source of toxics was channel flow;
- two evaluators indicated that the area contains a channel, while three indicated that it did not;
- three evaluators responded that the outlet was less than one-third the average width of the wetland, while two responded that it was greater than one-third the average width (or not present);
- three evaluators indicated that the buffer zone slopes were less than 5 percent, while the other two indicated that the buffer zone slopes were greater than 5 percent.

Less than 40 percent (33 of 88) of the questions for subsample 5-2 received the same responses from all five evaluators. Examples of these questions include:

- estuarine wetland classification,
- no islands present,
- zone B not shaded,
- toxic source in buffer zone,
- area of zone A less than 10 percent of zones B and C,
- no local impoundments,
- no special habitat features,
- average width of erect vegetation in zone B less than 500 feet.

More than 35 percent (32 of 88) of the questions for subsample 5-2 received the same responses from only 2 or 3 evaluators. Examples of these different responses include:

- three evaluators responded that the physical habitat interspersion was uniform, while two responded that it was intermediate;

- two evaluators responded that the area has significant cover for fish, while two responded that it did not, and one indicated that the question was "inappropriate";

- two evaluators indicated that the dominant water depth was between 9 and 20 inches, while two indicated that the dominant depth was between 5 and 8 inches, and one indicated that the dominant depth was between 1 and 4 inches;

- two evaluators indicated that the area had been directly altered, while three indicated that it had not;

- two evaluators indicated that a permanent (and no intermittent) inlet and outlet were present, while two indicated that an intermittent (and no permanent) inlet and outlet were present, and one evaluator did not indicate the presence of any inlets or outlets.

The results of the comparison of differences among evaluators for the composite questionnaire for site 5 fell between the results from both subsamples.

<u>Reference Site R1</u>

As is shown in Figure 2, site R1 was evaluated very consistently among the evaluators. In fact, almost 85 percent (79 or 94) of the questions for site R1 received the same responses from all five evaluators, and only three percent (3 of 94) of the questions were responded to differently by 2 or 3 evaluators. These three questions were:

- two evaluators indicated that the plant productivity was less than 500 grams per square meter per year, while the other three indicated that the productivity was greater than this, or unknown;

- three evaluators indicated that scrub-shrub and broad-leaved deciduous was a secondary vegetation type, while the other two did not;

- only two evaluators responded that the area contained a sinuous channel.

The reason for this apparent agreement among the evaluators may stem from the fact that this site was the first site visited, and, in order to make sure that all of the evaluators understood the questions being asked in the questionnaire, there was substantial discussion regarding the appropriate responses. This type of discussion was encouraged for the reference site in order to make sure that all evaluators understood the questions, but was discouraged for the remaining sites. Thus, this site should not be used to reach conclusions about evaluator variability.

Reference Site R2

As is shown in Figure 2, site R2 was not evaluated as consistently as site R1. The reason for the apparent consistency among answers for site R1 was discussed above.

For site R2, more than 40 percent (39 of 91) of the questions received the same responses from all five evaluators. Approximately 25 percent (24 of 91) of the questions received the same responses from only 2 or 3 evaluators. Some of the questions responded to differently include:

- two evaluators indicated that significant fish cover was present, while one indicated that fish cover was not present and two indicated that the question was "inappropriate" to this area;

- three evaluators indicated that the dominant water depth was between 6.5 and 26 feet, while one indicated that the dominant depth was between 5 and 6.5 feet, and one indicated that the dominant depth was between 1 and 4 inches;

- three evaluators indicated that the vegetation class was intermediate, while the other two responded that the vegetation class was solid;

- three evaluators indicated that the vegetation/water interface was checkerboard, while two indicated that it was intermediate.

It appears from an analysis of the disparity between the answers that most of the differences can be explained by the fact that site R2 was supposed to reflect the Sawmill Wildlife Management Area, and some people responded to the questionnaire for the entire area, while others responded to the questionnaire for the area immediately surrounding the field location. Another related reason for the disparity may be differences in familiarity of the evaluators with both on-site and off-site conditions.

5.1.3 Field Responses Different From AVID

Figure 3 presents the results of the analysis of differences between data collected during this study for the various sites and data collected during the AVID study for

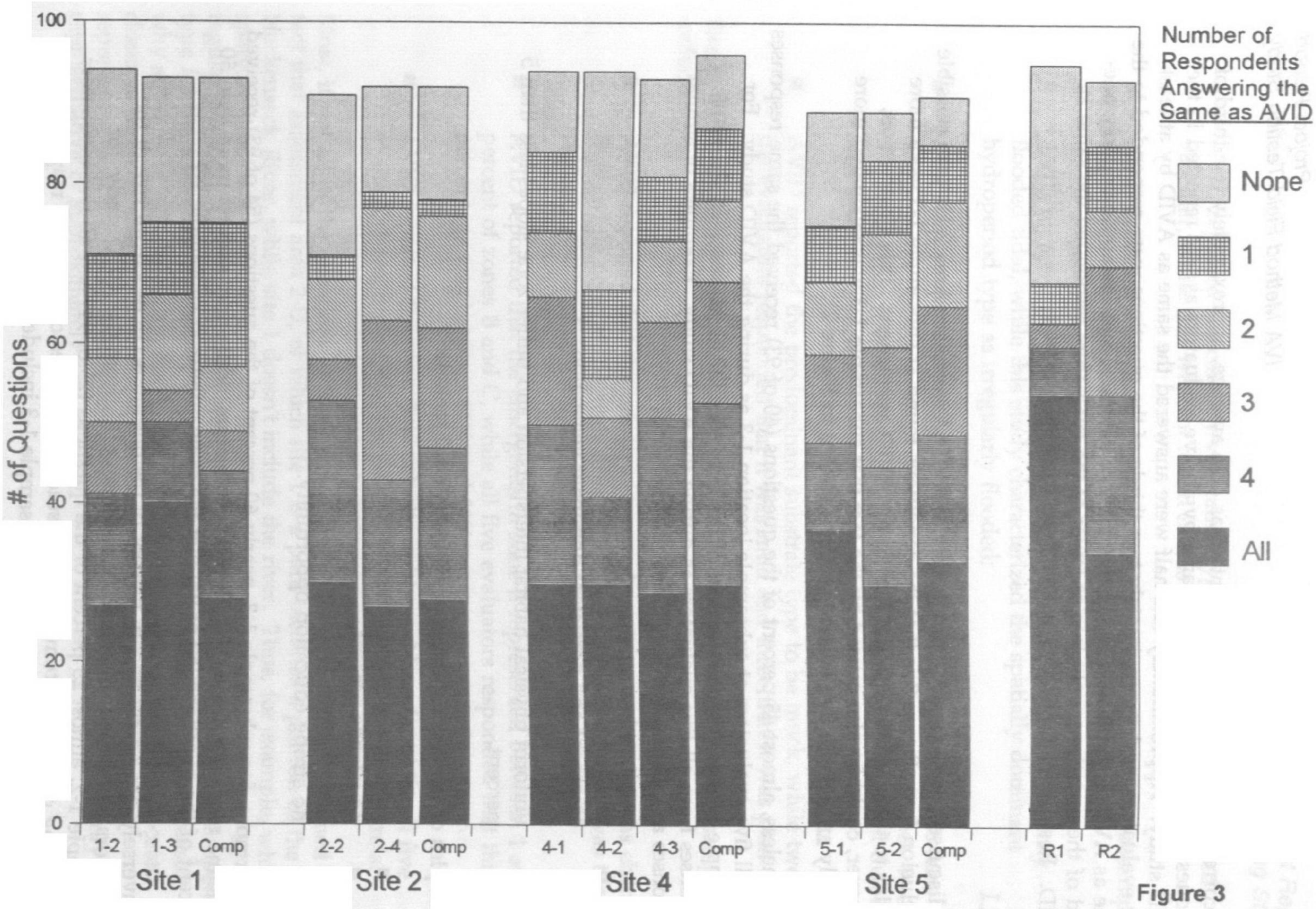


Figure 3
Field Responses Different from AVID

the corresponding AVID assessment areas. On average, approximately one-third of the questions were answered the same by all five evaluators as was reported in the AVID study. Approximately one-half were answered the same as AVID by at least four evaluators, and approximately two-thirds of the questions were responded to the same as AVID by at least three of the five evaluators. Thus, for approximately one-third of the questions, only two or fewer of the evaluators responded the same as AVID. Results for the individual sites are discussed below.

Site 1

As discussed in Section 3, site 1 is part of AVID Assessment Area 2-U. One possible conclusion from Figure 3 is that the conditions found at subsample 1-3 were more similar to the conditions found during the AVID assessment. This observation, however, could be also caused by the fact that subsample 1-3 was evaluated more similarly among the five evaluators (as is shown in Figure 2).

Nonetheless, almost 45 percent of the questions (40 of 93) received the same responses from all five evaluators at subsample location 1-3 as during the AVID study. For subsample 1-2, less than 30 percent of the questions (27 of 94) received the same responses from all five evaluators as during the AVID study. Examples of similar responses at subsample 1-3 include:

- no sheet flooding,
- emergent and persistent dominant vegetation,
- solid vegetation class,
- uniform physical habitat interspersion and buffer zone slopes less than 5 percent.

Examples of similar responses at subsample 1-2 include:

- estuarine wetland classification,
- no islands present,
- zone B larger than zone A,
- no strong education opportunity.

Furthermore, for subsample 1-3, nearly 60 percent of the questions (54 of 93) received the same responses from three or more evaluators, while only slightly more than 50 percent of the questions (50 of 94) met the same criteria at subsample 1-2.

Conversely, for nearly twenty percent of the questions (18 of 93), all five of the evaluators responded differently at subsample 1-3 from the AVID study; for subsample 1-2, almost 25 percent of the questions (23 of 94) had all five evaluators responding differently from the AVID study. Examples of questions responded to differently by all five evaluators at subsample 1-3 include:

- AVID reported a secondary vegetation type of aquatic bed and rooted vascular, while this was not found in this study;

- AVID reported a permanent outlet, while none was reported at subsample 1-3;

- AVID reported the spatially dominant hydroperiod type as regularly flooded tidal, while this study characterized the spatially dominant hydroperiod type as irregularly flooded;

- AVID reported the dominant water depth was between 6.5 and 26 feet, while one evaluator responded that it was between 9 and 20 inches, two responded that it was between 1 and 4 inches, and two responded that it was less than 1 inch;

- AVID reported the predominant substrate type to be muck, while two of the evaluators responded that it was mud and three that it was peat.

Examples of questions responded to differently by all five evaluators at subsample 1-2 include:

- AVID reported that the primary source of nutrients and toxics was channel flow, while none of the evaluators responded that channel flow was the primary source of nutrients or toxics;

- AVID reported that the emergents in zone B represented between 1 and 30 percent of zones B and C, while all five evaluators responded that this percentage was between 61% and 99%;

- AVID reported the peak flow velocity as above 30 cm/s, while all five evaluators responded that the peak flow velocity was below 10 cm/s.

Most, if not all of the questions with <u>all five</u> different answers can be explained by the fact that assessment area 2-U, of which site 1 is a part, includes a portion of the Hackensack River, while site 1 doesn't include the river. Thus, for example, while the spatially dominant hydroperiod type for the entire assessment area 2-U may be regularly flooded tidal (because the river is tidal), the spatially dominant hydroperiod type for the 6 acre site 1 probably is not. This conclusion suggests another reason why subsample 1-3 is more similar to the AVID results—subsample 1-3 is located closer to the river than subsample 1-2, and thus subsample 1-3 may be more representative of the entire assessment area. However, for this study, it is only representative of approximately half of site 1.

Site 2

As discussed in Section 3, site 2 is part of AVID Assessment Area 2-T. No strong conclusions can be drawn from Figure 3 for site 2. Approximately 30 percent of the questions (30 of 91) received the same responses from all five evaluators at subsample location 2-2 as during the AVID study. For subsample 2-4, less than 30 percent of the questions (27 of 92) received the same responses from all five evaluators as during the AVID study. Examples of similar responses at subsample 2-2 include:

- area of zone A and B greater than zone C,
- no significant open water,
- no immediate education opportunity, research resource, or recreation access point,
- no islands present.

Examples of similar responses at subsample 2-4 include:

- not part of a fringe or island wetland,
- no significant open water,
- no immediate education opportunity, research resource, or recreation access point,
- no islands present.

However, for subsample 2-2, more than 60 percent of the questions (58 of 91) received the same responses from three or more evaluators, while nearly 70 percent of the questions (63 of 92) met the same criteria at subsample 2-4.

Conversely, for more than twenty percent of the questions (20 of 91), all five of the evaluators responded differently at subsample 2-2 from the AVID study; for subsample 2-4, less than 15 percent of the questions (13 of 92) had all five evaluators responding differently from the AVID study. Examples of questions responded to differently by all five evaluators at subsample 2-2 include:

- AVID reported the presence of a permanent inlet, while none was reported at subsample 2-2;

- all five evaluators responded that subsample 2-2 was subjected to sheet flooding, while AVID reported that AA 2-T was not subjected to sheet flooding;

- AVID reported a vegetation class of intermediate, while all five evaluators responded that the vegetation class at subsample 2-2 was solid;

- AVID reported the primary source of sediment was channel flow, while all five evaluators responded that the primary source of sediment at subsample 2-2 was sheetflow;

- AVID reported that the dominant water depth for AA 2-T was between 9 and 20 inches, while four evaluators responded that the dominant water depth was less than 1 inch, and one responded that the dominant depth was between 1 and 4 inches.

Examples of questions responded to differently by all five evaluators at subsample 2-4 include:

- AVID reported that AA 2-T had an intermittent outlet, but not a permanent outlet, while all five evaluators reported that subsample 2-4 had a permanent outlet and not an intermittent outlet;

- AVID reported that the vegetation class of AA 2-T was intermediate, while all five evaluators classified the vegetation class at subsample 2-4 as solid;

- AVID reported that the emergents in zone B were 0% of zones B and C, while the reported percentage of emergents in zone B during this study varied from 1% to 99%.

Most, if not all of the questions with <u>all five</u> different answers can be explained by the fact that assessment area 2-T, of which site 2 is a part, includes a much larger area than just site 2. Thus, for example, while the vegetation class for the entire assessment area may be intermediate, as reported in the AVID, the vegetation class for site 2 was reported in this study as solid.

<u>Site 3</u>

Site 3 is the same as AVID assessment area 201, however, AA 201 was not assessed during AVID, so a comparison to the AVID data is not possible.

<u>Site 4</u>

As discussed in Section 3, site 4 is part of AVID Assessment Area 2-M. Although none of the subsamples are very consistent with the AVID data, subsamples 4-1 and 4-3 are substantially more consistent with the AVID data than subsample 4-2. This is probably due to the fact that subsample 4-2 represents only a small portion of site 4, and is most likely even less representative of the entire AA 2-M. It should also be noted in Figure 3 that the composite sample is generally more consistent with the AVID data than any of the individual subsamples.

Only approximately 30 percent of the questions (30 of 94 for subsample 4-1 and 4-2, and 29 of 93 for subsample 4-3) received the same responses from all five evaluators at subsample location 4-1 as during the AVID study. Examples of similar responses at subsample 4-1 include:

- buffer zone slopes less than 5 percent,
- no local impoundments,
- no immediate education opportunity, or recreation access point,
- area of zone B greater than zone A, and greater than 10 percent of the area,
- no islands present.

Examples of similar responses at subsample 4-2 include:

- buffer zone slopes less than 5 percent,
- not part of a fringe or island wetland,
- no intermittent inlet or outlet,
- no immediate education opportunity, or recreation access point,
- no islands present.

Examples of similar responses at subsample 4-3 include:

- area of zone B greater than zone A, and greater than 10 percent of the area,
- vegetation class is solid,
- no intermittent outlet,
- no immediate education opportunity, or recreation access point,
- no islands present.

However, for subsample 4-1, more than 70 percent of the questions (66 of 94) received the same responses from three or more evaluators, and for subsample 4-3, nearly 70 percent of the questions (63 of 93) met the same criteria. However, for subsample 4-2, only slightly more than half (51 of 91) of the questions received the same responses from three or more evaluators.

Conversely, for approximately ten percent of the questions (10 of 94), all five of the evaluators responded differently at subsample 2-2 from the AVID study; for subsample 4-4, less than 15 percent of the questions (12 of 93) had all five evaluators responding differently from the AVID study; and for subsample 4-3, nearly 30 percent (27 of 94) of the questions had completely different responses from the AVID study. Examples of questions responded to differently by all five evaluators at subsample 4-1 include:

- AVID reported that AA 2-M was an important research resource, while none of the evaluators reported this at subsample 4-1;

- AVID reported that the area of zone A in AA 2-M was greater than 10 percent of zones B and C, while all five evaluators responded the percentage of zone A in subsample 4-1 was less than 10 percent of zones B and C;

- AVID reported a permanent hydroperiod of irregularly exposed tidal, while all five evaluators classified the permanent hydroperiod of subsample 4-1 as regularly flooded tidal;

- AVID reported that the predominant substrate material was peat, while all five evaluators reported it to be muck at subsample 4-1;

- AVID reported that no plants of waterfowl value existed in AA 2-M, while all five evaluators indicated that they existed at subsample 4-1.

Examples of questions responded to differently by all five evaluators at subsample 4-2 include:

- AVID reported that AA 2-M was an important research resource, while none of the evaluators reported this at subsample 4-2;

- AVID reported that AA 2-M had an permanent inlet and outlet, while all five evaluators reported that subsample 4-2 had no inlets or outlets;

- AVID reported that AA 2-M performed channel flow spreading, while all five evaluators indicated that this function was not performed at subsample 4-2;

- AVID reported that AA 2-M had a sinuous channel, while all five evaluators reported that subsample 4-2 did not have a channel.

Examples of questions responded to differently by all five evaluators at subsample 4-3 include:

- AVID reported that AA 2-M was an important research resource, while none of the evaluators reported this at subsample 4-3;

- AVID reported that the area of zone A in AA 2-M was greater than 10 percent of zones B and C, while all five evaluators responded the percentage of zone A in subsample 4-3 was less than 10 percent of zones B and C;

- AVID reported a permanent hydroperiod of irregularly exposed tidal, while four evaluators classified the permanent hydroperiod of subsample

4-3 as regularly flooded tidal, and one classified the permanent hydroperiod as irregularly flooded tidal;

- AVID reported that the vegetation/water interface for AA 2-M was intermediate, while four evaluators described it as solid for subsample 4-3, and one described it as checkerboard.

Most of the questions with all five different answers can be explained by the fact that assessment area 2-M, of which site 4 is a part, includes a much larger area than just site 4. Thus, for example, while the entire AA might be an important research resource, as reported in the AVID, the area represented by site 4 may not be, as was answered by the evaluators in this study.

Site 5

As discussed in Section 3, site 5 is part of AVID Assessment Area 39. Figure 3 shows that the two subsamples at site 5 are, to some extent, comparable to the AVID data, and that the composite questionnaire is even more similar to the AVID data than either subsample.

More than 40 percent of the questions (37 of 89) received the same responses from all five evaluators at subsample location 5-1 as during the AVID study. For subsample 5-2, less than 35 percent of the questions (30 of 89) received the same responses from all five evaluators as during the AVID study. Examples of similar responses at subsample 5-1 include:

- estuarine wetland classification,
- dominant vegetation type of emergent and persistent,
- area of zone B greater than zone A, and greater than 10 percent of the area,
- no significant open water,
- no immediate education opportunity, research resource, or recreation access point,
- toxic and nutrient sources in the buffer zone.

Examples of similar responses at subsample 5-2 include:

- estuarine wetland classification,
- toxic source in the buffer zone,
- no significant open water,
- no immediate education opportunity, research resource, or recreation access point,
- average width of erect vegetation in zones A and B less than 500 feet.

For subsample 5-1, more than 65 percent of the questions (59 of 89) received the same responses from three or more evaluators, and more than 65 percent of the questions (60 of 89) met the same criteria at subsample 5-2.

Conversely, for approximately 15 percent of the questions (14 of 89), all five of the evaluators responded differently at subsample 5-1 from the AVID study; for subsample 5-2, slightly more than 5 percent of the questions (6 of 89) had all five evaluators responding differently from the AVID study. Examples of questions responded to differently by all five evaluators at subsample 5-1 include:

- AVID reported a secondary vegetation type of aquatic bed and algal, while no aquatic bed or algal vegetation was reported at subsample 5-1;

- AVID reported a vegetation class of intermediate, while all five evaluators classified it as solid;

- AVID reported that the area of zone A was more than 10 percent of zones B and C, while all five evaluators responded that the area of zone A was less than 10 percent of zones B and C;

- AVID reported that the permanent hydroperiod was irregularly exposed tidal, while four of the evaluators responded that it was irregularly flooded tidal, and one responded that it was regularly flooded tidal;

- AVID reported that AA 39 had plants of waterfowl value, while none of the five evaluators reported this at subsample 5-1.

Examples of questions responded to differently by all five evaluators at subsample 5-2 include:

- AVID reported a secondary vegetation type of aquatic bed and algal, while no aquatic bed or algal vegetation was reported at subsample 5-2;

- AVID reported that the area of zone A was more than 10 percent of zones B and C, while all five evaluators responded that the area of zone A was less than 10 percent of zones B and C;

- AVID reported that the physical habitat interspersion at site 39 was mosaic, while three of the evaluators classified the physical habitat interspersion at subsample 5-2 as uniform, while two classified it as intermediate.

Unlike the other sites, most of site 5 is coincident with its "parent" assessment area (AA 39). This might explain why fewer questions have all five evaluators giving a different answer from the AVID study. However, the reason for the differences is not readily apparent. Some of the differences may be explained by changing site conditions between 1986 and 1994, and others might be explained by differing interpretations of the WET questions.

Reference Site R1

As discussed in Section 3, site R1 is part of AVID Assessment Area 301. Because the AVID study was conducted prior to the completion of mitigation conducted at this site, the AVID data has been modified using existing data on the mitigation plans and results at this site. Figure 3 shows that approximately two-thirds of the questions were answered in this study similarly to the modified AVID data. The predominance of either all five or none of the respondents answering the same as AVID can be explained by the previous discussions of the similarity of all five evaluator's responses to questions for site R1.

More than 55 percent of the questions (54 of 95) received the same responses from all five evaluators at site R1 as the modified AVID data. Examples of similar responses at site R1 include:

- estuarine wetland classification,
- dominant vegetation type of emergent and persistent,
- permanent inlet and outlet, no intermittent inlet or outlet,
- channel flow spreading,
- vegetation class of mosaic,
- nutrient and toxic source in the buffer zone,
- dense understory edge,
- buffer zone slopes less than 5 percent,
- special habitat features,
- area of zone B greater than zone A, and greater than 10 percent of the area,
- plants of waterfowl value.

For site R1, more than 65 percent of the questions (63 of 95) received the same responses from three or more evaluators.

Conversely, for almost than 30 percent of the questions (27 of 95), all five of the evaluators responded differently at site R1 from the modified AVID data. Examples of questions responded to differently by all five evaluators at site R1 include:

- all five evaluators indicated that site R1 had immediate education opportunity and a recreation access point, while the modified AVID data did not include these;

- the modified AVID data assumed that sheet flooding would be present at the mitigation site, while none of the five evaluators reported this at site R1;

- all five evaluators indicated that site R1 is a fringe or island wetland, while the modified AVID data did not include this;

- AVID reported that the vegetation/water interface at the mitigation site was checkerboard, while all five evaluators indicated that it was intermediate;

- the modified AVID data indicated that the primary source of toxics was sheetflow, while all five evaluators reported that channel flow was the primary source of toxics;

- the modified AVID data indicated that the permanent hydroperiod was irregularly exposed tidal, while all five evaluators indicated that the permanent hydroperiod was regularly flooded tidal;

- the AVID data reported that the predominant substrate type was peat, while all five evaluators indicated that the predominant substrate material was muck.

Most of the differences between the data collected during this study and the modified AVID data can be explained by the fact that the modified AVID data was based on the original WET data collected during 1986, while the mitigation area was still evolving. While the AVID data has been modified using available data on the evolving conditions at the mitigation site, the modifications have not been confirmed in the field. The rest of the differences might be explained by the fact that the field visit lasted for only a few hours, and only visited one site in the mitigation area. It should also be noted that all five evaluators responded that site R1 had been directly altered. However, this response was not used in the following IVA analysis, as the "direct alteration" indicator was intended to be an indicator of reduced functioning, not of mitigation efforts.

Reference Site R2

As discussed in Section 3, site R2 is part of AVID Assessment Area 2-8. Figure 3 shows that approximately three-quarters of the questions were answered in this study similarly to the AVID data for AA 2-8.

More than 35 percent of the questions (34 of 93) received the same responses from all five evaluators at site R2 as in the AVID study. Examples of similar responses at site R2 include:

- estuarine wetland classification,
- dominant vegetation type of emergent and persistent,
- permanent inlet and outlet,
- channel flow spreading,

- wave protection,
- toxic source in the buffer zone,
- area contains a channel,
- area of zone B greater than 10 percent of the area,
- spatially dominant hydroperiod type of regularly flooded tidal
- plants of waterfowl value.

For site R2, more than 75 percent of the questions (70 of 93) received the same responses from three or more evaluators.

Conversely, for less than 10 percent of the questions (8 of 93), all five of the evaluators responded differently at site R2 from AVID study. Examples of questions responded to differently by all five evaluators at site R1 include:

- all five evaluators indicated that warm freshwater fish were present at site R2, while the AVID data did not;

- AVID reported that the dominant water depth was between 21 inches and 39 inches, while three evaluators indicated that the dominant water depth was between 6.5 feet and 26 feet, one evaluator indicated that the dominant depth was between 5 feet and 6.5 feet, and one evaluator indicated that the dominant depth was between 1 and 4 inches;

- all five evaluators indicated that site R2 has a recreation access point, while the AVID study did not.

Many of the differences between the data collected during this study and the AVID data can be explained by the fact that the evaluation team visited only one area of the Sawmill Creek Wildlife Mitigation Area.

5.1.4 Differences Among Subsamples

Figure 4 presents the results of the analysis of differences among subsamples. For each site, the range of similarity among subsamples for each evaluator is shown, along with the similarity among the artificial consensus evaluations determined for each subsample. For the sites with only two subsamples (sites 1, 2, 3, and 5), the two consensus subsamples were approximately 80% similar (with the similarity for individual evaluators ranging from 75% to 99%). For the site with three subsamples (site 4), the similarities were much lower. The results for each of the individual sites are discussed below.

<u>Site 1</u>

For the five different evaluators, responses to questions for subsamples 1-2 and 1-3 were between 75% (67 similar of 89 questions) and 88% (75 similar of 85 questions)

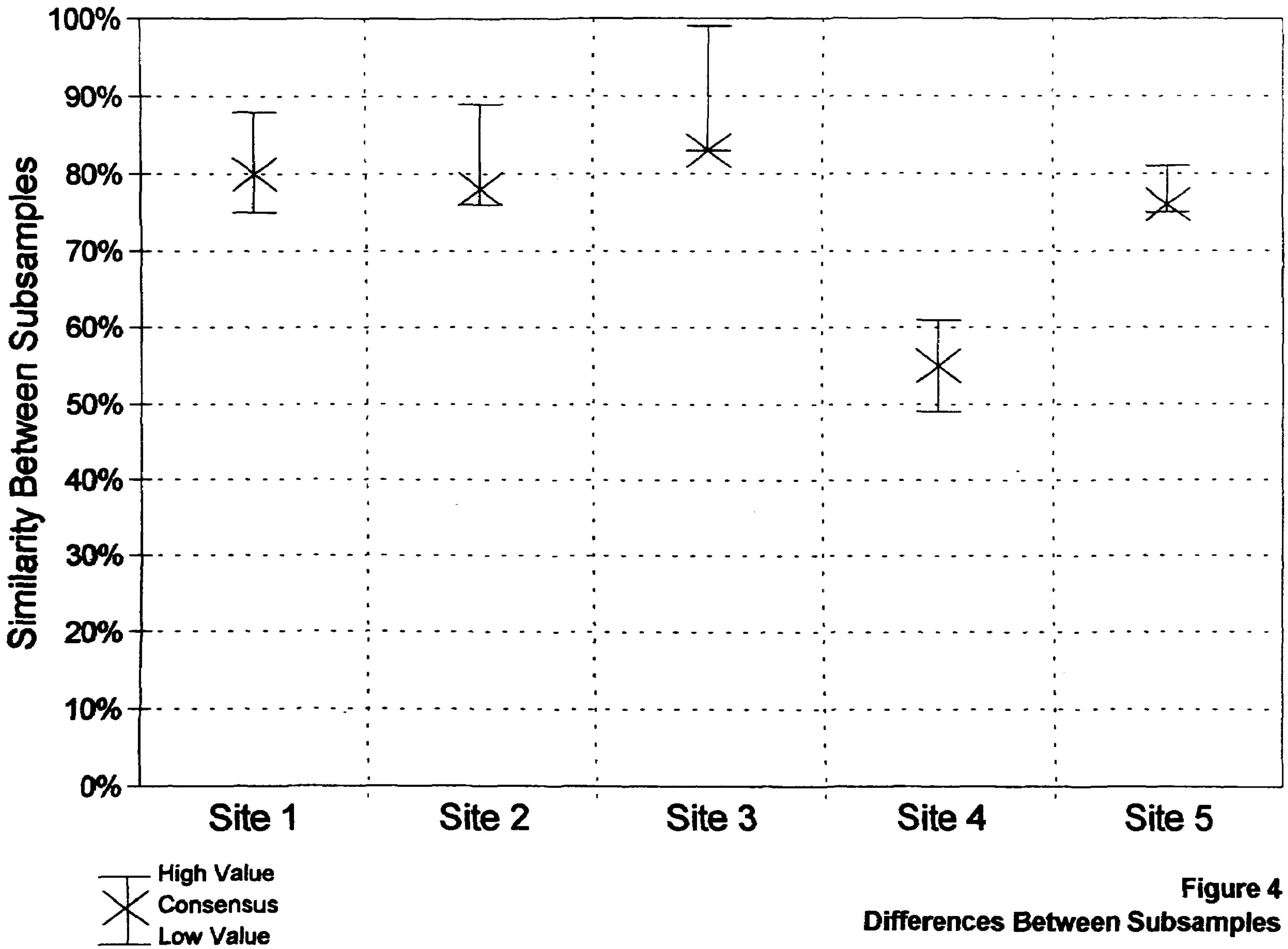


Figure 4
Differences Between Subsamples

similar. For the consensus questionnaires, subsamples 1-2 and 1-3 were 80% similar (69 of 86 questions). Some examples of the between 12 and 25 percent of the questions with different responses for subsamples 1-2 and 1-3 include:

- all five evaluators responded that the vegetation class found at subsample 1-3 was solid, while at subsample 1-2, four of the five responded that the vegetation class was intermediate;

- four of the five evaluators responded that subsample 1-2 had plants of waterfowl value, while only one evaluator responded that similar plants were found at subsample 1-3;

- four of the five evaluators responded that subsample 1-2 experienced sheet flooding, while all five responded that subsample 1-3 did not experience sheet flooding;

- four of the five evaluators responded that subsample 1-3 was included in, or comprised a fringe or island wetland, while only one evaluator responded that subsample 1-2 was a fringe or island wetland.

Site 2

For the five different evaluators, responses to questions for subsamples 2-2 and 2-4 were between 76% (65 of 86 questions) and 89% (74 of 83 questions) similar. For the consensus questionnaires, subsamples 2-2 and 2-4 were 78% similar (67 of 86 questions). Some examples of the between 11 and 24 percent of the questions with different responses for subsamples 2-2 and 2-4 include:

- four of the five evaluators responded that a permanent outlet was present at subsample 2-4, while only one responded that a permanent outlet was present at subsample 2-2;

- all five evaluators responded that a channel was present at subsample 2-4, while only one responded that a channel was present at subsample 2-2;

- three of the five evaluators responded that subsample 2-4 experienced flooding due to a downslope impoundment, while only one responded that subsample 2-2 experiences flooding due to a downslope impoundment;

- three of the five evaluators responded that warm freshwater fish were present at subsample 2-4, while only one evaluator responded that warm freshwater fish were present at subsample 2-2.

Site 3

For the five different evaluators, responses to questions for subsamples 3-1 and 3-2 were between 83% (68 of 82 questions) and 99% (87 of 88 questions) similar. For the consensus questionnaires, subsamples 3-1 and 3-2 were 83% similar (73 of 88 questions). The similarity between subsamples can be explained by the small size (2.8 acres) of site 3. Some examples of the between 1 and 17 percent of the questions with different responses for subsamples 3-1 and 3-2 include:

- all five evaluators responded that the vegetation/water interface at subsample 3-2 was solid, while two evaluators responded that the vegetation/water interface at subsample 3-1 was intermediate, one responded that it was mosaic, one responded that it was solid, and one did not provide a vegetation/water interface for subsample 3-1;

- three of the five evaluators responded subsample 3-1 provided upland habitat wind shelter, while only two of the five evaluators responded that subsample 3-2 provided upland habitat wind shelter;

- all five evaluators responded that the area of zone B at subsample 3-1 was more than 10 percent of the total wetland area, while only two evaluators responded that are area of zone B at subsample 3-2 was more than 10 percent of the total wetland area.

Site 4

For the five different evaluators, responses to questions for subsamples 4-1, 4-2 and 4-3 were between 49% (44 of 90 questions) and 61% (54 of 88 questions) similar. For the consensus questionnaires, subsamples 4-1, 4-2 and 4-3 were 55% similar (48 of 87 questions). Most of the differences among subsample responses can be attributed to the physical dissimilarities between subsample 4-2 and subsamples 4-1 and 4-3. Some examples of the between 39 and 45 percent of the questions responded to differently among subsamples 4-1, 4-2 and 4-3 include:

- four of the five evaluators responded that a permanent inlet and outlet were present at subsample 4-1, and four of the five responded that a permanent inlet and outlet were present at subsample 4-3, while none of the evaluators indicated that a permanent inlet or outlet were present at subsample 4-2;

- all five evaluators indicated that the wetland classification at subsamples 4-1 and 4-3 was estuarine, while four of the five evaluators indicated that the wetland classification at subsample 4-2 was palustrine;

- all five evaluators responded that the vegetation class at subsample 4-3 was solid, and three of the five evaluators responded that the vegetation class at subsample 4-1 was solid, while three of the five evaluators responded that the vegetation class at subsample 4-2 was mosaic;

- all five evaluators responded that migrating or wintering geese were present at subsample 4-1, while only one evaluator indicated the presence of migrating or wintering geese at subsamples 4-2 and 4-3.

Site 5

For the five different evaluators, responses to questions for subsamples 5-1 and 5-2 were between 76% (66 of 87 questions) and 81% (73 of 90 questions) similar. For the consensus questionnaires, subsamples 5-1 and 5-2 were 71% similar (62 of 87 questions). Some examples of the between 19 and 29 percent of the questions with different responses for subsamples 5-1 and 5-2 include:

- four of the five evaluators responded that the vegetation/water interface at subsample 5-1 was solid, while four of the five evaluators responded that the vegetation/water interface at subsample 5-2 was intermediate;

- all five evaluators responded that the vegetation class at subsample 5-1 was solid, while three of the five evaluators responded that the vegetation class at subsample 5-2 was intermediate;

- four of the five evaluators responded that the primary source of sediment at subsample 5-1 was sheetflow, while four of the five evaluators responded that the primary source of sediment at subsample 5-2 was channel flow;

- four of the five evaluators responded that the permanent and spatially dominant hydroperiod type at subsample 5-2 was regularly flooded tidal, while four of the five evaluators responded that the permanent hydroperiod and three of the five responded that the spatially dominant hydroperiod type at subsample 5-1 was irregularly flooded tidal;

- four of the five evaluators indicated that the predominant substrate material at subsample 5-1 was peat, while four of the five evaluators indicated that the substrate at subsample 5-2 was muck.

Reference Site R1

No subsamples were taken at site R1.

Reference Site R2

No subsamples were taken at site R2.

5.2 BEST PROFESSIONAL JUDGEMENT (BPJ) RESULTS

The remaining portion of the wetland evaluation form asked for best professional judgement (BPJ) assessment of the value of each wetland site for a variety of wetland functions and attributes. The evaluators were requested to rate each wetland subsample location, on a scale of 0 to 10 (with 0 representing no value, and 10 representing the value of the reference wetland) for ten wetland functions and three wetland attributes. The desired result of this data collection effort was a BPJ valuation of each subsample for the three wetland attributes (wildlife habitat—WH, water quality improvement—WQ, and social significance—SS). The requested BPJ valuations for the wetland functions that make up each attribute were intended to guide the evaluator toward the BPJ valuation for the three attributes. In some cases, BPJ valuations were made for the related functions, but not for the overall attribute. In these cases, an average of the BPJ valuations for the related functions was used for the attribute BPJ value.

In order to present a single BPJ value for each subsample, the average of all five evaluator's BPJ estimates was used. In order to present a single set of "aggregate" BPJ values for each site, the two or three subsample values were combined, according to the percent of the total site that each subsample represented (see Section 3). Each evaluator's BPJ estimates for the two or three subsamples were combined to obtain an aggregate BPJ value for each evaluator for each site. The results for each subsample and site are listed on Table 1, and discussed in the subsections below. Table 1 also presents the baseline IVA scores, calculated using the WET data collected during the 1986 AVID study.

5.2.1 Site 1

Aggregate values and scores for site 1 were calculated from the individual subsamples using the percentages of the entire site that each subsample represented—subsamples 1-2 and 1-3 each represented 50% of the entire site (see Section 3.1). Using the WET data collected in the AVID study, the baseline IVA scores for site 1 (Assessment Area 2-U) were 59 for WH, 31 for WQ, and 48 for SS.

Wildlife Habitat (WH) Attribute

Aggregate BPJ values for the WH attribute for site 1 ranged from 2.0 to 3.5, and averaged 2.7. This is somewhat lower than would be expected from the IVA baseline score of 59. However, the IVA baseline score includes a substantial portion of the Hackensack River and shoreline wetlands, which most likely have a higher value than the 6 acre area of site 1.

TABLE 1
BPJ RATINGS AND IVA SCORES

AANO	Site	Evaluator	Sub-Sample	BPJ Ratings WH	BPJ Ratings WQ	BPJ Ratings SS	IVA Scores WH	IVA Scores WQ	IVA Scores SS	Percentage Method WH	Percentage Method WQ	Percentage Method SS
2 U	1	AVID	Entire				59	31	48			
		DS	1-2	3.0	3.0	3.0	29	53	40			
		KRS	1-2	3.0	2.0	3.0	49	110	40			
		KSN	1-2	4.0	4.0	4.0	44	108	40			
		MAT	1-2	4.0	4.0	4.0	33	77	48			
		WW	1-2	2.5	4.0	3.0	19	61	40			
		Avg	1-2	3.3	3.4	3.4	35	82	42			
		Consensus	1-2				26	82	40			
		DS	1-3	1.0	3.0	1.0	19	37	40			
		KRS	1-3	2.0	2.0	2.0	61	79	40			
		KSN	1-3	3.0	3.0	3.0	38	56	40			
		MAT	1-3	2.0	2.0	2.0	33	51	48			
		WW	1-3	2.0	5.0	3.0	16	37	40			
		Avg	1-3	2.0	3.0	2.2	33	52	42			
		Consensus	1-3				27	46	40			
		DS	COMP	2.0	3.0	2.0	29	49	40	24	45	40
		KRS	COMP	2.5	2.0	2.5	69	108	40	55	95	40
		KSN	COMP	3.5	3.5	3.5	44	82	40	41	82	40
		MAT	COMP	3.0	3.0	3.0	41	84	48	33	64	48
		WW	COMP	2.3	4.5	3.0	20	63	40	18	49	40
		Avg	COMP	2.7	3.2	2.8	41	77	42	34	67	42
		Consensus	COMP				35	80	40	27	64	40
2 T	2	AVID	Entire				36	52	17			
		DS	2-2	0.5	1.0	1.0	13	60	17			
		KRS	2-2	1.0	1.0	1.0	22	83	17			
		KSN	2-2	1.0	2.5	2.0	19	64	17			
		MAT	2-2	1.0	0.0	1.0	26	85	17			
		WW	2-2	1.0	1.0	2.0	18	57	17			
		Avg	2-2	0.9	1.1	1.4	20	70	17			
		Consensus	2-2				17	77	17			
		DS	2-4	3.0	2.0	2.0	24	58	17			
		KRS	2-4	3.0	2.0	2.0	45	75	17			
		KSN	2-4	2.5	2.0	2.0	36	71	17			
		MAT	2-4	5.0	4.0	4.0	51	86	17			
		WW	2-4	5.0	3.0	4.0	41	63	17			
		Avg	2-4	3.7	2.6	2.8	39	71	17			
		Consensus	2-4				53	92	17			
		DS	COMP	0.8	1.1	1.1	25	60	17	14	60	17
		KRS	COMP	1.2	1.1	1.1	46	100	17	24	82	17
		KSN	COMP	1.2	2.5	2.0	30	69	17	21	65	17
		MAT	COMP	1.4	0.4	1.3	51	93	17	29	85	17
		WW	COMP	1.4	1.2	2.2	41	70	17	20	58	17
		Avg	COMP	1.2	1.3	1.5	39	78	17	22	70	17
		Consensus	COMP				42	81	17	21	79	17

TABLE 1
BPJ RATINGS AND IVA SCORES
(continued)

AANO	Site	Evaluator	Sub-Sample	BPJ Ratings WH	BPJ Ratings WQ	BPJ Ratings SS	IVA Scores WH	IVA Scores WQ	IVA Scores SS	Percentage Method WH	Percentage Method WQ	Percentage Method SS
201	3	AVID	Entire				na	na	na			
		DS	3-1	3.0	3.0	3.0	31	44	0			
		KRS	3-1	6.0	6.0	6.0	50	76	0			
		KSN	3-1	4.0	5.0	5.0	37	54	0			
		MAT	3-1	5.0	7.0	6.0	35	66	0			
		WW	3-1	4.0	2.5	3.0	22	39	0			
		Avg	3-1	4.4	4.7	4.6	35	56	0			
		Consensus	3-1				34	67	0			
		DS	3-2	3.0	3.0	2.5	30	43	0			
		KRS	3-2	4.0	5.0	6.0	40	69	0			
		KSN	3-2	4.0	6.0	4.0	32	58	0			
		MAT	3-2	5.5	8.0	6.0	35	58	0			
		WW	3-2	3.0	4.0	1.0	22	39	0			
		Avg	3-2	3.9	5.2	3.9	32	53	0			
		Consensus	3-2				38	62	0			
		DS	COMP	3.0	3.0	2.8	32	48	0	31	44	0
		KRS	COMP	5.0	5.5	6.0	46	77	0	45	73	0
		KSN	COMP	4.0	5.5	4.5	40	64	0	35	56	0
		MAT	COMP	5.3	7.5	6.0	38	70	0	35	62	0
		WW	COMP	3.5	3.3	2.0	22	39	0	22	39	0
		Avg	COMP	4.2	5.0	4.3	36	60	0	33	55	0
		Consensus	COMP				40	72	0	36	65	0
2 M	4	AVID	Entire				77	81	18			
		DS	4-1	6.0	8.0	5.0	45	55	17			
		KRS	4-1	7.0	7.0	7.0	70	56	17			
		KSN	4-1	7.5	7.0	4.0	84	71	17			
		MAT	4-1	7.0	9.0	4.0	63	77	17			
		WW	4-1	4.0	3.0	4.0	34	33	17			
		Avg	4-1	6.3	6.8	4.8	59	58	17			
		Consensus	4-1				63	65	17			
		DS	4-2	5.0	1.0	2.0	18	49	17			
		KRS	4-2	1.0	1.0	1.0	24	43	17			
		KSN	4-2	2.0	2.0	2.0	38	42	17			
		MAT	4-2	5.0	2.0	3.0	39	65	17			
		WW	4-2	1.0	1.0	1.5	10	28	17			
		Avg	4-2	2.8	1.4	1.9	26	45	17			
		Consensus	4-2				15	60	17			
		DS	4-3	3.5	7.5	3.0	45	52	17			
		KRS	4-3	3.0	5.0	3.0	33	78	17			
		KSN	4-3	7.0	8.0	4.0	63	77	17			
		MAT	4-3	6.0	9.0	4.0	68	92	17			
		WW	4-3	1.5	2.5	3.0	36	58	17			
		Avg	4-3	4.2	6.4	3.4	49	71	17			
		Consensus	4-3				47	82	17			
		DS	COMP	4.2	7.3	3.5	51	73	17	44	53	17
		KRS	COMP	3.9	5.3	3.9	71	102	17	42	71	17
		KSN	COMP	6.9	7.5	3.9	81	79	17	67	74	17
		MAT	COMP	6.2	8.7	4.0	75	108	66	65	87	17
		WW	COMP	2.1	2.6	3.2	47	57	17	34	50	17
		Avg	COMP	4.7	6.2	3.7	65	84	27	50	67	17
		Consensus	COMP				69	87	17	49	77	17

TABLE 1
BPJ RATINGS AND IVA SCORES
(continued)

AANO	Site	Evaluator	Sub-Sample	BPJ Ratings WH	BPJ Ratings WQ	BPJ Ratings SS	IVA Scores WH	IVA Scores WQ	IVA Scores SS	Percentage Method WH	Percentage Method WQ	Percentage Method SS
39	5	AVID	Entire				67	86	0			
		DS	5-1	1.0	3.5	1.0	29	64	0			
		KRS	5-1	1.0	4.0	1.0	28	80	0			
		KSN	5-1	2.0	4.0	3.0	31	80	0			
		MAT	5-1	3.0	7.0	1.0	38	98	0			
		WW	5-1	1.0	2.5	1.0	16	37	0			
		Avg	5-1	1.6	4.2	1.4	28	72	0			
		Consensus	5-1				23	94	0			
		DS	5-2	2.0	8.0	2.0	39	44	0			
		KRS	5-2	2.0	4.0	2.0	48	99	0			
		KSN	5-2	4.0	7.0	3.0	46	74	0			
		MAT	5-2	4.0	6.0	2.0	48	76	0			
		WW	5-2	2.5	3.5	2.5	31	31	0			
		Avg	5-2	2.9	5.7	2.3	42	65	0			
		Consensus	5-2				48	71	0			
		DS	COMP	1.5	5.8	1.5	42	58	0	34	54	0
		KRS	COMP	1.5	4.0	1.5	53	111	0	38	90	0
		KSN	COMP	3.0	5.5	3.0	50	83	0	39	77	0
		MAT	COMP	3.5	6.5	1.5	49	96	0	43	87	0
		WW	COMP	1.8	3.0	1.8	36	53	0	24	34	0
		Avg	COMP	2.3	5.0	1.9	46	80	0	35	68	0
		Consensus	COMP				56	92	0	36	83	0
301	R1	AVID	Entire				103	105	92			
		DS	R1	10.0	10.0	10.0	88	71	48			
		KRS	R1	10.0	10.0	10.0	84	60	48			
		KSN	R1	9.0	10.0	10.0	84	60	48			
		MAT	R1	10.0	9.5	10.0	87	65	48			
		WW	R1	10.0	10.0	10.0	85	62	48			
		Avg	R1	9.8	9.9	10.0	86	64	48			
		Consensus	R1				85	62	48			
2 8	R2	AVID	Entire				92	80	92			
		DS	R2	10.0	10.0	10.0	62	51	53			
		KRS	R2	10.0	10.0	10.0	116	82	100			
		KSN	R2	9.0	10.0	10.0	90	85	100			
		MAT	R2	9.5	9.0	10.0	109	90	103			
		WW	R2	10.0	10.0	10.0	70	69	48			
		Avg	R2	9.7	9.8	10.0	89	75	81			
		Consensus	R2				95	76	100			

For subsample 1-2, the wildlife habitat BPJ range was from 2.5 to 4.0, and averaged 3.3. Reasons for these ratings included:

- site consists of dense *Phragmites* very infrequently inundated by tides, providing habitat for only a few species of passerines and perhaps a few small mammals.
- very little fish habitat
- small areas of stagnant water provide habitat for feeding, loafing and perhaps nesting for mallards only
- lack of habitat diversity precludes significant use by wildlife
- vegetative diversity relatively high but probably little diversity and abundance of aquatic invertebrates
- supports nesting sandpipers and passerines
- substantial human disturbance limits wildlife habitat

For subsample 1-3, the wildlife habitat BPJ range was from 1.0 to 3.0, and averaged 2.0. Reasons for these ratings included:

- dense *Phragmites* with little standing water
- not tidal except during spring tides
- has some value for passerines and edge is ok for waders and shorebirds
- mostly dense *Phragmites* and substantial amounts of trash, but edge has interspersed *Spartina*

Water Quality Improvement (WQ) Attribute

Aggregate BPJ values for the water quality improvement attribute for site 1 ranged from 2.0 to 4.5, and averaged 3.2. These numbers are consistent with the baseline IVA WQ score of 31. It is possible that the disparity between BPJ and baseline IVA scores that appears in for the WH attribute doesn't appear for the WQ attribute because the wetlands in AA 2-U that perform water quality improvement functions are similar to site 1.

For subsample 1-2, the water quality improvement BPJ range was from 2.0 to 4.0, and averaged 3.4. Reasons for these ratings included:

- site is somewhat bermed from sheet flow.
- heavy growth of *Phragmites* and infrequent tidal flux contribute to rather high potential for both sediment and toxicant retention
- high marsh with little tidal contact

For subsample 1-3, the water quality improvement BPJ range was from 2.0 to 5.0, and averaged 3.0. Reasons for these ratings included:

- sheet flow and occasional channel overflow can carry nutrients from dense vegetation
- sediments and toxicants from adjacent golf course and roadway can be retained in wetland
- poor tidal connection, too high in elevation
- some functioning at edge, filters some runoff

<u>Social Significance (SS) Attribute</u>

Aggregate BPJ values for the social significance attribute for site 1 ranged from 2.0 to 3.5, and averaged 2.2. As with the WH attribute, this is somewhat lower than would be expected from the baseline IVA score of 48 for AA 2-U. But also as with the WH attribute, this disparity is most likely due to the fact that the assessment area includes a large part of the river, which has more social significance value than site 1.

For subsample 1-2, the social significance BPJ range was from 3.0 to 4.0, and averaged 3.4. Reasons for these ratings included:

- no hunting or fishing, perhaps a little trapping
- access physically easy but posted, many people visit adjacent golf range
- little to look at for birders or nature photographers
- high disturbance factor, with substantial noise from NJ Turnpike
- absorbs and retains tidal/storm overflow from Cedar Creek and/or Hackensack River
- low conservation potential due to poor quality wildlife habitat and recreation use
- possible future public access

For subsample 1-3, the social significance BPJ range was from 1.0 to 3.0, and averaged 2.2. Reasons for these ratings included:

- no hunting or trapping potential, little potential for fishing
- boating potential high but little to see or do if not fishing
- birdwatching/nature photography potential low as there is little to see
- highly disturbed, much trash and debris
- probably helps in curbing flooding on golf driving range, but reduced functioning because of narrow configuration
- conservation potential low in its current state.

5.2.2 Site 2

Aggregate values and scores for site 2 were calculated from the individual subsamples using the percentages of the entire site that each subsample represented—subsample 2-2 represented 90% of the site and subsample 2-4 represented 10% of the entire site (see Section 3.2). Using the WET data collected in the AVID study, the baseline IVA scores for site 2 (Assessment Area 2-T) were 36 for WH, 52 for WQ, and 17 for SS.

Wildlife Habitat (WH) Attribute

Aggregate BPJ values for the WH attribute for site 2 ranged from 0.8 to 1.4, and averaged 1.2. This is somewhat lower than would be expected from the IVA baseline score of 36. However, the IVA baseline score includes a substantially larger area, including Bashes Creek and shoreline wetlands, which most likely have a higher value than the 9.4 acre area of site 2.

For subsample 2-2, the wildlife habitat BPJ range was from 0.5 to 1.0, and averaged 0.9. Reasons for these low ratings included:

- site inundated during only the highest of tides, thus no aquatic habitats
- solid *Phragmites*, no habitat diversity
- no open areas that might provide feeding, resting, or nesting habitat for birds
- limited use by passerine birds (primarily red-winged blackbirds)
- limited use by muskrats and other mammals

For subsample 2-4, the wildlife habitat BPJ range was from 2.5 to 5.0, and averaged 3.7. Reasons for these ratings included:

- regularly flooded area with an immediately adjacent area that is less regularly flooded provides fairly good habitat diversity for aquatic organisms
- relatively high diversity of plants
- much exposed substrate at low tides
- good fish habitat due to regular tidal flux of creek, but suitable only for species tolerant of low DO and high turbidity
- tide gate restricting inflow, limiting fish habitat
- regularly flooded tidal creek provides fairly good habitat for feeding and loafing for several species of waterfowl
- bird nesting possible along edge of creek and on berms
- much evidence of use by muskrats
- much of area outside berms is fairly dry and provides little habitat for most birds

Water Quality Improvement (WQ) Attribute

Aggregate BPJ values for the water quality improvement attribute for site 2 ranged from 0.4 to 2.5, and averaged 1.3. These numbers are lower than would be expected from the baseline IVA WQ score of 52. However, the water quality improvement functioning of AA 2-T most likely occurs in the upper reaches of the assessment area—site 2 is at the lower end of the AA along the Hackensack River and is isolated from tidal flow.

For subsample 2-2, the water quality improvement BPJ range was from 0.0 to 2.5, and averaged 1.1. Reasons for these ratings included:

- no means of transport of nutrients, sediments, or toxics into or out of site except for overland flow (relatively infrequent)
- non-tidal—little opportunity for removal of nutrients
- dense vegetation will uptake some toxics and hold sediments, but little opportunity
- *Phragmites* can trap sediment from nearby peat berms on highway
- no water present

For subsample 2-4, the water quality improvement BPJ range was from 2.0 to 4.0, and averaged 2.6. Reasons for these ratings included:

- area not regularly flooded
- ponded water restricted to ditch, tidal area unvegetated, very little water contact with vegetation
- sediments and toxics brought in via creek will settle out because of slow velocity of flow, however, input via creek may be small
- no source of toxics entering wetland

Social Significance (SS) Attribute

Aggregate BPJ values for the social significance attribute for site 2 ranged from 1.1 to 2.2, and averaged 1.5. These numbers are consistent with the baseline IVA SS score of 17.

For subsample 2-2, the social significance BPJ range was from 1.0 to 2.0, and averaged 1.4. Reasons for these ratings included:

- no opportunity for consumptive use—monoculture of *Phragmites*
- birders and other non-consumptive users have little to attract them to this site
- no boating or fishing
- access is good—close to marina and restaurant
- could be effective at reducing floodflow during significant storm events—flow over berms would be trapped on site, but small size of area limits capacity
- very low conservation potential in current state
- good area to serve as mitigation/enhancement
- serves as open space/urban wetland

For subsample 2-4, the social significance BPJ range was nearly twice that of subsample 2-2, ranging from 2.0 to 4.0, and averaging 2.6. Reasons for these ratings included:

- some trapping potential but no other consumptive use
- access very poor
- usually probably little to see for birders and nature photographers
- creek too shallow for boating/fishing
- open to river for floodflow alteration potential, much of creek area not inundated by normal high tides so additional capacity available
- wetland functions here can, for the most part, be duplicated elsewhere

5.2.3 Site 3

Aggregate values and scores for site 3 were calculated from the individual subsamples using the percentages of the entire site that each subsample represented—subsamples 3-1 and 3-2 each represented 50% of the entire site (see Section 3.3). Using the WET data collected in the AVID study, the baseline IVA scores for site 3 (Assessment Area 201) were not calculated, because the AVID assessment was not performed for AA 201.

Wildlife Habitat (WH) Attribute

Aggregate BPJ values for the WH attribute for site 3 ranged from 3.0 to 5.3, and averaged 4.2. This area was not assessed during AVID, so a comparison to the AVID baseline score is not possible.

For subsample 3-1, the wildlife habitat BPJ range was from 3.0 to 6.0, and averaged 4.4. For subsample 3-2, the wildlife habitat BPJ values were similar, ranging from 3.0 to 5.5, and averaged 3.9. Reasons for these ratings included:

- good interspersion of trees, emergent vegetation, and open water, but small in size
- slightly greater diversity of vascular plants at subsample 3-1 than at 3-2
- shallow pond, probably experiences high changes in temperature and high changes in DO
- provides good fish habitat if stocked
- isolated from other wetlands, close to human disturbance
- supports a few species of waterfowl and aquatic invertebrates
- connected intermittently to other water via ditch
- dense understory
- good for songbirds, some waterfowl, and terrapins

Water Quality Improvement (WQ) Attribute

Aggregate BPJ values for the water quality improvement attribute for site 3 ranged from 3.0 to 7.5, and averaged 5.0. This area was not assessed during AVID, so a comparison to the AVID baseline score is not possible.

For subsample 3-1, the water quality improvement BPJ range was from 2.5 to 7.0, and averaged 4.7. For subsample 3-2, the water quality improvement BPJ values were similar, ranging from 3.0 to 8.0, and averaged 5.2. Reasons for these ratings included:

- good fringe of emergents increases nutrient uptake and sediment/toxicant retention capability
- forest vegetation decreases nutrient uptake and sediment/toxicant retention capability
- site has curbing reducing sheet flow into wetland
- algae beds remove nutrients from fertilizer used on surrounding lawns
- intermittent outlet increases retention time
- small size limits volume of removal
- may act as detention facility accepting nonpoint source (stormwater runoff) pollution and sediment from adjacent impervious areas
- presence of mineral soils lowers sediment/toxicant retention capability

Social Significance (SS) Attribute

Aggregate BPJ values for the social significance attribute for site 3 ranged from 2.0 to 6.0, and averaged 4.3. This area was not assessed during AVID, so a comparison to the AVID baseline score is not possible.

For subsample 3-1, the social significance BPJ range was from 3.0 to 6.0, and averaged 4.6. For subsample 3-2, the social significance BPJ values were similar, ranging from 1.0 to 6.0, and averaged 3.9. Reasons for these ratings included:

- close to human habitats, easily accessible
- only good for passive recreation uses, such as birdwatching and wildlife observation by local office workers
- probably receives storm drainage from surrounding impervious surfaces, and acts as detention/retention basin
- downslope flooding from non-tidal storms events are not a problem
- uncertain conservation potential due to infill location (small size and isolated from other wetlands, but only kind in the vicinity)

5.2.4 Site 4

Aggregate values and scores for site 4 were calculated from the individual subsamples using the percentages of the entire site that each subsample represented—subsamples 4-1 represented 25 percent of the site, subsample 4-2 represented 4 percent of the site, and subsample 4-3 represented 70% of the entire site (see Section 3.4). Using the WET data collected in the AVID study, the baseline IVA scores for site 4 (Assessment Area 2-M) were 77 for WH, 81 for WQ, and 18 for SS.

Wildlife Habitat (WH) Attribute

Aggregate BPJ values for the WH attribute for site 4 ranged from 2.1 to 6.9, and averaged 4.7. These results are somewhat lower than the IVA baseline WH score of 77. However, as with most of the other sites, the baseline WH score is calculated for a larger assessment area (AA 2-M), and the 9 acre site 4 may not be completely representative of the wildlife habitat available elsewhere in the larger assessment area.

For subsample 4-1, the wildlife habitat BPJ range was from 4.0 to 7.5, and averaged 6.3. Reasons for these ratings included:

- stressed water quality limits aquatic diversity and abundance
- spike rush growing on mudflat scrub-shrub berm good nesting habitat
- good diversity of cover increases wildlife habitat
- open water—fish, aquatic, and waterfowl habitat
- tidally flowed
- mudflats good shorebird and invertebrate habitat
- emergents and shrubs good passerine habitat
- part of large wetland system

For subsample 4-2, the wildlife habitat BPJ range was from 1.0 to 5.0, and averaged 2.8. Reasons for these ratings included:

- no water except during storms—high elevation
- no connection to estuarine system
- high nature of ground provides limited habitat for nesting
- some habitat for "upland" edge species of passerines and mammals.
- small size/small opening

For subsample 4-3, the wildlife habitat BPJ range was from 1.5 to 7.0, and averaged 4.2. Reasons for these ratings included:

- no permanent water, tidal flux very limited, little habitat diversity (*Phragmites* monoculture), therefore little habitat for aquatic invertebrates
- tidal range appears insufficient to support fish, no open areas or channels
- very limited waterfowl habitat due to lack of open areas

- stressed water quality (upstream treatment plant)
- limited value for wrens, sparrows, rails, red-winged blackbirds, etc., muskrats

Water Quality Improvement (WQ) Attribute

Aggregate BPJ values for the water quality improvement attribute for site 4 ranged from 2.6 to 8.7, and averaged 6.2. These results are somewhat lower than the IVA baseline WQ score of 81. However, as discussed above, the baseline WQ score for the entire assessment area may not be represented by the 9 acre site 4.

For subsample 4-1, the water quality improvement BPJ range was from 3.0 to 9.0, and averaged 6.8. Reasons for these ratings included:

- upstream wastewater treatment plant
- *Phragmites* marsh high value for retention of sediment/toxics
- good *Phragmites*/water interspersion
- regular tidal flushing
- part of large wetland system

For subsample 4-2, the water quality improvement BPJ range was from 1.0 to 2.0, and averaged 1.4. Reasons for these ratings included:

- frequency of tidal flush very limited
- little vegetation to uptake nutrients/trap sediments
- little source of sediment/nutrient/toxics

For subsample 4-3, the water quality improvement BPJ range was from 2.5 to 9.0, and averaged 6.4. Reasons for these ratings included:

- upstream wastewater treatment plant—source of nutrients
- no through-flow of fresh water and limited tidal flux limit export of nutrients
- possible retention of toxics from adjacent paved areas
- *Phragmites* excellent for sediment/toxicant retention
- very low sediment retention—no source of sediment

Social Significance (SS) Attribute

Aggregate BPJ values for the social significance attribute for site 4 ranged from 3.2 to 4.0, and averaged 3.7. These numbers are all substantially higher than the baseline IVA score of 18.

For subsample 4-1, the social significance BPJ range was from 4.0 to 7.0, and averaged 4.8. Reasons for these ratings included:

- limited access, good birdwatching location
- limited floodflow alteration potential due to tidal system
- good conservation potential due to diversity of wildlife habitats (rare mudflat habitat for shorebirds) and water quality benefits
- lower conservation potential due to proximity to industrial area

For subsample 4-2, the social significance BPJ range was from 1.0 to 3.0, and averaged 1.9. Reasons for these ratings included:

- can be seen from road, but parking is not permitted
- no hunting/fishing/trapping due to poor habitat for target species
- little birdwatching potential due to limited avifauna
- visibility from boat or vehicle obscured by tall *Phragmites*
- limited conservation potential—provides different habitat in otherwise "sea" of *Phragmites*

For subsample 4-3, the social significance BPJ range was from 3.0 to 4.0, and averaged 3.4. Reasons for these ratings included:

- no public access
- little potential for fishing, hunting, birdwatching, photography, or trapping
- has potential of absorbing flood waters from overflow of Bellman's Creek
- dense vegetation enhances potential to slow velocity of flood waters
- some conservation potential because it is part of a relatively large wetland area, fairly undisturbed, and near already enhanced wetland

5.2.5 Site 5

Aggregate values and scores for site 5 were calculated from the individual subsamples using the percentages of the entire site that each subsample represented—subsamples 5-1 and 5-2 each represented 50% of the entire site (see Section 3.5). Using the WET data collected in the AVID study, the baseline IVA scores for site 5 (Assessment Area 39) were 67 for WH, 86 for WQ, and 0 for SS.

Wildlife Habitat (WH) Attribute

Aggregate BPJ values for the WH attribute for site 5 ranged from 1.5 to 3.5, and averaged 2.3. These results are substantially lower than the IVA baseline WH score of 67. Unlike most of the other sites, however, site 5 encompasses most of its "parent" assessment area (AA 39). Thus, the lower BPJ estimate may indicate that either:

- the current field study did not represent all of the wildlife habitats found at site 5;
- the previous AVID assessment over-estimated the number of wildlife habitat indicators present in the assessment area;

- the wetland has degraded substantially between 1986 and 1994; or
- the IVA method is placing undue emphasis on a wildlife habitat indicator that may be present in this wetland, but may not be as important as the IVA method has assumed, or the IVA method is missing a "negative" indicator that would reduce the reported score at this wetland.

For subsample 5-1, the wildlife habitat BPJ range was from 1.0 to 3.0, and averaged 1.6. Reasons for these ratings included:

- no permanent water and no or very little tidal flux
- poor water quality
- little hydrologic connection to other wetlands
- dense monoculture of *Phragmites*
- no real food source for food chain
- no suitable edge for nesting
- no use by waterbirds and little use by passerines due to lack of habitat diversity
- very highly disturbed by traffic and loud noise

For subsample 5-2, the wildlife habitat BPJ range was from 2.0 to 4.0, and averaged 2.9. Reasons for these ratings included:

- shallow, non-permanent water, brief tidal inundation
- low plant diversity
- poor water quality
- food source limited
- limited foraging habitat for waterfowl due to small size of opening in *Phragmites*
- nesting of one or two pairs of ducks possible along edge of tidal flat
- limited use by shorebirds, passerine use limited to red-winged blackbird, grackle, and few other species
- some use by muskrats and other mammals
- small area
- highlv disturbed, stressed area

Water Quality Improvement (WQ) Attribute

Aggregate BPJ values for the water quality improvement attribute for site 5 ranged from 3.0 to 6.5, and averaged 5.0. These results are somewhat lower than the IVA baseline WQ score of 86. However, they are closer to the IVA results than for the WH attribute. The remaining difference could be the result of any of the reasons discussed above.

For subsample 5-1, the water quality improvement BPJ range was from 2.5 to 7.0, and averaged 4.2. Reasons for these ratings included:

- probably serves as moderately high retainer of runoff from adjacent roads, railroads, urban land uses and stormwater discharge points
- curbing may reduce some overland flow
- *Phragmites* marsh provides good retention of sediment/toxics
- restricted tidal flow decreases nutrient removal potential

For subsample 5-2, the water quality improvement BPJ range was from 3.5 to 8.0, and averaged 5.7. Reasons for these ratings included:

- sediment deposition on tidal flat likely from channel flow
- toxics/sediment/nutrients enter via sheet flow from adjacent roads, railroad tracks, urban land uses, and via channel
- toxics may be likely to leave site via channel
- *Phragmites* marsh good for retention

Social Significance (SS) Attribute

Aggregate BPJ values for the social significance attribute for site 5 ranged from 1.5 to 3.0, and averaged 1.9. These numbers are all slightly higher than the baseline IVA score of 0.

For subsample 5-1, the social significance BPJ range was from 1.0 to 3.0, and averaged 1.4. Reasons for these ratings included:

- no consumptive use possible
- nothing to see for non-consumptive users
- very high disturbance factor
- dangerous access
- low floodflow alteration potential because connected to Chromakill Creek by a very small connection
- may serve as backwater area during unusually high tides and storms
- low conservation potential due to overall low quality and undesirable location, not close to other large wetlands

For subsample 5-2, the social significance BPJ range was from 2.0 to 3.0, and averaged 2.3. Reasons for these ratings included:

- extremely limited and dangerous access
- no consumptive use possible
- some birding potential from roadway
- may absorb some storm tides from Chromakill Creek
- receives stormwater from adjacent impervious area
- limited conservation potential due to stressed area

5.2.6 Reference Site R1

Using the WET data collected in the AVID study, the baseline IVA scores for reference site R1 (Assessment Area 301) were 103 for WH, 105 for WQ, and 92 for SS.

Wildlife Habitat (WH) Attribute

BPJ values for the WH attribute for reference site R1 ranged from 9.0 to 10.0, and averaged 9.8. These results agree with the IVA baseline WH score of 103. Reasons for these ratings included:

- tidal flux provides some pools for aquatic species, permanent water
- emergent vegetation and limited shade in areas
- interspersion of habitat types: open water, emergent intertidal zone, mudflats, islands, *Phragmites*, *Spartina*
- permanent tidal regime
- large area of tidal open water provides good fish and waterfowl habitat
- diversity of zones B and C provides good waterfowl habitat
- high diversity of habitat
- high diversity of species usage
-
- areas for overwintering/breeding/migration
- one of the best wildlife habitats in the Meadowlands

Water Quality Improvement (WQ) Attribute

BPJ values for the water quality improvement attribute for reference site R1 ranged from 9.5 to 10.0, and averaged 9.9. These results agree with the IVA baseline WQ score of 105. Reasons for these ratings include:

- *Phragmites* and *Spartina* provide high nutrient removal and sediment/toxic retention
- high nutrient removal/transformation opportunity due to regular tidal flooding
- sources of nutrients/sediments/toxics
- vegetated mudflats and other zone B areas provide sediment/toxic retention

Social Significance (SS) Attribute

BPJ values for the social significance attribute for reference site R1 for all evaluators equalled 10.0. These results agree with the IVA baseline SS score of 92. Reasons for these ratings included:

- high recreation potential in regards to public viewing of preservation efforts
- limited access in some areas
- close to marina—boating access
- high quality habitat for passive recreation: birding, nature photography, etc.
- high conservation potential—deed restricted

5.2.7 Reference Site R2

Using the WET data collected in the AVID study, the baseline IVA scores for reference site R2 (Assessment Area 2-8) were 92 for WH, 80 for WQ, and 92 for SS.

Wildlife Habitat (WH) Attribute

BPJ values for the WH attribute for reference site R2 ranged from 9.0 to 10.0, and averaged 9.7. These results agree with the IVA baseline WH score of 92. Reasons for these ratings included:

- high diversity of interspersed habitats and microhabitats
- lacks some vegetative diversity
- regularly tidally influenced
- excellent habitat for fish, diversity of aquatic invertebrates
- abundance of food
- good water quality
- large areas of open water, great diversity of water depth
- exposed mudflats, islands, aquatic vegetation
- good habitat for waterfowl, shorebirds, passerines
- good hunting habitat for hawks
- good species diversity
- little disturbance from humans

Water Quality Improvement (WQ) Attribute

BPJ values for the water quality improvement attribute for reference site R2 ranged from 9.0 to 10.0, and averaged 9.8. These results are slightly higher than the IVA baseline WQ score of 80. Reasons for these ratings include:

- strongly tidal and highly productive system
- many acres of *Spartina* and *Phragmites* with good interspersion with water provides excellent sediment/toxic retention
- nutrient and toxic sources
- mudflats with benthic invertebrates provide nutrient removal/transformation
- good oxygen production transport to Hackensack River

<u>Social Significance (SS) Attribute</u>

BPJ values for the social significance attribute for reference site R2 for all evaluators equalled 10.0. These results agree with the IVA baseline SS score of 92. Reasons for these ratings included:

- much open water available for canoeing, boating, fishing
- opportunities for hunting, trapping
- high bird diversity attracts birdwatchers
- salt marsh with many acres of vegetation provides good flood buffering capacity
- little disturbance from humans
- large, urban wetland
- performs all wetland functions (except floodflow alteration) to a high degree
- is part of conservation/management area

5.2.8 Comparison of BPJ to AVID Baseline IVA Scores

The regressions for the three attributes for the AVID baseline against the average BPJ for each site gave good results—all regressions show a positive relationship between the average BPJ value and the AVID baseline for the assessment area. Figures 5, 6, and 7 present the AVID baseline IVA scores and corresponding BPJ values for each attribute for all of the sites. The "error bars" on these graphs represent the range of aggregate BPJ values (for all of the evaluators) for each sites. The straight line on each graph is the least-squares regression line that best fits the data. (The slope, intercept, and r^2 (the coefficient of determination, with a value of 0 indicating no correlation between variables and a value of 1 indicating 100% correlation between variables) values for all linear regressions in this report are included in Attachment 6.) In almost all cases, the BPJ value is less than would be expected from the AVID baseline (either by dividing the AVID score by 10 or multiplying the BPJ value by 10). This is most likely due to the fact that the BPJ value was only for a subarea (in many cases an area of lower value than the site as a whole) of a larger assessment area evaluated by AVID. It may also be likely that the IVA method results in a slightly higher, more conservative value for a wetland than a best professional judgement value.

Thus, the AVID baseline score and the BPJ values for all three attributes are comparable, and the IVA method, using the AVID baseline WET data, appears to value wetlands similarly to using best professional judgement to value the wetlands.

5.3 IVA RESULTS AND COMPARISONS

The responses to the 167 WET questions included on the form were used to calculate, using the Indicator Value Assessment (IVA) method, "indicator scores" for the three

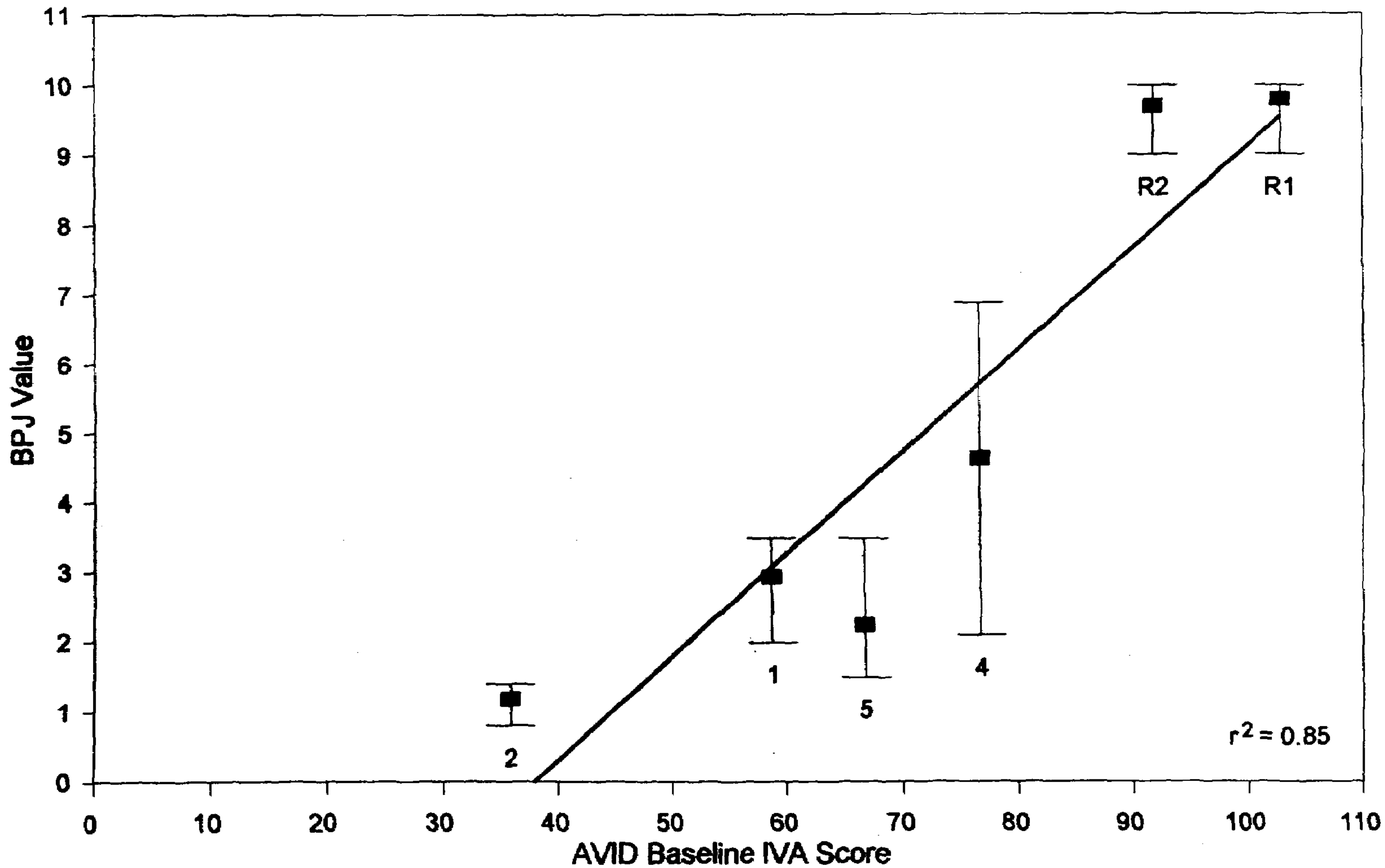


Figure 5
BPJ Values vs. AVID Baseline IVA Scores
Wildlife Habitat Attribute

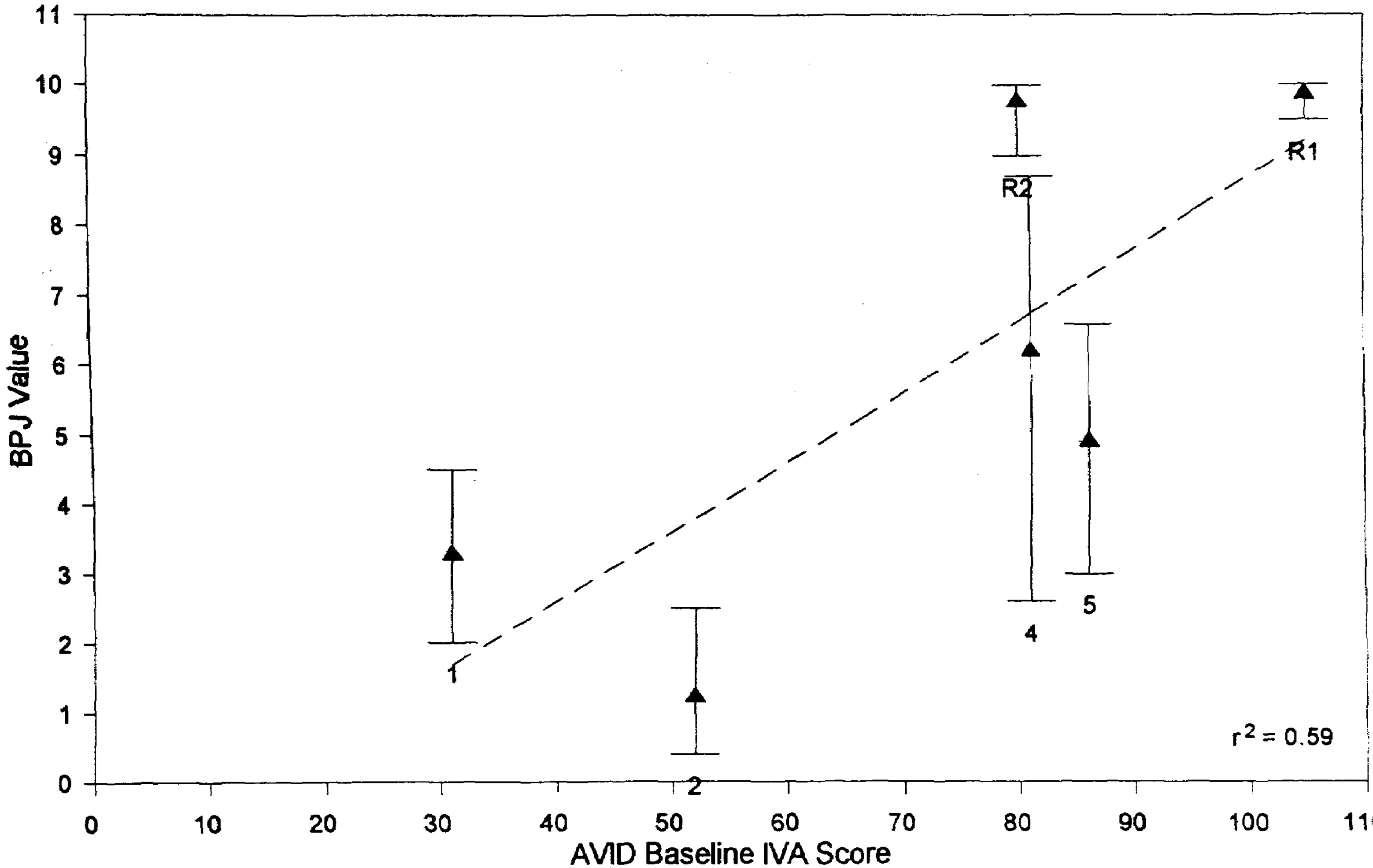


Figure 6
BPJ Values vs. AVID Baseline IVA Scores
Water Quality Improvement Attribute

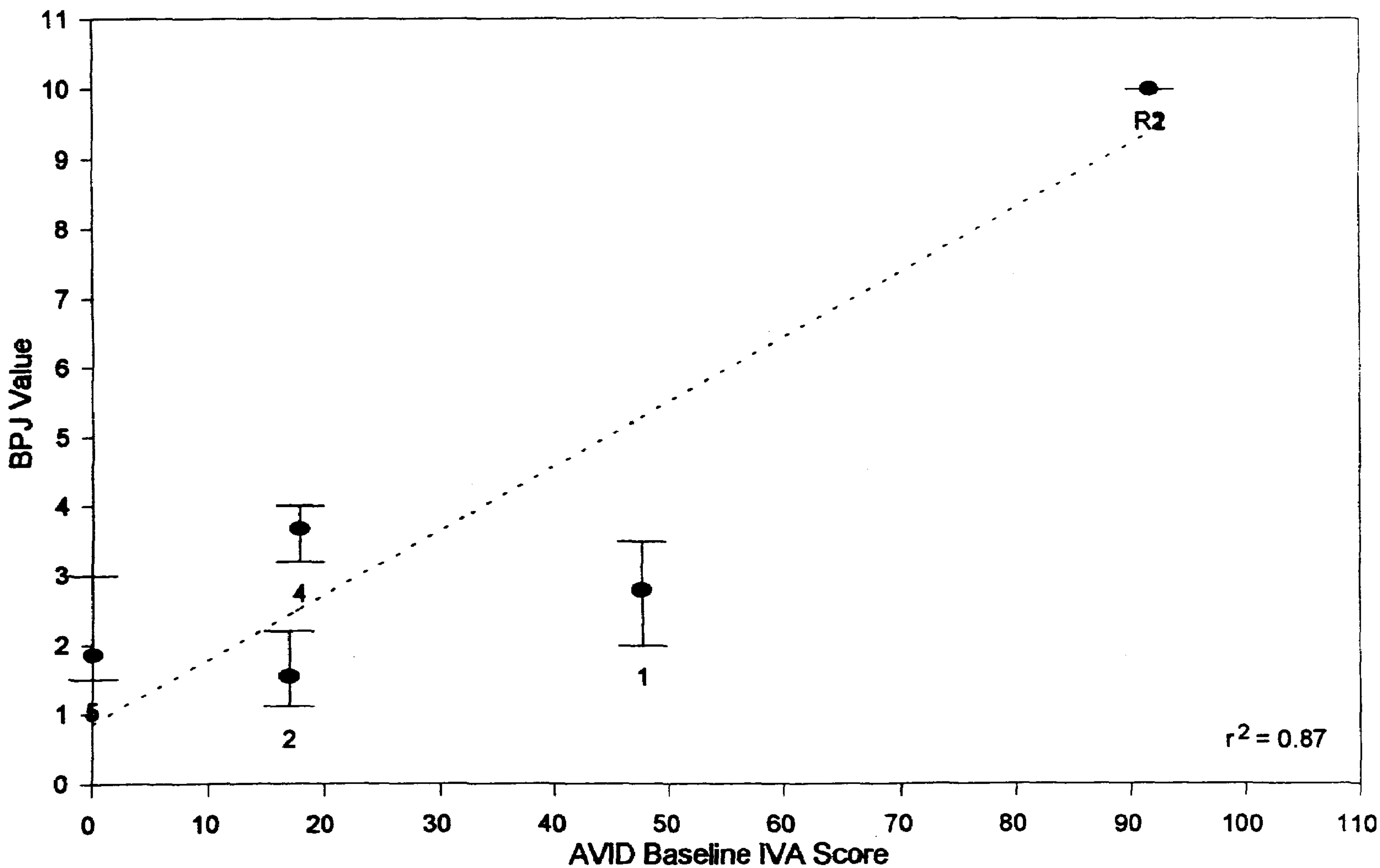


Figure 7
BPJ Values vs. AVID Baseline IVA Scores
Social Significance Attribute

attributes. For wetland indicators not included on the wetland evaluation form, or for unknown or missing results, the response from the AVID WET data collection was used. Indicator scores were calculated for each attribute for each subsample for each evaluator. The newly calculated indicator scores were compared against the indicator scores calculated using only the data collected during the 1987 AVID study (these indicator scores are termed "baseline" scores, as they were used to describe existing, or baseline, conditions in the EIS) and the BPJ estimates collected in the present study (see Section 5.2).

IVA results were combined into an aggregate score for each evaluator for each site, by using two different methods. The first method (the "percentage" method) combined the indicator scores for the two or three subsamples by using the percent of the total site that each subsample represented (see Section 3). The second method of creating an aggregate IVA score (the "composite" method) was to score the "composite" questionnaire (described in Section 5.1) using the IVA method. The "percentage" method implies that each subsample represents a distinct subsection of the site, and that the presence of wetland indicators in one distinct portion of the site do not necessarily influence the functioning of other distinct portion(s) of the site. The "composite" method implies that wetland indicators present in either subsample influence the value of the site as a whole. One IVA score for each attribute for each site was then calculated by averaging the five evaluator's scores.

An IVA score was also calculated for each subsample by using the "consensus" questionnaire described in Section 5.1. This analysis was conducted to simulate the more-often used approach to wetland evaluation, whereby several wetland professionals reach a consensus as to the presence of indicators at each site. It should be noted again that this artificial consensus was not necessarily representative of a "true" consensus among the five evaluators, because in a true consensus, the opinion of one person, presumably more knowledgeable about a particular wetland or indicator, could convince the other four evaluators to change their minds about a particular answer. In the artificial consensus used in this study, the majority "rules." The "true" consensus approach, if used in this study, would have been likely to influence the results, because some evaluators had much greater familiarity with the sites and knowledge of surrounding areas, while other evaluators were more familiar with the WET questions and methodology. As with the individual evaluator questionnaires, aggregate scores for each site for the consensus questionnaire were calculated using the "percentage" and "composite" methods as discussed above.

Thus, there are four possible IVA scores for each site for each attribute. There are two ways of combining evaluations among evaluators, either averaging or determining a consensus. There are also two ways of combining subsamples, either using the percentage method or the composite method. Thus, the four possible IVA scores have been given the following terms:

- *Average percentage*—individual subsamples were combined for each evaluator using the percentage method, and then averaged for all evaluators;

- *Average composite*—individual subsamples were combined for each evaluator using the composite method, and then averaged for all evaluators;

- *Consensus percentage*—a consensus among evaluators for each subsample was determined and scored, and then subsamples were combined using the percentage method;

- *Consensus composite*—a consensus among evaluators for each subsample was determined and scores, and then subsamples were combined using the composite method.

The results for each subsample and site are listed in Table 1, and discussed, by attribute, in the subsections below. In addition, the results of regression analyses between the various methods of calculating field IVA scores and both the baseline IVA scores and the BPJ scores are presented and discussed.

5.3.1 Wildlife Habitat (WH) Attribute

Site 1

For the composite method for scoring site 1, the IVA wildlife habitat scores ranged from 20 to 69, and the average composite score was 41. The consensus composite score for site 1 was 35. For the percentage method, the IVA wildlife habitat score ranged from 18 to 55, and the average percentage score was 34. The consensus percentage score for site 1 was 27. These numbers are approximately the same as (though slightly higher than) the average BPJ value of 2.7 (see Section 5.2.1). As with the BPJ values the field IVA scores are all lower than the baseline IVA score of 59, most likely due to the fact that the baseline IVA score is for the entire AA 2-U.

For subsample 1-2, the IVA method resulted in WH scores ranging from 19 to 49, and averaged 35. The consensus WH score for subsample 1-2 was 26. For subsample 1-3, the IVA method resulted in WH scores ranging from 16 to 61, and averaged 33. The consensus score for subsample 1-3 was 27. For all but one evaluator (the score of 61 for subsample 1-3), the WH scores for subsample 1-3 were slightly lower than the WH scores for subsample 1-2. However, the consensus WH score for subsample 1-3 is slightly higher than the consensus WH score for subsample 1-2. This result is due in large part to the larger disparity in answers in subsample 1-3 than in subsample 1-2 (see Section 5.1.1).

The composite scores for each evaluator are somewhat higher than the percentage scores. Although the individual subsamples scored similarly, different indicators were present in each subsample (see section 5.1.1 above). The percentage scores are, by definition, between the individual subsample scores. The composite scores, however, can be substantially higher than the individual scores if different indicators are present at each subsample location, that add together for a higher overall site score.

The consensus WH scores (26 for subsample 1-2, 27 for subsample 1-3, 27 for the percentage method for site 1, and 35 for the composite method for site 1) are consistently lower than the average scores (35 for subsample 1-2, 33 for subsample 1-3, 34 for the percentage method for site 1, and 41 for the composite method for site 1). This can be explained by the difference between the two methods—the average method simply takes the arithmetic average of the indicator scores for each evaluator, while for an indicator to be included in the consensus method, at least three of the evaluators need to have agreed on the presence or absence of each indicator. Thus, the one high score (61 for subsample 1-3, and 69 for the composite scores) that is included in the average score is not really represented in the consensus score.

<u>Site 2</u>

For the composite method for scoring site 2, the IVA wildlife habitat scores ranged from 25 to 51, and the average composite score was 39. The consensus composite score for site 2 was 42. For the percentage method, the IVA wildlife habitat score ranged from 14 to 29, and the average percentage score was 22. The consensus percentage score for site 2 was 21. The percentage scores are all slightly higher than the average BPJ value of 1.2 (see Section 5.2.2), and the composite scores are substantially higher than the BPJ valuations. The composite scores, however, are more in line with the baseline IVA score for this AA (36), but the percentage scores are substantially lower than the baseline IVA score. For site 2, the percentage method seems to give a better estimate of the wildlife habitat value of the test site, while the composite method seems to give a better estimate of the wildlife habitat value for the larger assessment area. This may be because subsample 2-4, while representative of only 10 percent of site 2, is more representative of the remainder of AA 2-T. In the composite method, subsample 2-4 gets substantially more weight than the 10% that it receives in the percentage method.

For subsample 2-2, the IVA method resulted in WH scores ranging from 13 to 26, and averaged 20. The consensus WH score for subsample 2-2 was 17. For subsample 2-4, the IVA method resulted in WH scores ranging from 24 to 51, and averaged 39. The consensus score for subsample 2-4 was 53. For all of the evaluators, the WH scores for subsample 2-4 were substantially higher than the WH scores for subsample 2-2. However, subsample 2-4 is only representative of approximately 10 percent of the entire site.

Site 3

For the composite method for scoring site 3, the IVA wildlife habitat scores ranged from 22 to 46, and the average composite score was 36. The consensus composite score for site 3 was 40. For the percentage method, the IVA wildlife habitat score ranged from 22 to 45, and the average percentage score was 33. The consensus percentage score for site 3 was 36. The percentage scores and the consensus scores are nearly equal, most likely because the two subsamples are not very different, due to the small size of the site (2.8 acres). Both sets of scores are very similar to the average BPJ value of 4.2 (see Section 5.2.3).

For subsample 3-1, the IVA method resulted in WH scores ranging from 22 to 50, and averaged 35. The consensus WH score for subsample 3-1 was 34. For subsample 3-2, the IVA method resulted in WH scores ranging from 22 to 40, and averaged 32. The consensus score for subsample 3-2 was 38. For all of the evaluators, the WH scores for subsample 3-1 were the same, if not slightly higher than the WH scores for subsample 3-2. Again, the two subsamples are so similar because of the small size of the site.

Site 4

For the composite method for scoring site 4, the IVA wildlife habitat scores ranged from 47 to 81, and the average composite score was 65. The consensus composite score for site 4 was 69. For the percentage method, the IVA wildlife habitat scores were slightly lower, ranging from 34 to 67, and the average percentage score was 50. The consensus percentage score for site 4 was 49. The percentage scores are very similar to the average BPJ values of 4.7 (see Section 5.2.4), and the composite scores are more similar (but slightly lower) to the baseline IVA WH score of 77. As with site 2, this may be because the less-representative subsamples within site 2 may be more representative of the diversity found elsewhere in the assessment area.

For subsample 4-1, the IVA method resulted in WH scores ranging from 34 to 84, and averaged 59. The consensus WH score for subsample 4-1 was 63. For subsample 4-2, the IVA method resulted in WH scores ranging from 10 to 39, and averaged 26. The consensus score for subsample 4-2 was 38. For subsample 4-3, the IVA method resulted in WH scores ranging from 33 to 68, and averaged 49. The consensus score for subsample 4-3 was 47. For all of the evaluators, the WH scores for subsample 4-2 were substantially lower than the WH scores for subsamples 4-1 or 4-3. However, subsample 4-2 is representative of only 5 percent of the entire site.

Site 5

For the composite method for scoring site 5, the IVA wildlife habitat scores ranged from 36 to 53, and the averaged composite score was 46. The consensus composite score for site 5 was 56. For the percentage method, the IVA wildlife habitat scores were slightly lower, ranging from 24 to 43, and the average percentage score was 35. The consensus percentage score for site 5 was 36. The percentage scores are more similar (but slightly higher) to the average BPJ value of 2.3 (see above), and the composite scores are more similar (but slightly lower) to the baseline IVA WH score of 67.

For subsample 5-1, the IVA method resulted in WH scores ranging from 16 to 38, and averaged 28. The consensus WH score for subsample 5-1 was 23. For subsample 5-2, the IVA method resulted in WH scores ranging from 31 to 48, and averaged 42. The consensus score for subsample 5-2 was 48. For all of the evaluators, the WH scores for subsample 5-1 were slightly lower than the WH scores for subsample 5-2.

Reference Site R1

Using the data collected during this field study, the IVA wildlife habitat scores ranged from 84 to 88, and averaged 86. The consensus score for reference site R1 was 85. Because only one sample was taken at this site, the percentage and composite methods result in the same scores, and thus the average percentage score and the average composite score for site R1 are both 86, and the consensus percentage score and the consensus composite score for site R1 are both 85. These results are somewhat lower than the average BPJ value (9.8) and the IVA baseline WH score (103). This may be due to the fact that only one location in the mitigation site was visited during this field study, and thus a complete list of wildlife habitat indicators may not have been collected.

Reference Site R2

Using the data collected during this field study, the IVA wildlife habitat scores ranged from 62 to 116, and averaged 89. The consensus score for reference site R1 was 95. Because only one sample was taken at this site, the percentage and composite methods result in the same scores, and thus the average percentage score and the average composite score for site R3 are both 89, and the consensus percentage score and the consensus composite score for site R2 are both 95. These results are consistent with the average BPJ value of 9.7 and the baseline IVA WH score of 92.

Comparison of Wetland Valuation Results

The results of the various methods of calculating a field IVA WH score for each site were compared against both the average BPJ value and the baseline IVA score for each site. Linear regressions were performed to evaluate the strength of any correlations. The results of these regressions for the WH attribute are presented graphically in Figures 8 and 9. Important points about these regressions are discussed below.

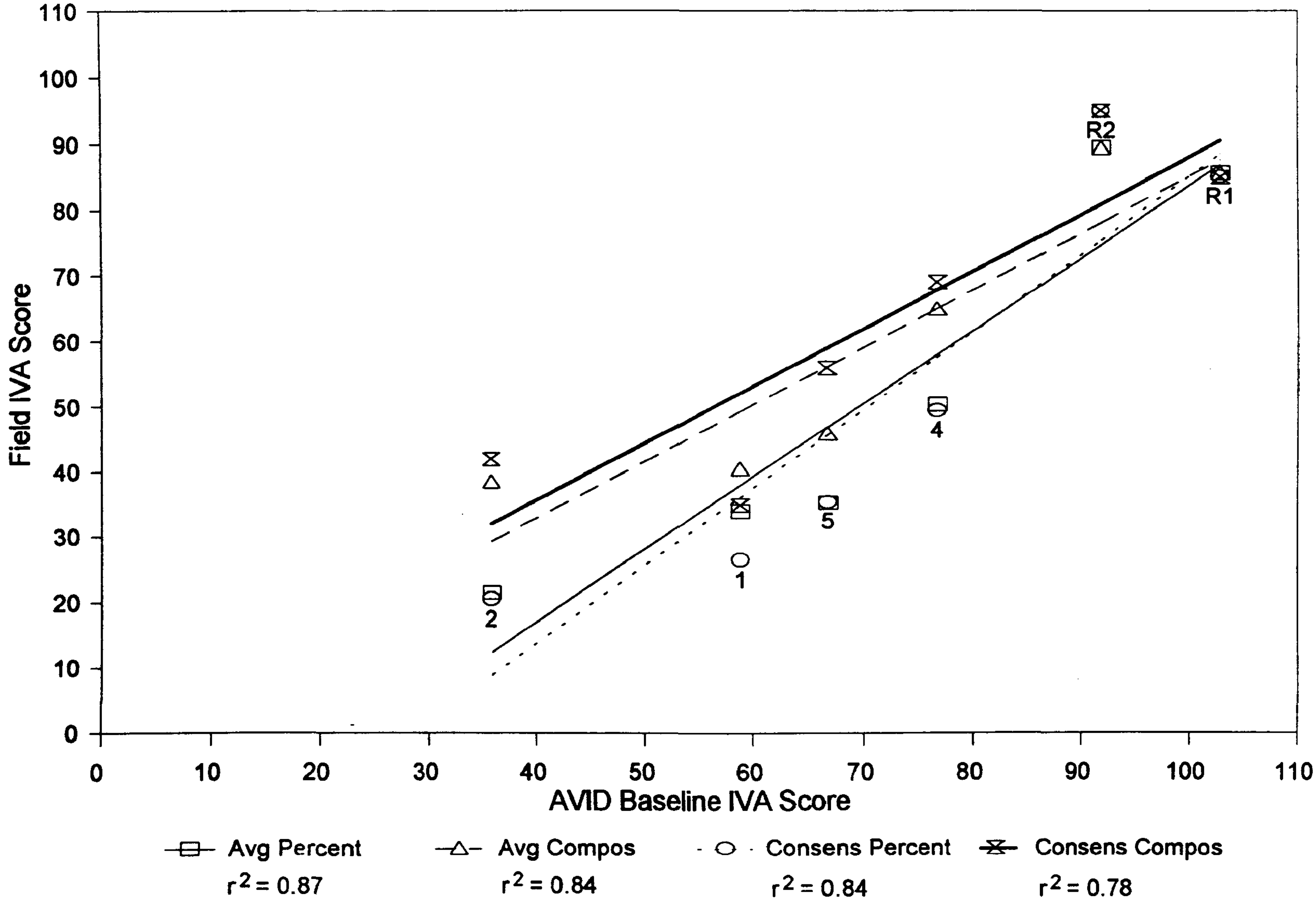


Figure 8

Field IVA Scores vs. AVID Baseline IVA Scores

Wildlife Habitat Attribute

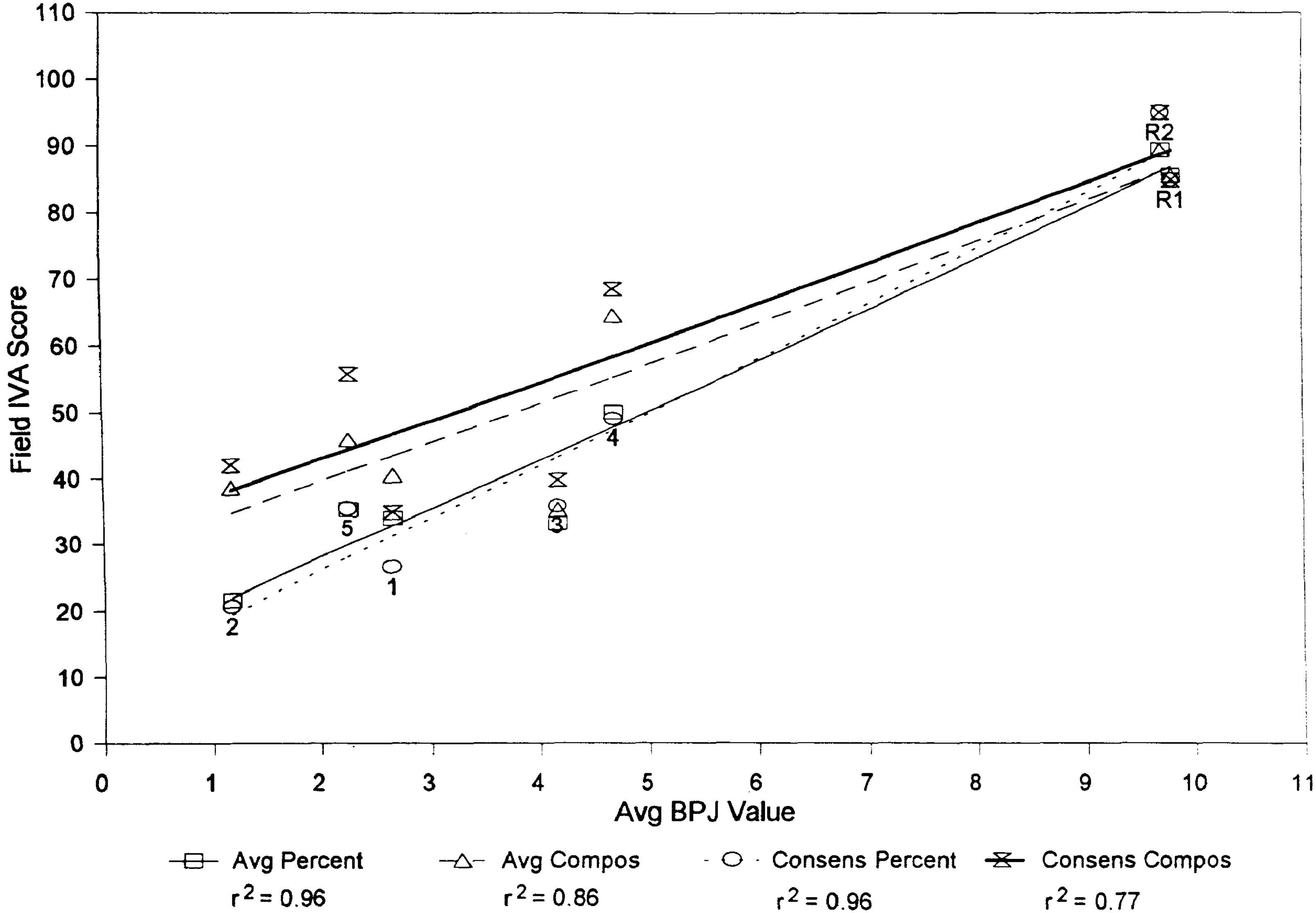


Figure 9

Field IVA Scores vs. Average BPJ Values

Wildlife Habitat Attribute

Field IVA Scores versus AVID Baseline. The results of the regressions between the various field IVA scoring methods and the AVID baseline IVA score for the WH attribute are presented in Figure 8. All of the methods for calculating a single score from the field data collected by five evaluators and two or three subsamples resulted in good correlations with the AVID baseline scores, with r^2 values between 0.78 and 0.87. However, as is shown in Figure 8, all of the correlations indicate that all methods of calculating a single field IVA score result in lower values than the AVID baseline scores. The regression of consensus composite scores against AVID baseline scores, while having the lowest r^2 value, resulted in the highest field IVA scores. The average percentage method, while resulting in slightly lower field IVA scores, had the best correlation with the AVID baseline scores (the r^2 value of 0.87 was the highest). Thus, for the WH attribute, the data collected in the field resulted in IVA scores that were comparable to, although slightly lower than, the baseline IVA score.

Field IVA Scores versus Average BPJ values. The results of the regressions between the various field IVA scoring methods and the average BPJ values for each site are presented in Figure 9. All of the methods for calculating a single score from the field data collected by five evaluators and two or three subsamples resulted in good correlations with the AVID baseline scores, with r^2 values between 0.77 and 0.96. The average percentage method appears to result in both the closest match between IVA scores and BPJ values (i.e., IVA scores are approximately 10 times the BPJ values), and the best correlation (the r^2 value of 0.96 was the highest). Although the consensus composite method resulted in the highest IVA scores, these appear to be over-estimates of the wildlife habitat value at the sites, based on the BPJ values. Thus, for the WH attribute, the data collected in the field results in IVA scores that were comparable to the BPJ values assigned by the five evaluators.

5.3.2 Water Quality Improvement (WQ) Attribute

Site 1

For the composite method for scoring site 1, the IVA water quality improvement scores ranged from 49 to 108, and the average composite score was 77. The consensus composite score for site 1 was 80. For the percentage method, the IVA water quality improvement score ranged from 45 to 95, and the average percentage score was 67. The consensus percentage score for site 1 was 64. These numbers are substantially higher than both the baseline IVA score (31) and the average BPJ value (3.2). It would appear that the answers to the WET questions collected during this field study do not adequately characterize the water quality improvement indicators at site 1.

For subsample 1-2, the IVA method resulted in WQ scores ranging from 53 to 110, and averaged 82. The consensus WQ score for subsample 1-2 was also 82. For subsample 1-3, the IVA method resulted in WQ scores ranging from 37 to 79, and averaged 52. The consensus score for subsample 1-3 was 46. For each evaluator, the

WQ scores for subsample 1-3 were substantially lower than the WQ scores for subsample 1-2.

As with the WH scores, the composite WQ scores for each evaluator are somewhat higher than the percentage scores. Unlike the WH scores, however, the consensus WQ scores are not always lower than the average scores (the composite-average WQ score was 77, while the composite-consensus score was 80).

Site 2

For the composite method for scoring site 2, the IVA water quality improvement scores ranged from 60 to 100, and the average composite score was 78. The consensus composite score for site 2 was 81. For the percentage method, the IVA water quality improvement score ranged from 60 to 85, and the average percentage score was 70. The consensus percentage score for site 2 was 79. These numbers are substantially higher than the average BPJ value of 1.3, and slightly higher than the baseline IVA score (52). This result is similar to site 1. As mentioned in the discussion for site 1, it would appear that the answers to the WET questions collected during this field study do not adequately characterize the water quality improvement indicators at site 2.

For subsample 2-2, the IVA method resulted in WQ scores ranging from 57 to 85, and averaged 70. The consensus WQ score for subsample 2-2 was 77. For subsample 2-4, the IVA method resulted in WQ scores ranging from 58 to 86, and averaged 71. The consensus score for subsample 2-4 was 92. For each evaluator, the WQ scores for subsample 2-2 were approximately the same as the WQ scores for subsample 2-4.

Site 3

For the composite method for scoring site 3, the IVA water quality improvement scores ranged from 39 to 77, and the average composite score was 60. The consensus composite score for site 3 was 72. For the percentage method, the IVA water quality improvement score ranged from 39 to 73, and the average percentage score was 55. The consensus percentage score for site 3 was 65. These numbers are all slightly higher than the average BPJ value of 5.0; the average percentage score comes the closest to matching the average BPJ value.

For subsample 3-1, the IVA method resulted in WQ scores ranging from 39 to 76, and averaged 56. The consensus WQ score for subsample 3-1 was 67. For subsample 3-2, the IVA method resulted in WQ scores ranging from 39 to 69, and averaged 53. The consensus score for subsample 3-2 was 62. For each evaluator, the WQ scores for subsample 3-1 were approximately the same as the WQ scores for subsample 3-2.

Site 4

For the composite method for scoring site 4, the IVA water quality improvement scores ranged from 57 to 108, and the average composite score was 84. The consensus composite score for site 4 was 87. For the percentage method, the IVA water quality improvement scores ranged from 50 to 87, and the average percentage score was 67. The consensus percentage score for site 4 was 77. These numbers are all comparable to the AVID baseline IVA score of 81, and are slightly higher than the average BPJ value of 6.2; as at site 3, the average percentage score comes the closest to matching the average BPJ value.

For subsample 4-1, the IVA method resulted in WQ scores ranging from 33 to 77, and averaged 58. The consensus WQ score for subsample 4-1 was 65. For subsample 4-2, the IVA method resulted in WQ scores ranging from 28 to 65, and averaged 45. The consensus score for subsample 4-2 was 60. For subsample 4-3, the IVA method resulted in WQ scores ranging from 52 to 92, and averaged 71. The consensus WQ score for subsample 4-3 was 82. As with the wildlife habitat attribute, for each evaluator, the WQ scores for subsample 4-2 were substantially lower than the WQ scores for subsamples 4-1 and 4-3.

Site 5

For the composite method for scoring site 5, the IVA water quality improvement scores ranged from 53 to 111, and the average composite score was 80. The consensus composite score for site 5 was 92. For the percentage method, the IVA water quality improvement scores ranged from 34 to 90, and the average percentage score was 68. The consensus percentage score for site 5 was 83. These numbers are all comparable to the AVID baseline IVA score of 86 (except for the average percentage score), but are substantially higher than the average BPJ value of 5.0.

For subsample 5-1, the IVA method resulted in WQ scores ranging from 37 to 98, and averaged 72. The consensus WQ score for subsample 5-1 was 94. For subsample 5-2, the IVA method resulted in WQ scores ranging from 31 to 99, and averaged 65. The consensus score for subsample 5-2 was 71.

Reference Site R1

Using the data collected during this field study, the IVA water quality improvement scores ranged from 60 to 71, and the average score was 64. The consensus score for reference site R1 was 62. Because only one sample was taken at this site, the percentage and composite methods result in the same scores, and thus the average percentage score and the average composite score for site R1 are both 64, and the consensus percentage score and the consensus composite score for site R1 are both 62. As with the WH attribute at site R1, these results are lower than the average BPJ value (9.9) and the IVA baseline WQ score (105). Again, this may be due to the fact that only one location in the mitigation site was visited during this field study, and thus a complete list of water quality improvement indicators may not have been collected.

Reference Site R2

Using the data collected during this field study, the IVA water quality improvement scores ranged from 51 to 90, and the average score was 75. The consensus score for reference site R2 was 76. Because only one sample was taken at this site, the percentage and composite methods result in the same scores, and thus the average percentage score and the average composite score for site R2 are both 75, and the consensus percentage score and the consensus composite score for site R2 are both 76. These results are slightly lower than the IVA baseline WQ score (80) and also lower than the average BPJ value (9.8). Again, this may be due to the fact that only one location in the reference site was visited during this field study, and thus a complete list of water quality improvement indicators may not have been collected.

Comparison of Wetland Valuation Results

The results of the various methods of calculating a field IVA WQ score for each site were compared against both the average BPJ value and the baseline IVA score for each site. Linear regressions were performed to evaluate the strength of any correlations. The results of these regressions for the WH attribute are presented graphically in Figures 10 and 11. Important points about these regressions are discussed below.

Field IVA Scores versus AVID Baseline. The results of the regressions between the various field IVA scoring methods and the AVID baseline IVA score for the WQ attribute are presented in Figure 10. None of the methods for calculating a single score from the field data collected by five evaluators and two or three subsamples resulted in good correlations with the AVID baseline scores, with r^2 values between 0.01 and 0.18. These low r^2 values mean that very little of the variability in field IVA scores among sites is attributable to the variability in AVID baseline scores. As pointed out in the discussion of each site above, the field IVA scores for sites 1 and 2 were substantially higher than the AVID baseline scores, while the field IVA scores for sites R1 and R2 were substantially lower than the AVID baseline scores. For sites 4 and 5, however, the field IVA scores were comparable to the AVID baseline scores. The reasons for the apparent discrepancies are not apparent from the data; however, similar results were observed in comparing the field IVA scores to the BPJ values, and possible reasons are discussed below.

Field IVA Scores versus Average BPJ values. The results of the regressions between the various field IVA scoring methods and the average BPJ values for each site are presented in Figure 11. As with the comparison to AVID baseline scores, none of the methods for calculating a single score from the field data collected by five evaluators

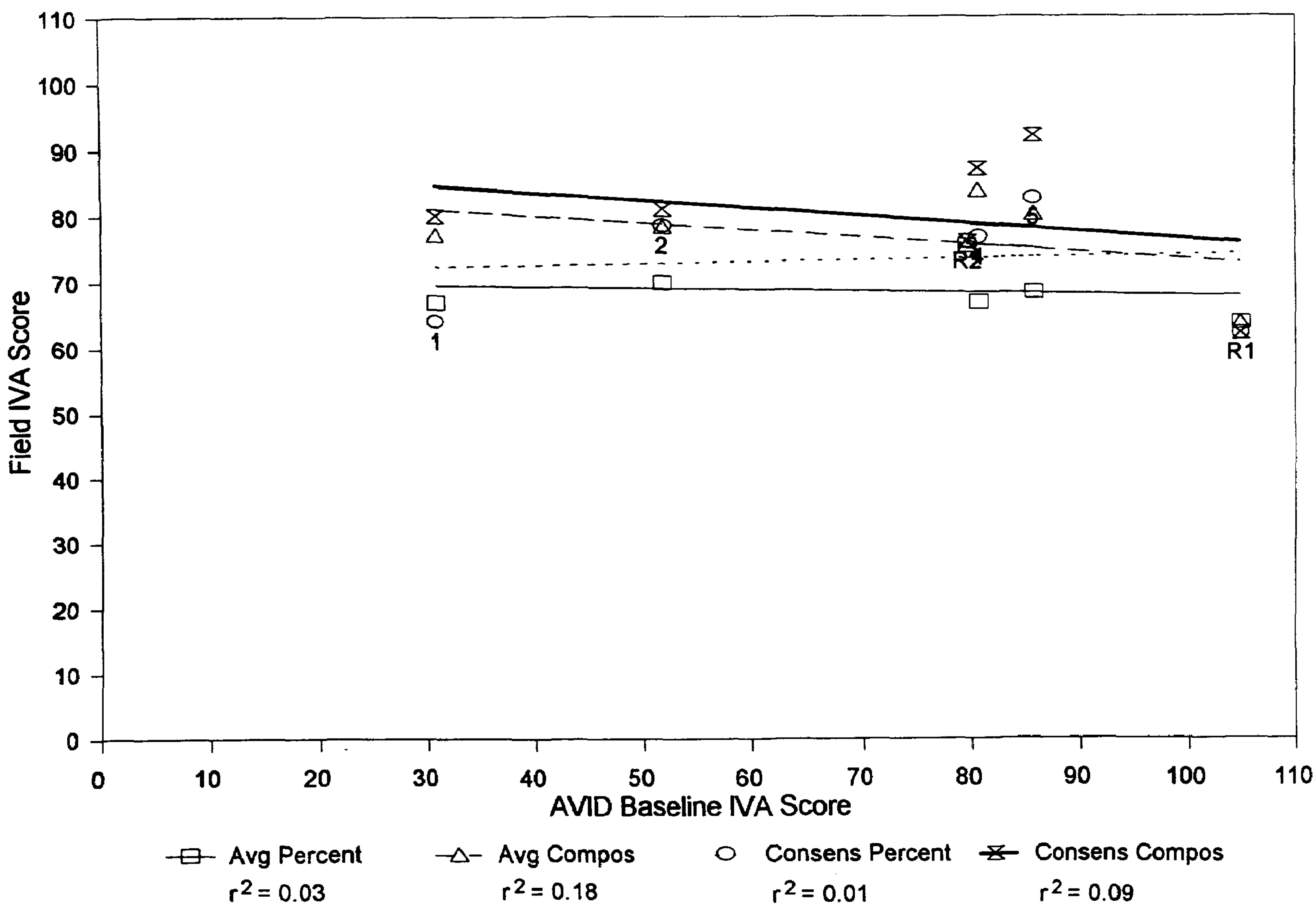


Figure 10

Field IVA Scores vs. AVID Baseline IVA Scores

Water Quality Improvement Attribute

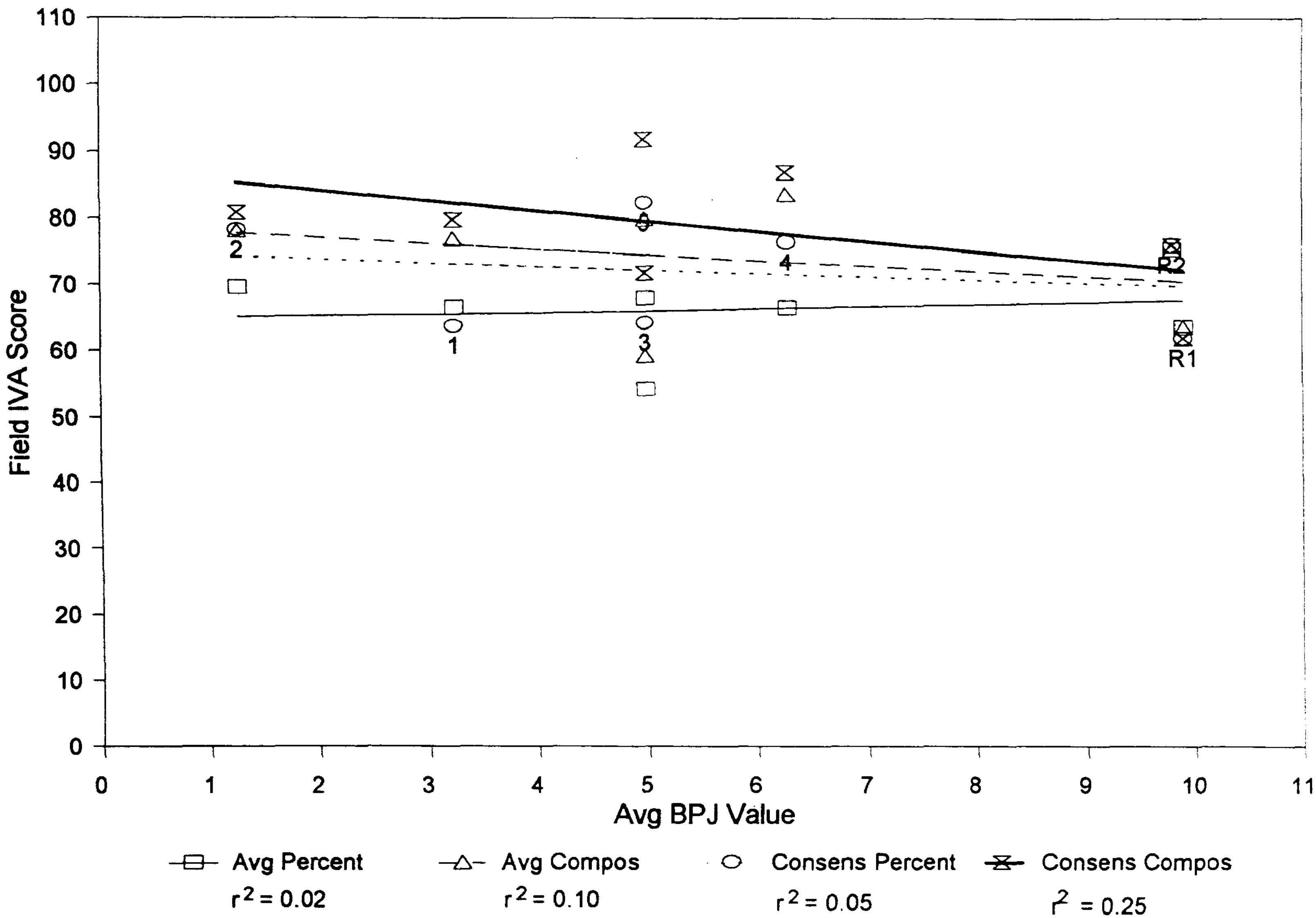


Figure 11
Field IVA Scores vs. Average BPJ Values
Water Quality Improvement Attribute

and two or three subsamples resulted in good correlations with the BPJ values, with r^2 values between 0.02 and 0.25. These low r^2 values mean that very little of the variability in field IVA scores among sites is attributable to the variability in BPJ values. As pointed out in the discussion of each site above, the field IVA scores for sites 1, 2, and 5 were substantially higher than the BPJ values, while the field IVA scores for sites R1 and R2 were substantially lower than the BPJ values. For sites 3 and 4, however, the field IVA scores were comparable to the average BPJ values.

Thus, for the water quality improvement (WQ) attribute, although a consistent and positive relationship was found between the AVID baseline IVA scores and the BPJ values (see Section 5.2.8), no consistent relationship was found between the field IVA scores and the AVID baseline data or the BPJ values. There are two probable reasons behind this apparent problem with the results of the field study for the WQ attribute. The first reason is that the value of a wetland for water quality improvement is strongly influenced by factors peripheral to an individual wetland site, while the data collected during this field study focused on the individual potential disturbance locations. Thus, the wetland questionnaire collected in this field effort may not accurately reflect the water quality improvement indicators important to each of the sites. On the other hand, based on discussions with the field evaluators, the WET data collected in 1986 for the AVID study is more reflective of the "external" indicators of water quality improvement value.

The second reason can be found by examining the expertise of the evaluators that participated in this study. Because it was thought to be imperative to collect additional information on the wetland flora and fauna during this field study, the field team consisted mostly of wetland biologists and wildlife experts. Thus, it is likely that the hydrologic features of the wetland sites, and thus the scores for the water quality improvement for the sites, were under-represented in this field study. However, the 1986 WET/AVID data collection effort strongly emphasized the hydrology of the District. The difficulty in comparing the BPJ estimates to the field IVA scores appears to arise from the evaluators inadequately (or inaccurately) responding to individual WET questions dealing with water quality improvement indicators, possibly due to unfamiliarity with local and regional conditions, or because of inconsistent familiarity with the WET questions. Thus, while the evaluators' best professional judgement of the water quality improvement value of each site agreed with the AVID baseline IVA scores, their evaluation of individual water quality improvement indicators did not match their "overall" understanding of the value of the site for water quality improvement.

On these lines, it is interesting to examine the data presented in Table 1 by comparing the field IVA scores and BPJ estimates for the WQ attribute for each site. It appears that some sites (for most evaluators), and some evaluators (for most sites) showed more consistent relationships between the field IVA scores and the BPJ estimates than was found by looking at all evaluators and all sites. Site 3 appears to have been the "easiest" site to evaluate for the WQ attribute—site 3 is small, relatively isolated hydrologically, and rather "common." In fact, for four of the five evaluators, using the field IVA scores for site 3 were very similar to the BPJ values. Similarly, the field IVA scores and BPJ values of one evaluator (one of the members of the field team most familiar with the hydrology and water quality improvement functioning of the District wetlands) were very similar for four of the five sites.

Thus, although the results of the regression analyses between the field IVA scores and both the AVID baseline scores and BPJ values suggest that the field IVA scores are not related to either the AVID baseline scores or the BPJ values, this does not indicate a failing of the IVA method. The strongest indicator of this conclusion is that the AVID baseline IVA scores <u>do show</u> a significant and strong relationship to the BPJ values (see Section 5.2.8).

5.3.3 Social Significance (SS) Attribute

<u>Site 1</u>

For the composite method for scoring site 1, the IVA social significance scores ranged from 40 to 48, and the average composite value was 42. The consensus composite score for site 1 was 40. For the percentage method, the results were identical. This is because the social significance values for each evaluator for the two subsamples were identical. This results from the substantially fewer number of indicators included in the IVA method of calculating the IVA score, and the fact that the responses to each subsample were identical.

The field test IVA scores are in agreement with the baseline IVA score of 48. Both scores are somewhat higher than the average BPJ value (around 2.8).

<u>Site 2</u>

The IVA social significance scores for all evaluators for all subsamples of site 2 was 17. This is in agreement with the average BPJ value of 1.5 and the baseline IVA SS score of 17.

<u>Site 3</u>

The IVA social significance scores for all evaluators for all subsamples of site 3 was 0. This is substantially lower than the average BPJ value of 4.3. The IVA score of 0 is because none of the recreation or floodflow alteration indicators were reported present in site 3 during the field study. This site was not evaluated during the 1986 AVID study, so a comparison to the AVID baseline score is not possible.

Field IVA Scores versus AVID Baseline. The results of the regressions between the various field IVA scoring methods and the AVID baseline IVA score for the SS attribute are presented in Figure 12. All of the methods for calculating a single score from the field data collected by five evaluators and two or three subsamples resulted in good correlations with the AVID baseline scores, with r^2 values between 0.78 and 0.86. However, as is shown in Figure 12, all of the correlations indicate that all methods of calculating a single field IVA score result in lower values than the AVID baseline scores (except for very low scoring wetlands, where the field IVA score is predicted to be slightly higher than the AVID baseline score). Thus, for the WH attribute, the data collected in the field resulted in IVA scores that were comparable to, although slightly lower than, the baseline IVA score.

Field IVA Scores versus Average BPJ values. The results of the regressions between the various field IVA scoring methods and the average BPJ values for each site are presented in Figure 13. All of the methods for calculating a single score from the field data collected by five evaluators and two or three subsamples resulted in similar correlations with the AVID baseline scores, with r^2 values between 0.59 and 0.61. However, the correlations between field IVA scores and average BPJ values are not as strong as the correlations between field IVA scores and AVID baseline scores. Thus, for the WH attribute, the data collected in the field results in IVA scores that were roughly comparable to the BPJ values assigned by the five evaluators.

5.4 BIRD SURVEY RESULTS

Table 2 presents the results of the bird inventory conducted at each site (five test sites and two reference sites). A total of 41 species of birds were observed during the field visits. The species found at the most sites were: red-winged blackbird (6 of the 7 sites), mallard (5 sites), spotted sandpiper (5 sites), least sandpiper (4 sites), marsh wren (4 sites), yellow warbler (4 sites), common yellowthroat (4 sites), and European starling (4 sites). Some of the more infrequently encountered species (found at only one site) were: virginia rail, laughing gull, eastern kingbird, great egret, and double-crested cormorant.

The results of the circular-plot bird density measurements show that the most common bird at almost all of the sites was the red-winged blackbird. Common yellowthroats and marsh wrens were also frequently encountered.

The following subsections present a discussion of the bird resources at each individual site.

5.4.1 Site 1

Seven species were identified during the field visits to site 1, including three shorebirds and four passerine species. Among the five test sites, site 1 had the least number of species found. Most of the species at site 1 were found at subsample 1-2—

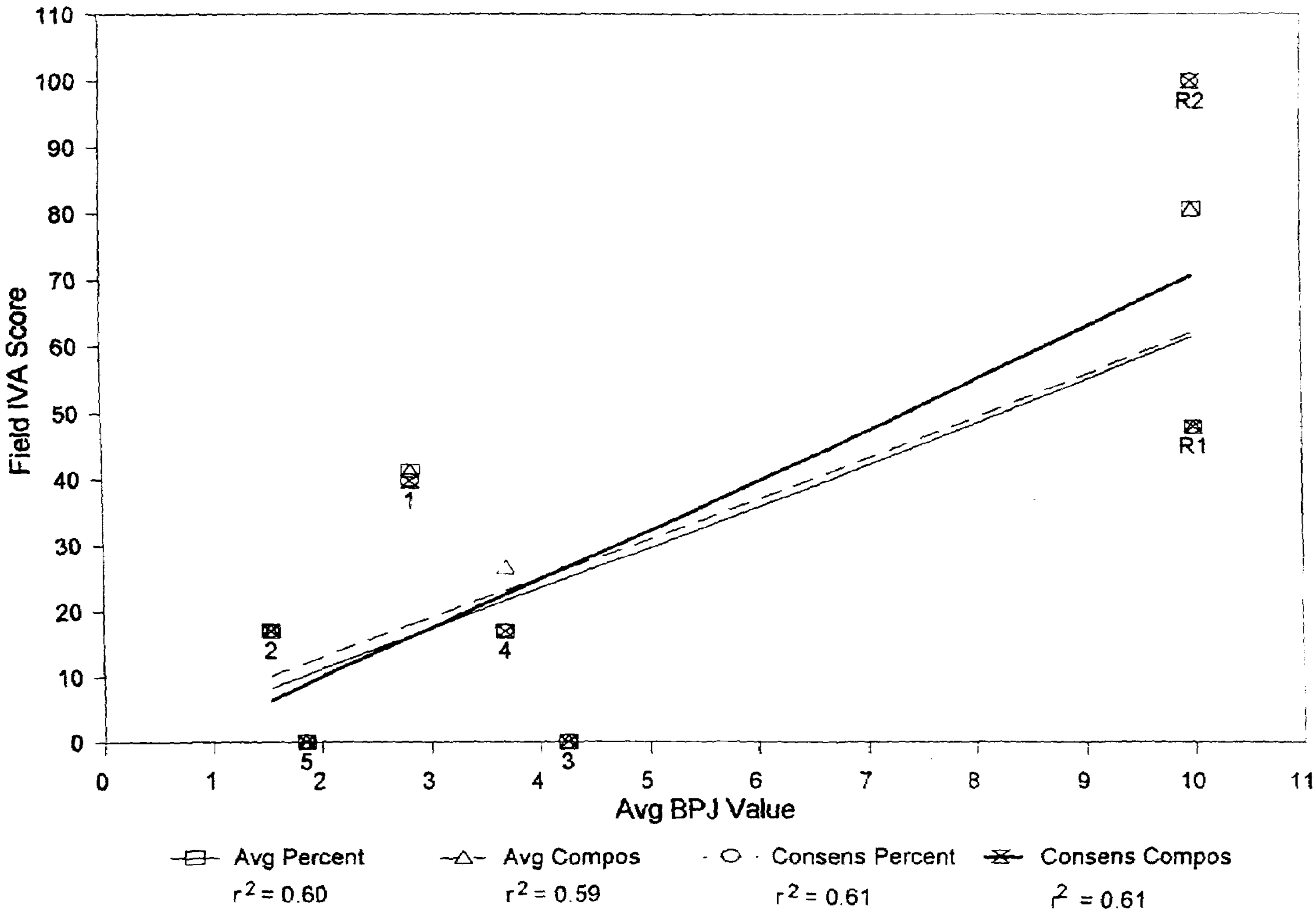


Figure 13

Field IVA Scores vs. Average BPJ Values

Social Significance Attribute

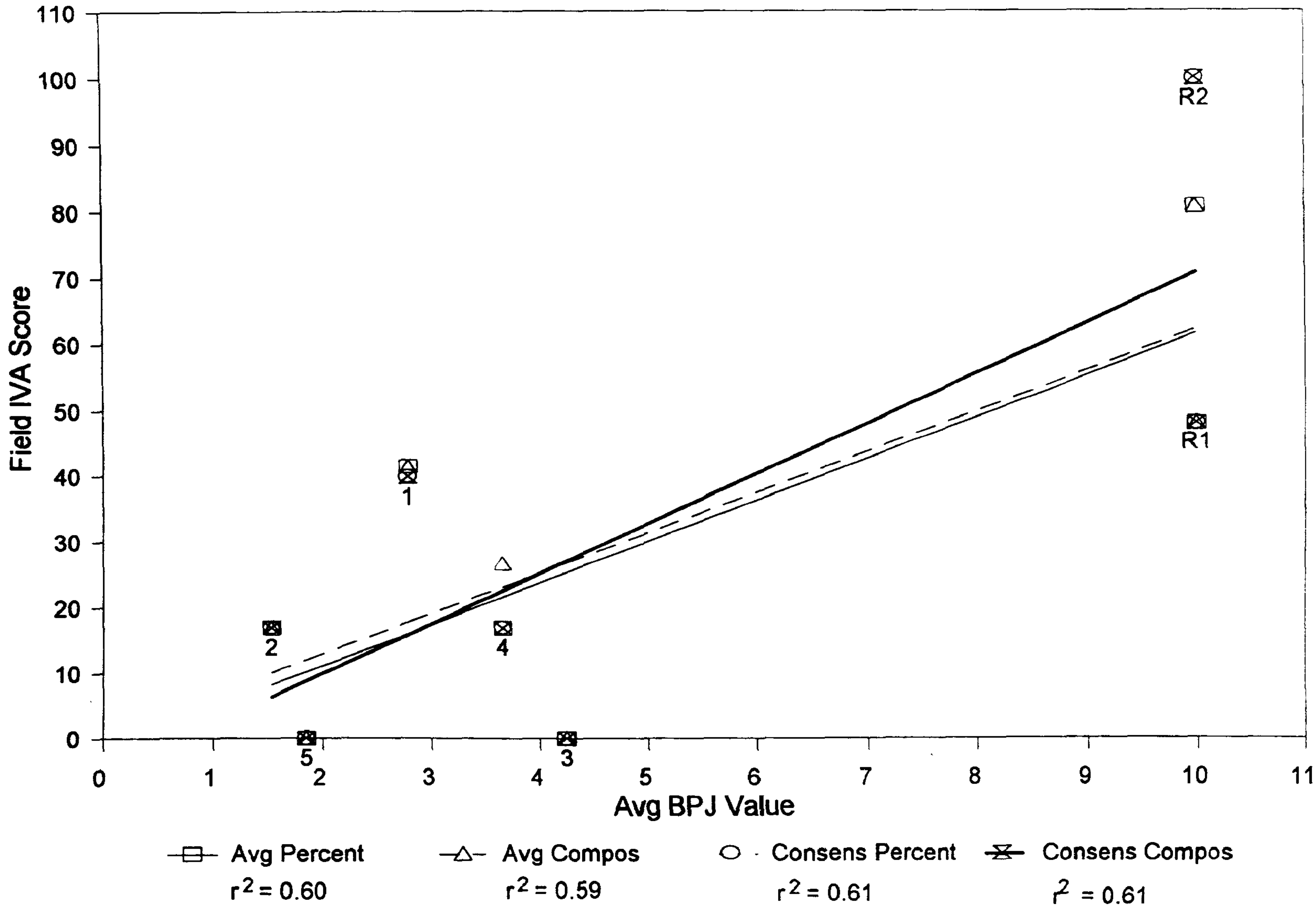


Figure 13

Field IVA Scores vs. Average BPJ Values

Social Significance Attribute

Field IVA Scores versus AVID Baseline. The results of the regressions between the various field IVA scoring methods and the AVID baseline IVA score for the SS attribute are presented in Figure 12. All of the methods for calculating a single score from the field data collected by five evaluators and two or three subsamples resulted in good correlations with the AVID baseline scores, with r^2 values between 0.78 and 0.86. However, as is shown in Figure 12, all of the correlations indicate that all methods of calculating a single field IVA score result in lower values than the AVID baseline scores (except for very low scoring wetlands, where the field IVA score is predicted to be slightly higher than the AVID baseline score). Thus, for the WH attribute, the data collected in the field resulted in IVA scores that were comparable to, although slightly lower than, the baseline IVA score.

Field IVA Scores versus Average BPJ values. The results of the regressions between the various field IVA scoring methods and the average BPJ values for each site are presented in Figure 13. All of the methods for calculating a single score from the field data collected by five evaluators and two or three subsamples resulted in similar correlations with the AVID baseline scores, with r^2 values between 0.59 and 0.61. However, the correlations between field IVA scores and average BPJ values are not as strong as the correlations between field IVA scores and AVID baseline scores. Thus, for the WH attribute, the data collected in the field results in IVA scores that were roughly comparable to the BPJ values assigned by the five evaluators.

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The results of the circular-plot bird density measurements show that the most common bird at almost all of the sites was the red-winged blackbird. Common yellowthroats and marsh wrens were also frequently encountered.

The following subsections present a discussion of the bird resources at each individual site.

5.4.1 Site 1

Seven species were identified during the field visits to site 1, including three shorebirds and four passerine species. Among the five test sites, site 1 had the least number of species found. Most of the species at site 1 were found at subsample 1-2—

TABLE 2
BIRD SPECIES IDENTIFIED

Taxonomic Order	Scientific Name	Common Name	Site 1	2	3	4	5	R1	R2
Pelecaniformes									
	Phalacrocorax auritus	double-crested cormorant		x					
Ciconiiformes									
	Butorides striatus	green-backed heron				x			
	Casmerodius albus	great egret			x				
	Egretta thula	snowy egret				x		x	x
Anseriformes									
	Anas platyrhynchos	mallard		x	x	x		x	x
	Anas rubripes	black duck						x	x
	Anas strepera	gadwall				x		x	x
	Branta canadensis	Canada goose		x		x		x	
Falconiformes									
	Circus cyaneus	northern harrier						x	x
Gruiformes									
	Gallinula chloropus	common moorhen						x	x
	Rallus limicola	virginia rail				x			
	Rallus longirostris	clapper rail				x			
Charadriiformes									
	Actitis macularia	spotted sandpiper	x	x		x	x	x	
	Calidris minutilla	least sandpiper	x			x	x	x	
	Charadrius vociferus	killdeer	x		x		x		
	Larus argentatus	herring gull							x
	Larus atricilla	laughing gull							x
	Larus delawarensis	ring-billed gull							x
	Sterna antillarum	least tern		x				x	
Piciformes									
	Colaptes auratus	northern flicker				x			
Passeriformes									
	Agelaius phoeniceus	red-winged blackbird	x	x	x	x	x	x	
	Carduelis tristis	American goldfinch		x		x			
	Carpodacus mexicanus	house finch		x					
	Cistothorus palustris	marsh wren	x			x		x	x
	Dendroica coronata	yellow-rumped warbler			x				
	Dendroica petechia	yellow warbler		x	x	x		x	
	Dumetella carolinensis	gray catbird			x				
	Empidonax traillii	willow flycatcher		x					
	Geothlypis trichas	common yellowthroat	x	x	x	x			
	Hirundo rustica	barn swallow		x		x		x	
	Icterus galbula	northern oriole		x					
	Melospiza georgiana	swamp sparrow		x		x			
	Melospiza melodia	song sparrow		x	x	x			
	Mimus polyglottos	northern mockingbird						x	
	Quiscalus quiscula	common grackle			x		x		
	Setophaga ruticilla	American redstart		x					
	Sturnus vulgaris	European starling		x	x	x	x		
	Tachycineta bicolor	tree swallow		x		x		x	
	Turdus migratorius	American robin		x	x	x			
	Tyrannus tyrannus	eastern kingbird						x	
Columbiformes									
	Zenaida macroura	mourning dove	x						

during the ten-minute bird survey conducted on March 17, no birds were found at subsample 1-3, and during the twenty-minute survey conducted on June 8, only one bird was observed (a red-winged blackbird). Subsample 1-3 is a small dry monoculture of *Phragmites*—not a good habitat for birds. However, there is most likely some use of the shoreline sections near subsample 1-3 (but not visible due to the dense *Phragmites*) by shorebirds. It was noted in the field that red-winged blackbirds, marsh wrens, and spotted sandpipers (and possibly swamp sparrows) nest around subsample 1-2.

Bird densities were calculated for six species at subsample 1-2. A total of 3 red-winged blackbirds and 3 common yellowthroats were identified during the two surveys at subsample 1-2, covering an area of approximately 0.8 hectares (2 acres), leading to an average density of approximately 75 pairs of each species per 40 hectares, or approximately 2 pairs of each species in the 3 acres of site 1 that subsample 1-2 represents. One spotted sandpiper was identified during each survey, and one killdeer, one marsh wren, and one mourning dove were identified during the June 8 survey. Thus, the average density for each of these species is approximately 50 pairs per 40 hectares, or between 1 and 2 pair of each species in the 3 acres of site 1 that subsample 1-2 represents. As was mentioned above, only one red-winged blackbird was identified at subsample 1-3 during either of the surveys, so no bird densities were calculated for subsample 1-3.

5.4.2 Site 2

A total of 19 bird species were identified during the various visits to site 2. These species include the double-crested cormorant, shorebirds (spotted sandpiper and least tern), waterfowl (mallard and Canada goose), and 14 species of passerines (e.g., American goldfinch, yellow warbler, swamp sparrow, song sparrow, American redstart). Many of these birds were observed in the circular-plot bird surveys at subsample 2-4 (which represents approximately 10 percent of the site), but not at subsample 2-2 (which represents approximately 90 percent of the site). Calculated bird densities (pairs per 40 hectares) are presented in Table 3.

5.4.3 Site 3

A total of 12 bird species were identified during the various visits to site 3. These species include shorebirds (great egret and killdeer), mallard, and nine species of passerines (e.g., yellow-rumped warbler, gray catbird, common grackle, and American robin). Calculated bird densities in Table 3 are presented for the two subsamples 3-1 and 3-2 combined, because of the small size of the site.

5.4.4 Site 4

A total of 21 bird species were identified during the various visits to site 4 (the largest diversity among the sites in this field study). These species include shorebirds (e.g.,

TABLE 3
BIRD DENSITIES
(pairs per 40 hectares)

Species	1-2	2-2	2-4	3	4-1	4-2	4-3	5-1	5-2
red-winged blackbird	77	88	71	83	88	169	106	250	203
common yellowthroat	77	106	53	35		63	35		
marsh wren	55				53	49	71		
common grackle				35				100	354
European starling		71		47					61
spotted sandpiper	50		35		35	63			61
song sparrow		35	35		71				
yellow warbler			35	53			35		
swamp sparrow			71			63	35		
american robin				35			35		
mallard				35	35	63			
kildeer									71
snowy egret					35				
willow flycatcher			35						
barn swallow			35						
clapper rail					35				
gadwall							35		
American goldfinch			35						
gray catbird				35					
great egret				35					
least sandpiper									71
American redstart			35						
virginia rail							35		
yellow-rumped warbler				35					

green-backed heron, virginia rail, least sandpiper), waterfowl (mallard, gadwall, and Canada goose), northern flicker, and 11 species of passerines (e.g., marsh wren, barn swallow, song sparrow, tree swallow, American goldfinch). Calculated bird densities for each subsample (pairs per 40 hectares) are presented in Table 3.

5.4.5 Site 5

Only 6 species of birds were identified during the various visits to site 5. These species are: spotted sandpiper, least sandpiper, killdeer, red-winged blackbird, common grackle, and European starling. Calculated bird densities for each subsample are presented in Table 3.

5.4.6 Reference Site R1

During the one visit to reference site R1, 17 species of birds were identified, including northern harrier, shorebirds (e.g., common moorhen, least sandpiper, and least tern), waterfowl (mallard, black duck, gadwall, and Canada goose), and seven species of passerines (e.g., marsh wren, northern mockingbird, eastern kingbird). Bird densities were not calculated for the reference sites.

5.4.7 Reference Site R2

During the one visit to reference site R2, 10 species of birds were identified, including northern harrier, shorebirds (e.g., snowy egret, common moorhen, herring gull, laughing gull), waterfowl (mallard, black duck, and gadwall), and only one species of passerine (marsh wren). Bird densities were not calculated for the reference sites.

5.5 FISH SURVEY RESULTS

5.5.1 Site 1

No fish were sampled at site 1, as there was not significant open water to support fish or fish sampling techniques.

5.5.2 Site 2

Fish sampling was performed in the tidal creek at subsample 2-4. A fish trap was set on March 24, but the leader line that directs the fish into the trap was missing. After 24 hours, the fish trap was still empty, and there wasn't enough water to reset the fish trap. Seines were used to sample the fish at this time. The catch included three species: three bluegill sunfish (*Lepomis macrochirus*), 28 banded killifish (*Fundulus diaphanus*), and 13 mummichogs (*Fundulus heteroclitus*).

5.5.3 Site 3

A fish trap was set in the pond at site 3. After 24 hours, the trap was retrieved, and found to contain one snapping turtle, and no fish. In all likelihood, the snapping turtle ate whatever fish were captured in the trap. Small killitraps were set, but they also did not yield any catches. An attempt was made to use a seine net, but the substrate was full of stumps and logs, which made seining impossible.

5.5.4 Site 4

No fish were sampled at site 1, as there was not significant open water to support fish or fish sampling techniques.

5.5.5 Site 5

No fish were sampled at site 1, as there was not significant open water to support fish or fish sampling techniques.

6.0 CONCLUSIONS AND RECOMMENDATIONS

As was stated in Section 2, this study had five basic objectives. The results of the data presented in Section 5 support the following conclusions and recommendations for each objective.

6.1 DIFFERENCES BETWEEN CURRENT DATA AND AVID DATA

Based on the results presented in Section 5.1.1, the current data collection effort produced the same responses (by a majority of the evaluators) as were reported in 1986 to approximately two-thirds of the questions on the wetland evaluation questionnaire. As was discussed in Sections 5.3, using the IVA method on both the 1986 AVID data and the current data produced very similar scores for both the wildlife habitat (WH) and social significance (SS) attributes. Many of the differences in responses and differences in water quality improvement (WQ) attribute scores can be attributed to inadequate (or potentially inaccurate) responses to water quality improvement indicators, caused by an insufficient representation of wetlands hydrology expertise amongst the field team, a lack of consistent familiarity with the WET questions, and incomplete knowledge of local and regional conditions..

Thus, it is recommended that future data IVA-related data collection efforts pay particular attention to the experience, training, and expertise of the field team members, with an attempt to cover hydrologic, wildlife, vegetation, and social significance aspects. It is also important (especially for the water quality improvement attribute) to obtain accurate definitions of the "assessment area" to which the method is being applied. Training the field team in responding to the WET questionnaire (or providing a refresher course where appropriate) is important to the reliable application of the IVA method.

6.2 VARIABILITY AMONG INDIVIDUAL EVALUATORS

Based on the results presented in Section 5.1.2, only approximately half of the questions received the same responses from all five evaluators. The remaining half of the questions were responded to differently by at least one evaluator. This leads to significant variability in IVA scores among evaluators, as was reported in Section 5.3. While determining an "artificial consensus" after the data was collected appeared to be an acceptable way of resolving differences, it would be more effective and more reliable to have the field team discuss the various indicators, and develop a true consensus.

Thus instead of collecting individual responses to the wetland questionnaires (as was done in this study to determine the consequences of so doing), in future IVA-related data collection efforts, the field team should develop a consensus as to the presence or absence of each indicator, and develop one set of indicators for each wetland site.

Additionally, as was recommended above, attention should be focused on assembling enough wetland professionals with experience in all facets of wetland ecosystems, with knowledge of local and regional conditions, and with experience answering the WET questions, to ensure a productive dialogue in reaching a consensus, instead of merely yielding to one "expert" for each question.

6.3 GEOGRAPHIC VARIABILITY

Based on the results presented in Section 5.1.3, there may be substantial differences between "microenvironments" present on a site. For four of the five sites evaluated in this field study, two subsample locations were determined to be sufficient to characterize the site. For these sites, the two subsample locations were approximately 80% similar. For one site, three subsample locations were required, and these locations were only approximately 55% similar. Thus, it is important to visit several locations within each site in order to fully characterize each site.

Additionally, under the category of geographic variability, it appears to be important to develop a consensus among the evaluators as to the physical boundaries to be used to interpret the WET questions. Some of the variability among evaluators and between the data collected for this study and the 1986 AVID study was due to differing interpretations of the extent of the evaluation area. It is recommended that in future IVA-related data collection efforts, the entire wetland area (as determined by the assessment area delineations performed for the AVID) be evaluated for determining impacts to portions thereof. This is particularly important for accurate assessment of the water quality improvement attribute.

6.4 VERIFICATION OF IVA METHOD USING BEST PROFESSIONAL JUDGEMENT

Based on the results presented in Sections 5.2.8 and 5.3, the IVA method appears to provide an adequate indication of the relative value of a wetland for the three wetland attributes examined (wildlife habitat (WH), water quality improvement (WQ), and social significance (SS)). Comparing the best professional judgement (BPJ) values for all three attributes with the IVA scores developed using the 1986 AVID data ("AVID baseline IVA scores") resulted in good correlations for all three attributes, indicating that using the IVA method to develop relative scores for wetlands provides a good measure of their relative value. Comparisons to best professional judgement are appropriate, as wetland science has not yet developed any other more objective quantitative measures by which to value wetlands.

Using the data collected during this field study to develop IVA scores for each site, however, was somewhat problematic. As is discussed above, the problems encountered dealt with obtaining appropriate responses to water quality improvement indicators (particularly, hydrologic characteristics of the individual sites). However, good correlations were obtained for the other two attributes (WH and SS) between IVA scores using the current field data and both AVID baseline IVA scores and BPJ values. Thus the problems encountered are most likely not problems with the IVA method, but with the data collected during this field study.

Based on the results of this field study, the IVA method is therefore appropriate to continue to use for impact assessment and mitigation planning for the SAMP.

6.5 ADDITIONAL HABITAT QUALITY DATA

Based on the results presented in Sections 5.4 and 5.5, the additional habitat data collected do not conflict with the AVID baseline IVA scores which indicate wildlife habitat quality. No usually or unexpectedly high wildlife habitat characteristics were found in any of the field sites that were not already indicated by the results of the baseline IVA wildlife habitat attribute score. Thus, using the IVA method to determine wetland impacts and compensating mitigation seems to be warranted.

ATTACHMENT 1

RESUMES FOR FIELD TEAM MEMBERS

KATHRYN S. NADEAU

Environmental Scientist
Camp Dresser & McKee

Summary

As an environmental scientist with 6 years' experience, Ms. Nadeau specializes in environmental impact assessments, wetland and wildlife habitat restoration, environmental permitting, wetland delineations, and resource evaluations. Ms. Nadeau's work has included conducting feasibility studies, developing protocols for the evaluation of habitats for species of special concern, and designing and monitoring wetland restoration programs in accordance with the Massachusetts, New York and New Jersey wetland laws.

Experience

Ms. Nadeau is currently involved in several projects at CDM. These include a land feasibility study for the placement of a residual sludge facility in New Bedford, revising the "State of Rhode Island Department of Environmental Management Rules and Regulations Governing the Administration and Enforcement of the Freshwater Wetlands Act", and wetland and wildlife impact evaluations for the Wading River Water Supply project in Mansfield, Massachusetts.

Ms. Nadeau has also been involved in evaluating potential wetland restoration sites for the Alcoa Hazardous Waste Clean-up Project in Massena, New York. To date, the project has required in-depth evaluations of the past, present, and future conditions of the soil and hydrology at the site to determine areas best suited for wetland restoration. In addition, the potential use of the restored wetlands by various wildlife species will be evaluated and a monitoring program to evaluate the success of the created wetlands will be prepared.

Ms. Nadeau has assisted in obtaining the environmental permits for one of the largest shopping malls in New England. Because of the scope of the project, several environmental permits were required. These permits included a Section 404 Permit from the U.S. Army Corps of Engineers, a 401 Water Quality Certification, an Order of Conditions, and an Environmental Impact Report. In addition, the presence of State Listed Species of Special Concern required unique mitigation measures and developing a wildlife habitat monitoring program. Ms. Nadeau was also responsible for delineating the wetland resources around the mall in accordance with state and federal methodologies, as well as designing, implementing, and monitoring the wetland replacement areas mitigated for impacts to wetlands.

Ms. Nadeau has assisted in obtaining permits for a 700-unit mobile home community in Middleboro, Massachusetts. This project involved evaluating effluent discharge options in compliance with state and federal regulations for a tertiary treatment plant. Several state, federal and local permits regarding wetland, wildlife and water quality were required.

Ms. Nadeau has been responsible for various wetland delineations within New England and evaluating, designing, constructing, planting, and monitoring numerous wetland restoration and replication plans for Riparian swamp, herbaceous marshes, stream banks, and floodplain areas.

Education B.S. - Biology, Southeastern Massachusetts University, 1987

KENNETH R. SCARLATELLI

Wetlands Specialist, Hackensack Meadowlands Development Commission

EDUCATION AND SPECIALIZED TRAINING

M.A. Environmental Management, Montclair State University, 1994
B.S. Wildlife Biology, University of Massachusetts, 1983
USEPA Wetland Evaluation Training Certification Course 1994
O.S.H.A. 40 Hour Hazardous Materials Safety Training, 1989

PROFESSIONAL AFFILIATIONS

The Wildlife Society
Society of Wetlands Scientists
Society for Conservation Biology
Society for Ecological Restoration
National Association of Environmental Professionals

APPOINTMENTS

NY/NJ Harbor Estuary Program Biomonitoring Work Group & Scientific and Technical Advisory Committee

New Jersey Department of Environmental Protection/New Jersey Recreation and Parks Association Wetlands Committee

Interagency Panel for Scientific Review of Proposed Revisions to the Federal Manual for Identification and Delineation of Jurisdictional Wetlands, 1991

Hackensack Meadowlands Flood Control Committee

EMPLOYMENT HISTORY

Hackensack Meadowlands Development Commission; Lyndhurst, New Jersey; Wetlands Specialist; 1991 - Present;

President, Northeast Environmental Management Systems; Lodi, NJ; 1988 - Present;

Woodward-Clyde Consultants; Wayne, New Jersey; Assistant Project Scientist; 1989-90;

Lynch, Carmody, Guiliani & Karol, Brick, New Jersey; Director of Environmental Studies; 1987-88;

Hillside School, Malborough; Massachusetts; Science Department Instructor and Curriculum Developer; 1985-86;

Louis Berger & Associates; East Orange, New Jersey; Wetlands Biologist; 1983-84;

REPRESENTATIVE HISTORY INCLUDES:

Wetlands Studies and Permitting:

Wetlands delineations and for all ACOE jurisdictional determinations along the proposed route for a 150 mile gas pipeline between Buffalo and Syracuse, NY. Qualitative analyses of all NYSDEC wetlands along the same route, including a comparison of proposed and alternate routes with respect to their potential impacts on existing DEC wetlands. Presentation of results to NYSDEC.

Wetlands delineation and functional assessments for all wetlands affected by a proposed 20 mile extension of Interstate Highway 287 in northern New Jersey. First use and refinement of Federal Highway Administration Wetland Functional Assessment methodology.

Wetlands delineation and site selection studies on a 860+ acre site for a proposed landfill in Montgomery County, Maryland. Studies included analyses of vegetative cover types, wildlife habitat, and wetlands. Potential impacts were quantified and tabulated, and a comparison of the proposed sites was discussed. Results to were presented to meet the regulatory requirements of ACOE, Maryland Department of Natural Resources, and Maryland Department of the Environment.

Secured NJDEPE Freshwater Wetlands General Permit No. 6 for an EPA Priority Wetland in Mahwah, New Jersey. Involved aggressive lobbying, filing of appeals with New Jersey's Division of Law, and interagency negotiations, all of which resulted in persuading the EPA to revise their Priority Wetlands Listing for isolated wetlands within the Passaic River Basin.

Permitting strategy support for several proposed electric power cogeneration facilities and their related fuel delivery and waste removal systems. Provided field analyses, permitting logistics support, and analysis of alternatives for proposed facilities in Salem and Gloucester Counties in New Jersey and Staten Island, New York.

NJDEP Freshwater Wetlands permitting for the construction of an interim collection and containment device to prevent discharge of hazardous materials into the Passaic River.

Preliminary wetlands survey and vegetative inventory on the site of proposed U.S. Navy Command Center in the metropolitan Washington, D.C. area. Wetlands permitting strategies were outlined; and an assessment of drainage, topography, wildlife habitat, streams, and exceptional features were provided.

Wetlands functional assessment for a proposed recreational park on an 11 acre site in Brewster, New York.

Preliminary wetlands survey and wetlands delineation on a 100 acre site in Thorofare, NJ, for a proposed electric power cogeneration facility, including coal delivery and waste removal systems.

Numerous wetlands delineations and jurisdictional confirmations from the US Army Corps, NJDEP, Pinelands Commission, NYSDEC, PADER, and regulatory agencies from other states throughout the northeast.

Wetlands permitting for a variety of commercial, residential, industrial, recreational, school, utility, transportation, and hazardous materials cleanup projects.

Environmental Site Assessment:

Survey of existing habitat and breeding populations of the least tern, an endangered species, along the proposed crossings of the Arkansas and Mississippi Rivers by the proposed Panhandle Gas Pipeline.

Survey of site in New Brunswick for suitable habitat for the barred owl, a State threatened species.

Site evaluation studies for a proposed hazardous waste incineration facility in Granville County, North Carolina.

Environmental Site Assessment for a proposed residential development in Ramsey, NJ.

Field and laboratory studies for an estuarine toxicology study in the Hackensack Meadowlands for Rutgers University.

Evaluation of wildlife habitat suitability for a variety of species on abandoned and active landfills in the Hackensack Meadowlands, to determine post-closure habitat management feasibility.

Impact Assessment:

Assessment of impacts to the aquatic and wildlife community resulting from a 200,000 gallon kerosene spill in Orange County, Virginia.

Fish and wildlife receptor survey for the solid waste management facility on the Shell Wood River Refining Complex near St. Louis, Missouri.

Dam restoration impact studies, involving assessment of interaction of dam with existing forest and wetland community, Cranberry Lake, NJ.

Environmental Impact Statement, woodland management plan inventory, wetlands delineation and permit applications for Briarcrest East, a proposed residential development in Howell Twp., NJ.

CAFRA environmental impact statement, wetlands delineation, and permit applications for Brookville Manor, a proposed residential development in Barnegat, NJ.

Environmental impact statement, woodland management plan inventory, wetlands delineation and permit applications for Ramtown Knolls, a proposed residential development in Howell Twp, NJ.

Environmental impact statement and wetlands delineation, permit applications for an 80 acre residential development in Flemington, NJ.

Wildlife and fisheries inventory, water quality and aquatic benthic community sampling, ecological portions of environmental impact statement for a proposed retail center in Weymouth, MA.

Regulatory Review:

Coordinates HMDC environmental review and represents the HMDC in the interagency regulatory review of all projects requiring regulatory approval from the Hackensack Meadowlands Development Commission, including:

Allied Junction, a proposed railway transfer station, retail center, and wetlands mitigation plan in Secaucus, New Jersey;

Meadowlands Town Center, a proposed 730 acre mixed use development and wetlands mitigation plan in Carlstadt, New Jersey;

Kearny Connection railway improvements and transfer station in Kearny, New Jersey;

Vince Lombardi Park & Ride Facility and endangered species mitigation for the New Jersey Turnpike Authority in North Bergen, New Jersey;

Bergen Generating Station Repowering Project of Public Service Electric and Gas Company; Ridgefield, New Jersey;

Drafted proposed revisions to the language for the NJDEP Freshwater Wetlands Protection Act General Permit No. 19, which are currently being considered for adoption by NJDEP.

Drafted and negotiated interagency mitigation agreements for a $2.5 million wetlands mitigation project for Consolidated Railway Corporation (Conrail) and a $1.2 million mitigation project for Johnson Controls World Services, Inc.. Currently supervising project design and implementation.

DONALD J. SMITH
593-A Ramapo Valley Road
Oakland, New Jersey 07436
(201) 460-8300 office (201) 337-7697 home

EMPLOYMENT HISTORY

3/72- Present — Hackensack Meadowlands Development Commission, One DeKorte Park Plaza, Lyndhurst, New Jersey. Staff Naturalist Observe and document aquatic and terrestrial life forms in the Hackensack Meadows. Review development plans for possible negative impact on wetlands. Assist Federal and State Agencies on wetland mitigation work. Serve as staff liaison with N.J. Division of Fish & Wildlife. Conduct Environmental Education seminars in conjunction with the Hackensack Meadowlands Environment Center.

10/68- 3/72 — Bronx Zoological Park, Bronx, N.Y. Zookeeper. Worked in the Avian Department. Responsiblities included feeding, caring for, and observing the zoo's aquatic bird collection. Worked with breeding rare and endangered species.

2/61-2/65 — United States Air Force.

EDUCATION & SEMINARS

High School Diploma. Coastal Estuarine Ecology, New Jersey Marine Sciences Consortium, 1981.

SPECIAL PROJECTS

Inventoried colonial bird nesting in Hackensack Meadowlands and Shooters Island, New York Bay, for New Jersey Audubon Society, 1978.

REPORTS

HMDC Biozone Report, 1975. Updated 1980. Wetland Vegetation Maps. Contributed to numerous Commission documents including the Master Plans for DeKorte Park, Meadows Path, and Losen Slote Creek Park.

REFERENCES

Available upon request.

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Hackensack Meadowlands Development Commission

Memorandum

TO Anthony Scardino

FROM Chester Mattson, Director CDM
Environmental Programs & Planning
Date June 23, 1981

Subject Don Smith -- Annual Review (effective April, 1981) "Chief Staff Naturalist"

I have written at length in previous memoranda about Don Smith's value to the agency as Staff Naturalist.

Don has been with the HMDC for 9 years. He is one of the people I regard as central and vital to the Commission's ability, over those years, to bringing the Hackensack River and its wetlands back to life. More than any other among us, he understands and teaches us about the River; he knows every nook and cranny of its wetlands; he knows both its capacity to support life and where its many critters actually live; he remembers the River from a lifetime spent upon it; he loves the River and has taught us how to do the same. The River was the center of <u>his</u> Master Plan long before there was a Commission to make it the center of <u>its</u> Master Plan.

He has, in addition to his extensive duties as Staff Naturalist:

. worked on dozens of water pollution cases, at all hours of the day and night;

. held the responsibility in the field for leading our many all-night, or all week-end, or all-week fights against chemical and oil slicks;

. served as our liaison to all the Federal and State people, in the Coast Guard, the EPA, the U.S.Fish and Wildlife Service, the DEP, the Bergen County Mosquito Commission,etc.who also show up when a typical environmental disaster occurs. They all know him and respect him. In a circle of people with a tough problem to solve, or with tough and jealous jurisdictional issues to solve <u>before</u> the work can begin, Don emerges as a calm, strong leader. [redacted]

It was Don who organized nearly the entire Environmental staff, two months ago, to attend a week-end wetlands seminar in South Jersey. [redacted] Such gatherings not only teach us about our ecological resources. They bring us together; he knows that so well.

Don links us, repeatedly, to local people in inestimably valuable ways. He can be found on any particular week-end with a boat load of environmentalists, public officials, reporters, visiting scientists, etc.

Don, two weeks ago, took a bus load of geology and engineering students from the Netherlands to the Office/Environment Center site, explaining how the wetlands work and how the garbage, so long ugly and environmentally disastrous, is being shaped and mounded to provide those wetlands with the views of the park that they saw stretching out before them. They were fascinated and impressed; and they complimented us both on our technical abilities and our vision.

These examples demonstrate his human values.

His professional abilities abound, as well.

Don knows the birds of the Meadowlands better than any person alive -- by sight, name, by wingbeat, by habitat, by season, and by instinct. It's his desire for more knowledge, however, that gives him an ever greater capability, each year, to understand the dynamics of the Hackensack Estuary as it changes around us while we, changing, watch it. When Dr. John Teal of Woods Hole Oceanographic Institute is visiting us, sharing his world-renowned knowledge with us, Don, too, is in the boat, learning from Teal, while showing John Teal what Don, too, understands. They are like people, those two who, to my observations, have like abilities.

Don also knows the vegetation, the aquatic organisms and mammals, and where they, too, live. When we, as an Environmental Staff can collect and analyze 3,300 samples in one year from this estuary's complement of animals and plants, soils and waters, it is Don who will have been one of the crew in the boat, staking the sampling areas, setting the traps, pulling the plankton net, helping choose the points of frequent and infrequent tidal penetration, driving the corer into the mud; setting the seines, and, above all, interpreting the results of this constant scientific watch we keep on our estuary.

Don's duties, these drawn by me to match his skills, relate to our Department of Environmental Programs and Planning's responsibilities as follows:

I ENVIRONMENTAL SCIENCE, INVENTORY, MONITORING AND ANALYSIS: AND
II OPEN SPACE PLANNING

As Staff Naturalist, Don is a core and vital member of the environmental team that keeps track of the estuary's resources. He works regularly in this regard with Paul Galluzzi, Nick Vallario, Jim Kocis, and myself. He has also been of great value in teaching Mary Kay Murphy and Dawn Pompeo how best to understand the special environmental resources that they must be protected on the Sports Complex site.

He helps devise strategies (such as that incorporated into the Wastewater Findings for the Berrys Creek Center Decision) for sewage treatment plant locations and size, as keyed to water quality analysis, understanding and planning.

Don devises wetland productivity programs -- such as those now in effect in Sawmill Creek Wildlife Management Area, in the Kearny Meadows, in the Anderson Creek Marsh (Harmon Cove), in the Ridgefield Marsh (see Public Service Decision), in the New Jersey Turnpike's upcoming wetland nature study and observation area at the Vince Lombardi Center which he helped design; for the Berrys Creek

continued...

Center's preserved marshes, for which he prepared the vegetation maps inserted in that Decision; for the nature trail and education system designed by HMDC staff for Losen Slote Creek State Park; for the environmental features to be incorporated into the Steiner project; for the high marsh preserved, through his efforts, adjacent to the Mall Landfill site; for the Lyndhurst high marsh; for the 11 acre marsh adjacent to the Arena; for the tide pool area within Snipes Park.

Don is preparing, with Susan Anisfield, Maryjude Haddock and Cassandra Gates, a series of park designs along Meadows Path, as part of the Coastal Zone Grant.

Don has been the driving force at the Commission for the preservation of the Kearny Fresh Water Marsh; and has taken countless visitors to and through these marshes as part of the public education process.

Don makes regular boat runs throughout the estuary, keeping a watch not only for new and old pollution sources, midnight dumping patterns, etc., but, as well, for new species (such as New Jersey's first marsh hawk in 35 years, whose nest was spotted and photographed by Don),and for returning species -- such as blue claw crabs and stripped bass and bluefish.

Don prepares the Commission's Biozone Reports, with the July 1980 update the latest system-wide report; and the Berrys Creek Center vegetation and wildlife inventory of this June, the latest site-specific report.

Don works on the preparation of Corps of Engineers permits, and with the field investigators associated with the Corps of Engineers, the U. S. Fish and Wildlife Service, the EPA, the U.S.Marine Fisheries Service, the Coastal Zone Management Office, etc.

Once we in Environmental Programs and Planning had completed the Master Plan for DeKorte State Park, a three year project which Don contributed extensively to, field inspections became essential on park planning grounds (as well as on landfill inspection grounds, of course). When Engineering was unable to supply field inspectors for the landfills, I asked Don to do this on a temporary basis. This has lasted over two years, with Don providing the critical field presence (especially in conversations with the field landfill operators, in determining each day, in the field, what should be done next to achieve each stage of the park's shape. [redacted]

[redacted]

III SEWAGE TREATMENT PLANNING

Don's knowledge of the River and its localized flushing patterns have provided us invaluable field knowledge in the preparation of our Sewage Treatment Management Plans.

continued...

IV LAND PLANNING IN SPECIALLY PLANNED AREAS

The first critical land use planning exercise in all Specially Planned Areas is the identifying of valuable wetlands and waterways, such that the devising of land use patterns for the built environment will respect and enhance those ecological values. Don is expert at this. He has helped Susan and me extensively with these layouts over the years. In fact, in the Commission's Ecological and Resource Management Plan, we have laid out such land use scenario for almost every Specially Planned Area with high wetland area or value. Examples include the Kearny Special Use Areas, the Island Residential-1 (Harmon Cove)SPA, Parkside Residential-2 -- planning ongoing; Parkside Residential-3 -- planning ongoing; Island Residential-2 (Mill Creek) -- advanced planning completed.

V HMDC ENVIRONMENT CENTER -- See Below

VI PARK PLANNING, DESIGN, CONSTRUCTION AND MANAGEMENT

As noted above, Don has been the field manager, on a day-to-day basis for two years, for the incredibly difficult and important task of badgering and tugging and kidding the landfill operators, through consummate tact, personal diplomacy and persistence, into shaping DeKorte Park as the Plans said it should be shaped. With the balers 2 years later than expected, this has required repeated reassessments of the possibilities.

Not many people will ever know how many times we staked out the pond sites, only to have the operators fill them in on a Saturday morning, only to have Don start all over again. These are the kinds of deeds that make us the staff that we are. That the P & N, Egan and MSLA 1-C Landfills look like a park is proof of Don's work. He has endured 2 bone crushing years in a 4 wheel pick-up truck to do it.

In summary, in all of our six major areas of responsibility in Environmental Programs and Planning that is, in

- Environmental Science, Inventory, Monitoring and Analysis
- Open Space Planning
- Park Planning, Design, Construction and Management
- Hackensack Meadowlands Environment Center
- SPA Land Use Planning
- Sewage Treatment Planning,

Don's knowledge, skills, common sense, diplomacy, and dedication have, over nine years, been and remain invaluable. The Commission would not be able to replace him.

Mary Anne Thiesing, Ph.D.

RR 3, Box 822A
Monroe, New York 10950
(914) 783-1797

EDUCATION

5/89	Ph. D., Ecology, Fordham University, Bronx, N.Y. Dissertation: The Comparative Ecology of a guild of minnows (Pisces: Cyprinidae) in a southeastern New York stream.
2/80	M.S. in Biology, Fordham University, Bronx, N.Y.
5/78	B.S. in Biology, College of Mt. St. Vincent, Bronx, N.Y.
9/74 - 1/76	Attended Cornell University, Ithaca, N.Y.

PROFESSIONAL EXPERIENCE

2/91 - present Protection Agency.	Environmental Scientist, Marine & Wetlands Protection Branch, U.S. Environmental Responsibilities include evaluation of permit applications for compliance with the 404(b)(1) Guidelines, wetland delineation and characterization for enforcement actions; contracts administration under FAR; evaluation of grant applications and administration of awarded grants; trainer of agency personnel in Wetland Evaluation Technique (WET) procedure. Projects of interest include preparation of a case for an action under 404(c) for Hartz Mountain, including documents for national level review; development of documents for removal of a 404(c) action. Serve as divisional representative for the preparation of a Special Area Management Plan for the Hackensack Meadowlands, including developing an interagency mitigation banking agreement, assisted in developing a wetlands quality assessment methodology, developed proposed mitigation standards for the Meadowlands District. Developed wetlands evaluation and delineation course for NYCDEP personnel.
8/89 - 2/91	Area manager, Regulatory Branch, N.Y. District Army Corps of Engineers. Responsibilities include review and approval of wetlands delineation, coordination of District comments on Federal wetlands manual and related issues, endangered species coordination under the Endangered Species Act, coordination of historic properties issues under the National Historic Preservation Act of 1966, etc.; training of new personnel in wetlands identification and delineation, permit processing and resolution of sensitive public interest issues.
8/84 - 8/88	Full - time Instructor of Biology, Dominican College of Blauvelt, Orangeburg, N.Y. Responsibilities include teaching, advisement, committee work, supervision of student research, and consulting on development of biology major program.
9/80 - 5/84	Fordham University, Bronx, N.Y. Teaching fellow in general biology, botany, microbiology, marine biology, graduate ichthyology. Curator of Fordham fish collection for a period of time.
1/79 - 5/80	Teaching assistant in biology.
1/80 - 8/82	College of New Rochelle, New Rochelle, New York. Professional Staff, Learning Resources Center. Responsibilities included design, implementation and analysis of ongoing self-study for Title III grant; training of peer tutors and duties as a senior tutor in science and math.
9/79 - 5/81	College of New Rochelle. Adjunct instructor in HEOP program; taught developmental science biology and chemistry courses.
6/79 - 8/81	Rockland Community College, Suffern, N.Y. Laboratory Instructor in biology and anatomy.

Mary Anne Thiesing

RESEARCH EXPERIENCE

Present	Assessment methodologies for wetlands evaluation; wetland values of impacted urban ecosystems; assessment of cumulative impacts of watershed development on fish species
1980 - present	Feeding ecology of freshwater fishes; Ecology of Notropis
1979	Culture and nutrition of Protococcus from Panamanian sloth
1978	Salt marsh establishment on the Hudson River Comparative surveys of macroinvertebrate communities in sewage stressed areas of the Hudson River
1977	Nutrient loading and plankton species composition in sewage-stressed areas of the Hudson River

TECHNICAL SKILLS

Performed and approved over 100 wetland delineations, using both the 1989 interagency and 1987 Corps delineation manual; wetlands characterization; plant identification; certified EPA enforcement officer, certified in WET.
Identification of freshwater and marine fishes and invertebrates; curation of ichthyological material; transmission electron microscopy; preparation of biological photographs for technical presentation; algal and protistological culture; word processing, graphics, SPSS on IBM/PC and Vax mainframe.

PAPERS PRESENTED

Thiesing, M.A. and G. Dale. 1990. Spatial preference and feeding habits of Notropis amoenus: a test for competition. Presented at the New York Natural History Conference, Albany, N.Y. June 20-22, 1990.

Thiesing, M. A. and G. Dale. 1990. Aspects of the life history of the comely shiner, Notropis amoenus, in a southeastern New York stream. Presented at the annual meeting of the N.Y. chapter of the American Fisheries Society, Owego, N.Y. January 26-27, 1990.

Thiesing, M. A. 1989. Feeding habits of four species of Notropis, with a new method for food habits analysis.
Presented at the 45th annual meeting of the Northeast Fish and Wildlife Society, Ellenville, N.Y. May 7-10, 1989.

Thiesing, M. A. and G. Dale. 1989. Feeding habits of four species of Notropis with a new method for food habits analysis. Presented at the annual meeting of the N.Y. S. chapter of the American Fisheries Society. Jan. 26-28, 1989.

PUBLICATIONS

Thiesing, M.A. 1978. A Comparative Survey of Macroinvertebrate Communities in Sewage stressed and Unstressed areas of the Hudson River. Sci. Media:3:2:1- 15.

OTHER RELEVANT TRAINING

USEPA Courses: Contracts Administration, Field Health and Safety, Enforcement Officer Certification, Enforcement Negotiation, Administrative Trials and hearings, First Aid, CPR, Ethics. USACE Courses: Wetland Delineation workshop, Regulatory I, Regulatory IV. Interagency Wetland Delineation course, Fundamentals of Dredging.

Mary Anne Thiesing

AWARDS AND HONORARIA

1989	Roger Reed Memorial award for Best Student Paper, Northeast chapter of the AFS.
1989	Alan J. McCarthy, S. J. Award, Fordham University
1989	Best Paper Award, N. Y. S. chapter of the American Fisheries Society
1989	Best Student Paper Award, N. Y. S. Chapter of the American Fisheries Society
1988	Invited delegate to Citizen Ambassador Program delegation to U.S.S.R. on Solid Waste Management
1981-84	Teaching Fellow, Fordham University
1979-81	Graduate Assistantship, Fordham University
1978	AIBS National Undergraduate Research Award
	MACUB Undergraduate research award
	AIBS chapter research award
1974	Cornell University Dean's Scholarship
	Abbott Foundation Scholarship
	N.Y. State Regents Scholarship
1973	NSF Science Honors Program, Columbia University; NSF program Boyce Thompson Institute for Plant Research

PROFESSIONAL SOCIETIES

American Fisheries Society, Sigma Xi, New York Academy of Sciences; listed in Who's Who in Science and Technology.

COMMUNITY

Member, Bogota Zoning Board of Adjustment 1983-87

REFERENCES Available on request.

WANDER ECOLOGICAL CONSULTANTS
QUALIFICATIONS OF PRINCIPALS

Wade Wander

M.Sc. in Ecology, Rutgers University, 1980. *Thesis topic:* Temporal Distribution, Age Separation, and Feeding Habitat Preference as Factors in the Ecological Segregation of Migrating Shorebirds at Jamaica Bay Wildlife Refuge, New York City.
B.S. in Wildlife Ecology, Cook College, Rutgers University, 1976
- Former Research Associate of the NJ Audubon Society
- Science Advisor to NJ Breeding Bird Atlas Project
- Member of the Check-list Committee of the New York City Butterfly Club
- Certified wetland delineator #WDCP93MD0910074B by the U.S. Army Corps of Engineers
- Certified wetland professional #0103 by the NJ Association of Environmental Professionals

Mr. Wander has more than 25 years of zoological and botanical field experience throughout North, Central and South America, as well as East Africa, and Australia. He has been an independent environmental consultant since 1974 and since 1980 has been on retainer as a Senior Environmental Scientist at Louis Berger Associates. He has conducted research on New Jersey Threatened and Endangered (T&E) species funded by the state Nongame and Endangered Species Program, and has conducted many T&E surveys in New Jersey and other states. Since 1986, Mr. Wander has conducted more than 700 wetland delineations and inspections throughout New Jersey. He is very experienced in dealing with various state and federal regulatory agencies, and in presenting expert testimony before municipal boards and in court. He is on the faculty of the Cook College Office of Continuing Professional Education, in which capacity he teaches courses on wetland plant identification. Mr. Wander, along with his wife, has taught wetland awareness courses to employees of the Port Authority of NY&NJ.

Mr. Wander was principal investigator for the U.S. Fish & Wildlife Service project that documented the international importance of the Delaware Bayshore as a migration stop for hundreds of thousands of shorebirds. He has written dozens of articles for both technical and popular publications, has taught classes in ornithology and herpetology, and has lectured extensively on a variety of natural-history topics. Mr. Wander has been qualified as an ornithologist by the NJDEP.

Professional Affiliations: The Society of Wetland Scientists, The Association of State Wetland Managers, the Society for Ecological Restoration and Management, the Wildlife Society, and the Natural Areas Association. Mr. Wander is a founding member of the NJ Association of Environmental Professionals.

WANDER ECOLOGICAL CONSULTANTS
LIST OF REPRESENTATIVE PROJECTS

- Advisor to the Newark Museum on the preparation of dioramas on the natural history of the Highlands Physiographic Province of New Jersey

- Review of Wildlife section of U.S. Coast Guard Environmental Impact Statement for proposed expansion of Goethals Bridge between New Jersey and Staten Islands, New York. For The Port Authority of New York and New Jersey through Louis Berger & Associates, East Orange, NJ.

- Wildlife survey (including Threatened & Endangered species) for the proposed expansion of the Monmouth County Regional Landfill and Reclamation Center. For Monmouth County Municipal Utilities Authority through Birdsall Engineering, Belmar, NJ.

- Environmental review of Hawk Hill subdivision. For Boonton Township Planning Board.

- Environmental Review of River Walk development. For Pohatcong Township Planning Board.

- Evaluation of Bird Control Unit at JFK International Airport, New York. For The Port Authority of New York and New Jersey, through Louis Berger & Associates.

- Biological assessment of habitat for Peregrine Falcon in the Hackensack Meadowlands. For Hackensack Meadowlands Development Commission through Camp, Dresser & McKee, Edison, NJ.

- Endangered & Threatened species survey along parkways in Nassau and Suffolk counties, Long Island, NY. For New York State Department of Transportation through Blauvelt Engineers, East Orange, NJ.

- Preparation of a natural resource inventory. For the Borough of Bernardsville, NJ (in progress).

- Avifauna survey of Mashipicong Bogs, Sussex County, NJ. For The Nature Conservancy.

- Preparation of alternatives analysis for Environmental Impact Statement for gull hazard control program at John F. Kennedy International Airport. For U.S. Department of Agriculture, Animal and Plant Health Inspection Service, through Louis Berger & Associates.

- More than 700 wetland delineations and inspections for proposed residential and commercial developments throughout New Jersey.

- Preparation of a multi-year ecological management plan for properties adjacent to Jamaica Bay. For the New York City Audubon Society and New York City Parks Department.

- Wildlife inventory of 1200-acre Delaware Bayshore property in Sea Breeze, Cumberland County. For Wildlife Preserves, Inc.

- Natural resource inventory of proposed school expansion site in The Bronx, New York City. For Allee, King, Rosen & Fleming.

- Restoration of 6-acre Palustrine deciduous forest wetland in Morris County, NJ. For Mt. Hope Rock Products, Inc. (in progress)

- Numerous freshwater wetland restoration plans in New Jersey; most in response to Notices of Violation issued by the NJDEP.

- Critical review of wetland delineation and Environmental Impact Statement for proposed development of Schiff Reservation, Mendham Township, Morris County. For Schiff Reservation Preservation, Inc., and Citizens for Controlled Development.

- Threatened and Endangered species search along a 4.3-mile proposed sewer line route, Manchester Township, Ocean County, NJ. For Ocean County Municipal Utilities Authority through Birdsall Engineering.

- Avifauna study for EIS for the proposed widening of a 13-mile section of U.S. Route 6, Cape Cod, MA. For Massachusetts Highway Department through Louis Berger & Associates.

- Avifauna study for EIS for the proposed widening of the Delaware Turnpike. For Delaware Department of Transportation through Louis Berger & Associates.

- Avifauna and Endangered species survey for EIS on proposed widening of the NJ Turnpike (including assessments of impacts on wildlife by the project and proposals for mitigating adverse effects on Endangered species and wetlands). For the NJ Turnpike Authority through Louis Berger & Associates.

- Biological inventory (including Endangered species survey), habitat assessment, wetland functional assessment, and habitat restoration plan for two Superfund sites in Burlington County, NJ. For Environmental and Energy Consultants, Inc., Philadelphia, PA.

- Wetland delineation and Endangered species survey along a 7-mile length of proposed pipeline expansion in Morris County, NJ; and preparation of an Individual Freshwater Wetlands Permit application. For Texas Eastern Gas Pipeline Company, Houston, Texas.

- Avifauna inventory, impact study, and mitigation proposals for proposed development on lands of Stewart Airport, Newburgh, NY. For New York State Department of Transportation through Louis Berger & Associates.

- Preparation of "An Assessment of the Birdlife of the Pinelands National Reserve/Pinelands Area," a 90-page report for the New Jersey Pinelands Commission that was utilized in developing the Pinelands Comprehensive Management Plan.

- Numerous surveys of Threatened and Endangered species of birds, herptiles, and plants in the Pinelands Natural Reserve/Pinelands Area and CAFRA zone.

- Teaching seminars in wetland identification and protection to various personnel groups. For The Port Authority of New York and New Jersey.

- Environmental constraints mapping and analysis for funding proposal for sewerage improvements. For Pequannock River Basin Regional Sewerage Authority.

- Environmental review of plans and supporting documents for the proposed Black Bear Golf course. For the Borough of Franklin, Sussex County, NJ.

- Individual Freshwater Wetlands Permit application, Endangered species search, and wetland restoration plan. For Elizabethtown Gas Company, Union, NJ.

• Phase 1 Environmental Assessment. For JRF Magnetic Sciences, Green Township, Sussex County, NJ.

• Avifauna survey of 60-acre tract on the Manasquan River, Monmouth County, NJ. For American Timber Co., through Maser Sosinski Associates, Matawan, NJ.

• Preparation of Environmentally Sensitive Areas Protection Plans (portion of DPCC Plan) for:

Fabricolor, Inc., Paterson, NJ, through Vectre Corporation, Lafayette, NJ
The Okonite Company, Paterson, NJ, through EEC, Inc., Philadelphia, PA
Exxon-Linden Technology Center, Linden, NJ, through ERM-Northeast, Woodbury, NY
Courtauld Coatings, Union, NJ, through EEC, Inc., South Orange, NJ
Van Doren Oil Co., White House, NJ, through Bell Environmental Consultants, Dover, NJ
Spartan Oil Company, Dover, NJ, through Bell Environmental Consultants
H&N Chemical Co., Totowa, NJ, through Bell Environmental Consultants
Polychrome Corporation, Clark, NJ

• Environmental review of plans and supporting documents for proposed championship golf course. For Township of Bernards, Somerset County, NJ.

• Wetland delineations and endangered species surveys on numerous county bridge-replacement and road-widening projects. For Pickering, Corts & Summerson, Inc., Trenton, NJ, and Cherry, Weber & Associates, Phillipsburg, NJ.

• Endangered species survey along a proposed gas pipeline route in Somerset County, NJ. For Texas Eastern Gas Pipeline Company.

• Critical review of technical reports and mitigation proposals for potential ecological impacts of a proposed baseball stadium in the Hackensack Meadowlands. For the NJ Sports and Exposition Authority through Malcolm Pirnie, Inc., White Plains, NY.

• Vegetation and wildlife subtasks of an EIS for the proposed expansion of the Squibb pharmaceutical complex, Hamilton Township, Mercer County, NJ; and for the proposed conversion to residential development of Grossinger's Resort, Sullivan County, NY. For Allee, King, Rosen & Fleming, Inc., New York City.

• Intermediate site investigation (ecological inventory) of proposed prison sites in Oregon, Pennsylvania, and Nevada. For the Federal Bureau of Prisons through Louis Berger & Associates.

• Avifauna survey, Habitat Evaluation Procedure, and mitigation proposal for proposed commercial development/mitigation sites in Edison and New Brunswick, Middlesex County, NJ, For Schmid & Company, West Chester, PA.

• Numerous natural resource inventories and endangered species surveys for residential and commercial developers and citizens' groups in New Jersey.

• Preparation of numerous Environmental Impact Statements for residential and commercial projects in New Jersey.

• Natural resource inventory for proposed expansion of Goethals Bridge between New Jersey and Staten Island, New York. For The Port Authority of New York and New Jersey through Louis Berger and Associates.

Mr. Wander, a former research associate of the New Jersey Audubon Society, has also conducted the following ornithological research projects:

- Survey of breeding birds of Sandy Hook, NJ, 1976. Independent research funded by the National Park Service.

- Survey of breeding birds of southern New Jersey cedar swamps (including Bear Swamp [Cumberland County] and other Delaware Bayshore sites), 1980. Independent research funded by the New Jersey Audubon Society and the Frank F. Chapman Fund of the American Museum of Natural History.

- Distributional study of grassland birds in New Jersey, 1981 and 1982. For State of New Jersey, Department of Environmental Protection, Endangered and Nongame Species Project.

- Aerial and ground survey of migrant shorebirds on the Delaware Bayshore, NJ, 1981 and 1982. For U.S. Fish and Wildlife Service. This was the original study documenting the hemispherical importance of the Bayshore to the survival of many species of migrating shorebirds.

- Aerial survey of shorebirds on Raritan Bay, NJ, 1982. For State of New Jersey, Department of Environmental Protection, Endangered and Nongame Species Project.

Mr. Wander's Master's thesis research was a year-long field study of the temporal and spatial distribution of shorebirds and other waterbirds in Jamaica Bay, New York City.

Publications

Wander, W. 1977. Breeding birds of Sandy Hook—1976. Occasional Paper No. 129. *NJ Audubon* 3(5&6):83-90.

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_____, and S.A. Brady. 1980. Summer Tanager and Red-headed Woodpecker in the Pinelands. *NJ Audubon* VI(3):34-37.

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Wander, W. 1984. Techniques for aging selected species of shorebirds in the field. NJ Audubon *Records of New Jersey Birds* X(3):49-55.

Burger, J., J.R. Trout, W. Wander, and S. Ritter. 1984. Jamaica Bay Studies VII: factors affecting the distribution and abundance of ducks in a New York estuary. *Estuarine, Coastal, and Shelf Sciences* 19:673-689.

Wander, S.A., and W. Wander. 1985. Observations at a Northern Waterthrush nest. *Journal of Field Ornithology* 56(1):69.

ATTACHMENT 2

QA/QC PLAN FOR IVA FIELD STUDY

QUALITY ASSURANCE/QUALITY CONTROL PLAN

INDICATOR VALUE ASSESSMENT METHOD
FIELD TESTING STUDY

HACKENSACK MEADOWLANDS DISTRICT SPECIAL AREA MANAGEMENT PLAN
ENVIRONMENTAL IMPACT STATEMENT

HACKENSACK MEADOWLANDS DISTRICT, NEW JERSEY

Camp Dresser & McKee
Edison, NJ

May 1994

FINAL

1.0 PROJECT BACKGROUND

The proposed wetland investigation is being conducted in support of an Environmental Impact Statement (EIS) for the development and implementation of a Special Area Management Plan (SAMP) for the Hackensack Meadowlands District. The SAMP will be a comprehensive plan providing for natural resource protection and reasonable economic growth in the District. The purpose of the EIS is to determine the environmental impacts resulting from implementation of the SAMP. The purpose of this study is to collect field data, specifically regarding wetland indicators and functions, to support the environmental impact methods used in the EIS, as well as implementation mechanisms to be used in the SAMP.

Implementation of the SAMP is expected to result in changes to regulatory processes for fill and construction activities under Section 10 of the Rivers and Harbors Act of 1899 and Section 404 of the Clean Water Act. These regulations are administered by the US Army Corps of Engineers (USACE) as the permitting authority and the Environmental Protection Agency (EPA) as the Section 404 oversight agency. Some of the regulatory changes being considered include: general permits (under Section 404(e) of the CWA), abbreviated permit processes, and establishment of permanent prohibitions on activities in certain wetland areas. These products would increase predictability in acquiring federal permits, reduce burdens upon developers and regulators, and restrict development or ensure proper mitigation measures in important wetland areas.

Given the nature of the action, the EIS has been prepared using a programmatic format. As such, it addresses regional issues, and the analysis is conducted at a regional scale. The function of the EIS for the SAMP is to identify management plan alternatives, assess the potential environmental, social, and economic consequences of each alternative, and identify the preferred alternative.

1.1 BACKGROUND

The Hackensack Meadowlands District (District) is located less than five miles west of Manhattan, in Bergen and Hudson Counties. The Meadowlands District contains approximately 8,000 acres of wetlands, and 12,000 acres of upland. Most of the upland areas are developed, and host primarily industrial, institutional, and commercial land uses.

The District includes portions of 14 municipalities in Bergen and Hudson Counties, New Jersey. Within the District, HMDC is responsible for land use planning, zoning decisions, issuance of building permits, regional solid waste management, and protection of the environment. Remaining undeveloped area within the District are primarily wetlands, and these areas are under intense developmental pressure.

The wetlands system which exists in the Meadowlands District today has evolved in response to hydrologic alterations over time. The construction of the Oradell dam across the Hackensack River (north of the District) in 1922 impeded fresh water flow, and promoted salt water intrusion. By the 1920's common reed (*Phragmites australis*) dominated the remaining marshes once covered by Atlantic white cedar (US EPA, 1989).

In 1969, the 32-square mile Meadowlands region laid substantially abused and under-utilized. The development and ecological preservation potential of this area was visibly and regularly undermined. The result was a rapid quantitative and qualitative erosion of some of the most significant tidal wetlands in the Metropolitan region.

At present, HMDC is preparing to revise its Master Plan and the regulations through which it controls the use of land in the District. Revisions to the Plan must seek to resolve a number of policy issues, the most important of which is identifying the proper balance among the goals of economic development, wetland preservation, and solid waste disposal in the public interest.

1.2 MEMORANDUM OF UNDERSTANDING

In recognition of the environmental and economic needs of the District, and the need for additional coordination of regional planning and regulatory process, EPA and USACE entered into a Memorandum of Understanding (MOU) on September 14, 1988 with HMDC, the New Jersey Department of Environmental Protection (NJDEPE), and the National Oceanic and Atmospheric Administration (NOAA) that calls for the preparation and implementation of a SAMP for the HMD. The SAMP facilitates compliance of future development activities with applicable environmental statues and regulations. In particular, certain regulatory presumptions for future activities, including those identified in the MOU, result from the SAMP and will be used by the EPA and USACE in administering their authorities pursuant to Section 404 of the CWA. As noted previously, the SAMP is invaluable to the HMDC's ongoing effort to revise its Master Plan.

1.3 SPECIAL AREA MANAGEMENT PLANS (SAMPs)

The Hackensack Meadowlands District is located within New Jersey's Coastal Zone. The 1980 Amendments to the Coastal Zone Management Act define a Special Area Management Plan as a "comprehensive plan providing for natural resource protection and reasonable coastal-dependent economic growth containing a detailed and comprehensive statement of policies, standards and criteria to guide public and private uses of lands and waters; and mechanisms for timely implementation in specific geographical areas within the coastal zone". The USACE provides additional detail and guidance regarding the development of SAMPs in Regulatory Guidance Letter (RGL) No. 92-03, issued August 19, 1992. (RGL 92-03 extended RGL 86-10, originally issued October 2, 1986.)

A SAMP also establishes an area-wide basis for regulatory actions, founded on an understanding of the cumulative effects of changes in the environment. A SAMP can conclude with definitive regulatory products that include streamlined permit processing procedures and Section (404)c restrictions for undesirable activities.

All the factors that motivate preparation of a Special Area Management Plans are present for the Hackensack Meadowlands SAMP: the extensive wetlands in the District are under significant development pressure; a regional planning agency (HMDC) is present to coordinate the local needs elements and to help implement the plan; the SAMP/EIS includes a full public participation process; and the SAMP/EIS Memorandum of Understanding commits all participants to implementing regulatory enhancements. Furthermore, the Advanced Identification (AVID) of wetlands (conducted by USACE and EPA, in concert with NJDEPE and HMDC, between 1986 and 1991), has been integrated into the SAMP and the EIS. The data collected during the AVID study has been invaluable in the evaluation of potential impacts to wetlands, as well as potential gains to the quality of wetland ecosystem through enhancement of existing wetlands.

1.4 EPA/CORPS OF ENGINEERS MEMORANDUM OF AGREEMENT

The EPA and USACE signed a Memorandum of Agreement (MOA) in February 1990 that provides clarification and general guidance regarding the level of mitigation necessary to demonstrate compliance with the Clean Water Act Section 404(b)(1) Guidelines. To achieve this goal the MOA interprets and provides guidance and procedures for the USACE and EPA in implementing existing Section 404 regulations. The MOA is significant in that it mandates a sequential review for most project evaluations, starting with avoidance of impacts, minimization of impacts, and finally the requirement that compensatory mitigation be provided for unavoidable impacts. The MOA also recognizes that mitigation consistent with an EPA- and USACE-approved comprehensive plan, such as a SAMP, is considered to satisfy the avoidance, minimization, and compensatory mitigation requirements. The overall goal of the MOA is to achieve no net loss of wetland values in the United States.

1.5 INDICATOR VALUE ASSESSMENT METHOD FIELD TESTING STUDY

In support of the EIS, a method has been developed, based on previous work conducted in the District (the AVID conducted by EPA between 1986 and 1991), which computes a relative score for wetlands in the District for three wetland attributes: water quality improvement, wildlife habitat, and social significance. This method, termed the indicator value assessment (IVA) method, is based on assigning importance to specific indicators of wetland quality, and calculating a "score" for each wetland based on the indicators present in that wetland. The IVA method is used in the EIS to determine the existing condition of wetlands in the District, to assess direct and indirect wetland impacts from development, and to determine appropriate mitigation actions to ensure no net loss of wetlands value.

This study consists of field testing that will be conducted to gain additional information on selected representative wetland areas that may potentially be impacted under HMDC's hybrid development plan (the "preferred alternative" for the EIS). Wetlands with less than 15 acres of direct fill, but more than 5 acres, will be targeted, because larger sites typically have more complicated ecosystems. One major purpose is to compare the "value" obtained for these areas using the IVA against the field team's best professional judgement (BPJ) of wetland quality. This comparison is being done to assess the differences between the two methods of estimating existing conditions: using the IVA method and using best professional judgement.

Because wetland areas might be permanently lost due to development, this assessment will help to determine if the value predicted to be lost (by using the IVA to assess impacts) agrees with best professional judgement of the wetland quality. The information on the quality of wetlands impacted will ultimately aid in selecting appropriate mitigation and enhancement measures to assure no net loss of wetland values in the District.

2.0 OBJECTIVES

2.1 STUDY OBJECTIVES

This study has three basic objectives. These objectives are discussed below.

- *Collect data to provide a quality control check on the WET field data collected in 1986.* The measure of existing wetland value and impacts to existing wetlands are based on data collected during the AVID. These data were collected in the form of answers to a questionnaire, which was based on the contemporaneous WET questionnaire. One objective of this study is to review whether any variation exists between the field responses to the AVID questionnaire and the responses collected as part of this field investigation; to assess the reasons for any differences; and to assess the variability introduced by having different persons answering the questionnaire.

- *Use best professional judgement (BPJ) assessments of wetland quality to verify use of the indicator value assessment (IVA) method to relatively quantify wetland impacts.* The IVA method computes the "score" of a wetland for three important wetland attributes—water quality improvement (WQ), wildlife habitat (WH), and social significance (SS)—on a scale of 0 to 100, based on a semi-quantitative ranking of the importance of many wetland indicators. While the results obtained to date agree with professional judgements of overall distributions of wetland quality in the District, additional testing of the method needs to be performed to gauge the effectiveness of the method at site-specific levels.

- *Collect data on habitat quality in more accurate, site-specific detail to support the issuance of a general permit (GP).* A GP may be issued as part of the SAMP for fill activities of less than 15 acres that are consistent with the SAMP. Because larger sites typically have more complex ecosystems, this study will target development sites with between 5 and 15 acres of fill proposed in wetlands.

2.2 DATA QUALITY OBJECTIVES

The majority of the data collected in this wetland study will be, by their nature, subjective, because they rely on interpretations of field conditions, rather than simple observation. The objective measurements to be made will encompass general site conditions, such as ambient air temperature and weather. Quality review of this limited objective data will consist of a review for obvious errors.

Because of the subjective nature of the majority of data collected in this study, specific data quality objectives are difficult to quantify. Data to be collected, and specific measures to be taken to assure data quality include:

- *Answers to wetland questionnaire.* The field team will consist of at least four wetland professionals who will, to the extent practical, independently respond to the wetland questionnaire. This effort is being made to confirm previous data collection for the site, and to try to determine the variability introduced by having different persons answering the questionnaire. Also, the field team will visit several different locations in each wetland site to assess the effects of spatial variability on previous wetland valuation, and assure that the project data set accurately represents the subject wetland.

- *Determination of avian resources of the wetland site.* A survey of birds will be taken at each site. Where sufficient data is collected, estimates of bird densities will be calculated. Where data is insufficient, data on species sightings and observed habitats will be tabulated. The purpose of this effort is to determine the species diversity at each site.

- *Determination of aquatic resources of the wetland site.* For wetland sites that include open water, a survey of fish usage will be conducted. Where sufficient open water is present, fish sampling will occur. The fish captured will be identified and counted. The purpose of this effort is to determine the species diversity at each site.

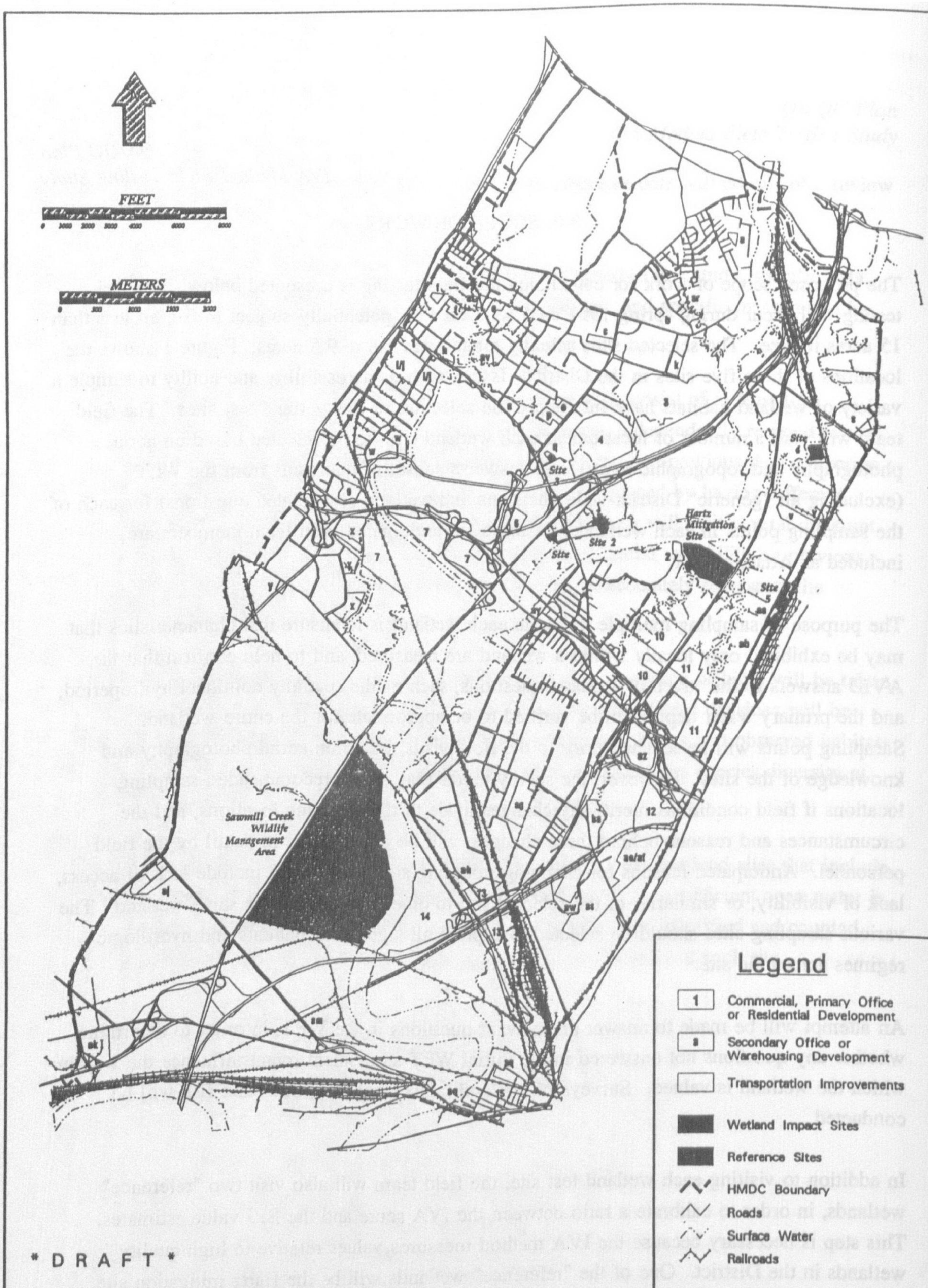
3.0 SCOPE OF WORK

The proposed scope of work for conducting the field testing is presented below. The field testing will occur during spring 1994 on 5 wetland sites potentially subject to fill, all less than 15 acres in size. The selected sites actually range from 1.8 to 9.5 acres. Figure 1 shows the locations of these five sites in the District. Issues such as accessibility and ability to sample a variety of wetland habitats have influenced the selection of the wetland test sites. The field team will visit a number of locations at each wetland site (to be selected based on aerial photography and topographic maps), and answer a subset of questions from the WET (excluding all "generic" District-wide questions and wetland size-related questions) for each of the sampling points in each wetland. Resumes for anticipated field team members are included as Attachment 1.

The purpose of sampling multiple points in each wetland is to ensure that characteristics that may be exhibited only locally within a wetland are measured, and to help confirm that the AVID answers to the "overall" wetland questions, such as the spatially dominant hydroperiod, and the primary water depth, can be verified to be appropriate for the entire wetland. Sampling points will be selected prior to the field visits, based on aerial photography and knowledge of the sites. However, the survey teams may revise recommended sampling locations if field conditions merit; any changes made to the sampling locations, and the circumstances and reasons behind these changes, will be documented in detail by the field personnel. Anticipated reasons for changing sampling sites in the field include lack of access, lack of visibility, or similarity of the selected site to other sites within the same wetland. The various sampling sites should be selected to capture all significant habitats and hydrologic regimes across the site.

An attempt will be made to answer all relevant questions in the WET, in order to determine whether any questions not answered in the initial WET assessment might influence the way in which the wetland is valued. Surveys of wetland fauna (including birds and fish will be conducted.

In addition to visiting each wetland test site, the field team will also visit two "reference" wetlands, in order to calibrate a ratio between the IVA score and the BPJ value estimates. This step is necessary because the IVA method measures values relative to high quality wetlands in the District. One of the "reference" wetlands will be the Hartz mitigation site, which, when scored based on its mitigated set of wetland indicators, scored the highest among the wetlands in the District. The other "reference" wetland will be the Saw Mill Creek



June 01, 1994

Figure 1
Wetland Impact Sites for Wetland Field Testing

Hackensack Meadowlands SAMP/EIS

CDM
environmental engineers, scientists, planners & management consultants

Wildlife Management Area, which is considered a valuable natural resource, and scored highly in the IVA. There is a substantial amount of existing data for these sites, thus the detailed investigations of fauna (fish netting and bird surveying) will not be necessary at this site. Data from existing studies will be used to characterize the fauna at the Hartz mitigation site and the Sawmill Creek Wildlife Management Area.

The field team will prepare a BPJ evaluation of the quality/value of each test wetland for the three wetland attributes (wildlife habitat, water quality improvement, and social significance), relative to the reference wetland(s). This assessment will be, of necessity, qualitative in nature, but will be supported by detailed comments as to reasoning behind the quality judgement, as well as the answers to the WET questions (especially level 3 and 4 questions). The BPJ estimates of relative wetland value will be compared against the values calculated using the IVA. The answers to the WET questions will be input and the wetlands will be re-scored using the IVA, to assess whether the recalculated IVA value changes notably from the initial determination of wetland value for each wetland test site.

It is estimated that the field testing should take approximately 3 hours per sampling site, with a field team of 3 to 4 persons. An additional 2 hours of office analysis will be required per sampling site. An estimate of 4 sampling sites per wetland area, and 5 wetland areas plus one "reference" wetland, results in a preliminary level of effort estimate of 9 days in the field (for 3 to 4 persons), plus 6 days of office analysis. Table 1 presents an outline of the steps necessary to complete the field test.

TABLE 1
OUTLINE FOR SCOPE OF WORK

Task 1—Data Preparation

A. Select wetland test sites
   1. Select 5 sites between 5 and 15 acres as "test sites" *(see Figure 1)*
   2. Determine access to sites
   3. Select sampling points within each wetland to capture major habitat areas/hydrologic regimes
   4. Identify "reference" wetland *(Hartz mitigation site)*
B. Develop wetland questionnaire and data logging forms *(see Attachments 2, 3, 4, and 5)*
   1. List WET questions to be answered by field team (subset of full list)
   2. List additional questions to be answered by field team, to assist in developing BPJ of wetlands quality
C. Select field team *(see Attachment 1)*
   1. Select team members
      a. HMDC personnel (local wetlands expertise)
      b. ACE/EPA personnel (regulatory perspective)
      c. FWS and NJDEPE team participants
      d. Independent wildlife biologists (fauna, esp. birds)
   2. Train field team
D. Criteria for Best Professional Judgement (BPJ) evaluations for three attributes (WQ, WH, SS)
   - Ecosystem characteristics
   - Species richness
   - Vegetative diversity
   - Hydrologic functioning
   - Flood protection
   - Recreation access
   - Special habitat features

Task 2—Field Surveys

A. Visit reference wetlands
   1. Answer wetland questionnaire, review previous wildlife survey results in field
   2. Conduct BPJ evaluations of wetland quality
B. Visit each wetland test site
   1. Answer wetland questionnaire, perform wildlife survey
   2. Conduct BPJ evaluations of wetland quality relative to reference wetland
C. Review data for completeness/accuracy (QA) after each sampling point

Task 3—Data Entry and Analysis

A. Enter questionnaire results into database, and QA
B. Identify significant differences between current data and previous data, if any
C. Recalculate IVA value
D. Assess qualitative relationship between BPJ values with IVA values, recommending adjustments to method, as appropriate
E. Summarize method and results of field test in study memorandum, to be included as appendix to EIS

4.0 QUALITY ASSURANCE AND QUALITY CONTROL

This Quality Assurance Plan identifies CDM's approach to assuring quality for this multi-faceted field exercise. The previous sections of this document have identified the background, data objectives, and scope of work for this study. This section presents specific activities which focus on maintaining the quality of data required to meet the study objectives, from the planning phase, through data collection, to achieve a high caliber study report.

4.1 CDM'S CORPORATE QUALITY ASSURANCE AND QUALITY CONTROL MEASURES

The quality assurance policy of Camp Dresser & McKee (CDM) is to maintain high professional standards and a commitment to excellence in all levels of services offered to its clients. The basis of CDM's quality assurance program is its "Quality Management Process Manual No. 1," or QMP-1. This document is issued by CDM's Project Performance Improvement Center (PPIC), the CDM division responsible for development and implementation of the firm-wide quality management process. The QMP-1 document covers quality management for all stages of a project from proposals and contracts to project closeout activities.

All CDM technical personnel are certified to perform technical tasks or use equipment based on either education, experience, or CDM training. Technical training is an ongoing process and all personnel undergo a periodic review of their technical competency.

4.2 STUDY QUALITY ASSURANCE AND QUALITY CONTROL MEASURES

Equipment and instruments necessary for conducting in-situ measurements, sample collection, and laboratory analyses are assembled, maintained, and calibrated prior to use. Trained and certified personnel conduct sampling efforts, analyze samples and data, and write reports in accordance to QC procedures. Within the data collection, analysis, and reporting cycles, there are specified inspection points beyond which data do not progress until appropriate reviews or approvals have been made. As a result, data are continually checked to ensure accuracy and reliability.

4.2.1 Calibration of Measuring and Testing Equipment

No use of "measuring" or "testing" equipment, other than field gear such as a measuring stick and scale, is anticipated. If any such equipment is used, the following protocol will be used to calibrate the equipment.

The calibration procedures developed for each instrument provide nomenclature, identification number, calibration interval and source, acceptable tolerance and accuracies, and environmental conditions under which measurement equipment is used and calibrated. Calibration standards used by CDM meet standards set by the manufacturer, appropriate industry, or regulatory agencies. References to standards are included with the calibration procedure. Calibration standards are reviewed and updated as necessary.

CDM utilizes scientifically recognized procedures for conducting wetlands field investigations. Supplemental procedures have been carefully developed by CDM wetland scientists for various tasks which lack standardized procedures.

Each instrument has a separate calibration history log in which records of maintenance and calibration are made. The logs are maintained in each of the QC manuals for the instruments. Applicable maintenance and calibration results will be included in the field log books for this study.

4.2.2 Sampling Procedures

Based on published methods and CDM's expertise, methods have been selected which, with proper use, will provide data necessary to support the inventory of wildlife presence and usage of the study sites. The following presents a summary of the various techniques to be employed.

Wetland Evaluation

Field personnel will respond to a series of questions about each wetland sampling location (see Attachment 2). These questions were culled from the WET questionnaire, and supplemented by additional questions aimed at guiding the BPJ estimate toward the desired result—an estimate of relative wetland value (compared to the reference wetland) for each of the three wetland attributes (water quality improvement, wildlife habitat, and social significance). Data will be collected from each member of the field team, for each wetland sampling location.

The field team will be provided with the relevant sections of the WET method, to assist in responding to the WET questions. Questions on water quality aspects of the wetlands will be answered in the office based on existing water quality data (e.g., data collected during the AVID, and HMDC's "Inventory of Fisheries Resources").

<u>Fish Sampling</u>

Field personnel will collect and census fish populations at evaluation sites that exhibit sufficient open water to support fish. At each site where fish are collected, species collected will be identified, counted, and released in the field. Information collected during the fish sampling will be recorded on the "Field Data (Seine)" form (see Attachment 3). Samples which require further identification will be preserved with 70% isopropyl alcohol for storage. Depending on specific site conditions, one of the following fish collection methods will be used.

<u>Seines</u> will be used to collect fish in open water areas which are relatively deep, with stable bottom sediment, and relatively free of debris and large boulders. The seine net will be approximately 30 feet long, 8 feet high, and constructed of 3/16-inch mesh. Seining will be conducted in an upstream direction for approximately 25 feet (or the length of the channel, whichever is smaller). Two hauls will be performed for each sampling location.

<u>Fish traps</u> will be used to collect fish in open water areas where seining is not feasible (because of soft bottom sediment or presence of debris), and where there is sufficient space and flow for the fish trap. The fish trap will be approximately 3 feet by 6 feet, with 20 foot-long wing walls, and constructed of 1/2-inch mesh. The fish trap is to be placed in the channel so that netting is perpendicular to the direction of flow. Fish traps will be set for approximately 24 hours.

<u>Dip nets</u> will be used where the other methods of fish collection are not feasible. Dip nets of various sizes and meshes will be utilized to collect a variety of fish sizes. Multiple hauls with a range of dip net sizes and meshes will be taken.

<u>Visual Avifauna Survey</u>

Whenever field teams are visiting a study site, notations of bird sightings will be taken on the "Daily Bird List" (see Attachment 4), including species, number, sex (where possible), location, habitat, and activity (feeding, nesting, etc.).

Circular-plot Songbird Counts

In addition to the general avifauna surveys noted above, the 60-meter radius circular plot method will be used to estimate densities of songbirds. Sampling will occur at each of the identified sampling points. This method consists of standing at a sampling point for a ten-minute period, and recording all visual and vocal observations during that time. The bird species and numbers will be recorded on a "Circular Plot - Bird Density Measurement" form (see Attachment 5)

The data collected will be analyzed to determine an estimate of bird density within each site. The number of breeding pairs is calculated by first assuming that only territorial males were vocalizing and recorded. The number of observed birds during each ten-minute survey is converted to pairs per hectare for each species, using the size of the 60-meter radius circular plot (2.8 acres or 1.13 hectares). A minimum of one recording will be made at each sampling location. This is based on the assumption that the field time is better spent sampling a variety of locations within a wetland, rather than sampling multiple times at one location.

4.2.3 Data Validation and Reporting

The results of quality control checks are the primary tools used for data validation. Raw data and final results will be reviewed by the quality control coordinator (see section 5.1) on a daily basis. The QC coordinator confirms that documentation is complete and legible, that data entry is complete and accurate, that analyses have been conducted according to accepted methods, that results are expressed in the appropriate units and significant figures, and that the required quality control checks have been run. The quality assurance manager/project manager (see section 5.1) is responsible for assuring the overall quality of the final product (a study report).

5.0 ORGANIZATION AND SCHEDULE

5.1 ORGANIZATION

The quality assurance organization structure for this project is as follows:

Project Manager and Quality Assurance Manager

The project manager and QA manager for this study, along with the SAMP/EIS project, is William Cesanek. Mr. Cesanek is ultimately responsible for the quality of the reports produced by CDM for this project, and maintains the overall CDM Quality Management Process for this project.

Quality Control Coordinator

The quality control coordinator for this study will be Keith Miller, P.E. Mr. Miller will be responsible for maintaining CDM's high standard of quality control for the data collection, analysis, and reporting for this study.

5.2 SCHEDULE

The schedule for this study is anticipated to require approximately four weeks from initiation of the study to preparation of the draft study report. During the first half of the first week, the remaining items in Task 1 will be completed (including the finalization of the field team selection, and the training of the field team). The next two weeks will be devoted to collection of the data at the various sampling locations. The remainder of the four week period will be needed for data entry, analysis, and preparation of the draft report. Issuance of the final report will depend upon agency review and comment periods, and is anticipated to take an additional month.

ATTACHMENT 3

WETLAND EVALUATION FORM

Evaluation Site: ______________________ Date: _______ Evaluator: ______________

Subsample Location: ______________________ Subsample Number: _______

WET Question	Summary				
I23	Closest wetland (> 5 acres) to education & w/in 2,000 ft of road?	Y	N	U	
I24	Part of an ongoing environmental research or monitoring program?	Y	N	U	
I27	Major public recreation access point?	Y	N	U	
Q8.1	Permanent inlet?	Y	N		
Q8.2	Intermittent inlet?	Y	N		
Q8.3	Permanent outlet?	Y	N		
Q8.4	Intermittent outlet?	Y	N		
Q9.1	Outlet < one third average width?	Y	N		
Q9.2	Sheet flow entering and constricted or no outlet?	Y	N	I	
	Wetland Classification				
Q10.B	Palustrine?	Y	N		
Q10.D	Riverine tidal?	Y	N		
Q10.E	Estuarine?	Y	N		
Q11	Fringe or island wetland?	Y	N		
	Dominant vegetation:				
Q12.Ab	forested and needle-leaved evergreen	Y	N		
Q12.Ac	forested and broad-leaved evergreen	Y	N		
Q12.Ad	forested and needle-leaved deciduous	Y	N		
Q12.Ae	forested and broad-leaved deciduous	Y	N		
Q12.Bb	Scrub-shrub and needle-leaved evergreen	Y	N		
Q12.Bc	Scrub-shrub and broad-leaved evergreen	Y	N		
Q12.Bd	Scrub-shrub and needle-leaved deciduous	Y	N		
Q12.Be	Scrub-shrub and broad-leaved deciduous	Y	N		
Q12.Ca	Aquatic bed and algal	Y	N		
Q12.Cb	Aquatic bed and floating vascular	Y	N		
Q12.Cc	Aquatic bed and rooted vascular	Y	N		
Q12.Da	Emergent and persistent	Y	N		
Q12.Db	Emergent and non-persistent	Y	N		

Evaluation Site: ______________________ Date: ______ Evaluator: ______________

Subsample Location: ______________________ Subsample Number: ______

WET Question	Summary				
	Secondary vegetation				
Q13.Ab	forested and needle-leaved evergreen	Y	N		
Q13.Ac	forested and broad-leaved evergreen	Y	N		
Q13.Ad	forested and needle-leaved deciduous	Y	N		
Q13.Ae	forested and broad-leaved deciduous	Y	N		
Q13.Bb	Scrub-shrub and needle-leaved evergreen	Y	N		
Q13.Bc	Scrub-shrub and broad-leaved evergreen	Y	N		
Q13.Bd	Scrub-shrub and needle-leaved deciduous	Y	N		
Q13.Be	Scrub-shrub and broad-leaved deciduous	Y	N		
Q13.Ca	Aquatic bed and algal	Y	N		
Q13.Cb	Aquatic bed and floating vascular	Y	N		
Q13.Cc	Aquatic bed and rooted vascular	Y	N		
Q13.Da	Emergent and persistent	Y	N		
Q13.Db	Emergent and non-persistent	Y	N		
Q14.1	AA on 25 square foot island?	Y	N		
Q14.2	AA on 2 acre island?	Y	N		
	Vegetation<-->Water:				
Q15.1.A	solid form	Y	N	I	
Q15.1.B	intermediate	Y	N	I	
Q15.1.C	checkerboard	Y	N	I	
Q15.2	Channel flow spreading?	Y	N	I	
	Vegetation class:				
Q16.A	solid	Y	N		
Q16.B	intermediate	Y	N		
Q16.C	mosaic	Y	N		
Q17	Plant form richness	Y	N		
Q18	Upland<-->Wetland edge irregular?	Y	N	I	
Q19.1.A	Wind shelter?	Y	N	I	
Q19.1.B	Wind shelter + fetch?	Y	N	I	
Q19.2	Wave protection?	Y	N	I	

Evaluation Site: ______________________ Date: _______ Evaluator: ____________

Subsample Location: ______________________ Subsample Number: _______

WET Question	Summary				
Q19.3	Upland habitat wind shelter?	Y	N	I	
Q20.1	Zone B shaded?	Y	N	I	
Q20.2	Balance sun <--> shade?	Y	N	I	
Q22.1.1	AA contains a Channel?	Y	N		
Q22.1.2	AA contains a Sinuous channel?	Y	N	I	
Q23	Is the AA Channelized?	Y	N		
Q24.2	Fine mineral soils?	Y	N	I	
Q24.4	Slow percolation in watershed?	Y	N	I	
	Primary source of sediment:				
Q25.2.A	sheetflow?	Y	N	I	
Q25.2.B	channel flow?	Y	N	I	
Q25.3	Wetland stabilizes erosion?	Y	N		
Q26.1	Nutrient source in buffer zone?	Y	N	U	
	Primary source of nutrients:				
Q26.2	sheetflow?	Y	N	I	
Q26.3	channel flow?	Y	N	I	
Q27.1	Toxic source in buffer zone?	Y	N	U	
	Primary source of toxics:				
Q27.2	sheetflow?	Y	N	I	
Q27.3	channel flow?	Y	N	I	
Q28	Has AA been Directly altered?	Y	N		
Q29.1	Dense understory edge?	Y	N		
Q29.2	Buffer zone slopes < 5%?	Y	N		
Q30	Is AA subject to frequent Human disturbance?	Y	N		
Q31.1	Area of Zone A + Zone B > Zone C?	Y	N		
Q31.2	Area of Zone B > 10% of AA?	Y	N		
Q31.3	Area of Zone B > Zone A?	Y	N		
Q31.4	Area of submergent in Zone B > open water of Zones B + C?	Y	N	I	
Q31.5	Area of Zone A >= 10% of Zone B and C?	Y	N		

Evaluation Site: ______________________ Date: ______ Evaluator: ____________

Subsample Location: ______________________ Subsample Number: ______

WET Question	Summary				
	emergent in Zone B:				
Q31.6.a	0% of Zones B and C?	Y	N		
Q31.6.b	1% - 30% of Zones B and C?	Y	N		
Q31.6.c	31% - 60% of Zones B and C?	Y	N		
Q31.6.d	61% - 99% of Zones B and C?	Y	N		
Q31.6.e	100% of Zones B and C or not present?	Y	N		
	Spatial Dominant Hydroperiod:				
Q32.A	perm flooded nontidal?	Y	N		
Q32.B	intermit exposed nontidal?	Y	N		
Q32.C	semiperm flooded nontidal?	Y	N		
Q32.D	seasonally flooded nontidal?	Y	N		
Q32.E	saturated nontidal?	Y	N		
Q32.F	temp flooded nontidal?	Y	N		
Q32.G	intermit flooded nontidal?	Y	N		
Q32.I	regularly flooded tidal?	Y	N		
Q32.J	irregularly exposed tidal?	Y	N		
Q32.K	irregularly flooded tidal?	Y	N		
	Permanent Hydroperiod:				
Q33.A	perm flooded nontidal?	Y	N		
Q33.B	intermit exposed nontidal?	Y	N		
Q33.C	semiperm flooded nontidal?	Y	N		
Q33.D	seasonally flooded nontidal?	Y	N		
Q33.E	saturated nontidal?	Y	N		
Q33.F	temp flooded nontidal?	Y	N		
Q33.G	intermit flooded nontidal?	Y	N		
Q33.I	regularly flooded tidal?	Y	N		
Q33.J	irregularly exposed tidal?	Y	N		
Q33.K	irregularly flooded tidal?	Y	N		
Q34.1	Local dams?	Y	N		
Q34.2	Upstream impoundment?	Y	N		

Evaluation Site: ____________________ Date: ______ Evaluator: ______________

Subsample Location: ______________________________ Subsample Number: _______

WET Question	Summary				
Q34.3.1	Flooding due to downslope impoundment?	Y	N		
Q36.1.2	Average width of erect veg in Zones A and B > 500 feet?	Y	N		
Q37	Open water (d>2ft,w>6ft,l>1000ft)?	Y	N		
Q38.1	Perm flood or seas flood and other < 1 mi	Y	N		
Q38.2	(nontidal with erect veg) or 1 acre hardwood and other < 0.5 mi	Y	N		
Q38.3	(estuarine/marine) or (fw palustrine/lacustrine) and other < 5 mi	Y	N		
Q38.4	mudflat or tidal scrub-shrub and other adjacent	Y	N		
Q38.5	mudflat > 5 acre or emergent veg > 5 acre and other adjacent	Y	N		
Q38.6	agr/early succession or evergr forest>10 acres and other < 0.5 mi	Y	N		
Q38.7	semiperm or seas flood or perm flood/intermit exposed and others < 1 mi	Y	N		
Q39	Special habitat features?	Y	N		
Q41.1	Peak flow velocity < 10 cm/s?	Y	N	I	
Q41.2	Peak flow velocity > 30 cm/s?	Y	N	I	
	Dominant Water Depth:				
Q43.A	< 1 inch	Y	N		
Q43.B	1 - 4 inches	Y	N		
Q43.C	5 - 8 inches	Y	N		
Q43.D	9 - 20 inches	Y	N		
Q43.E	21 - 39 inches	Y	N		
Q43.F	40 - 59 inches	Y	N		
Q43.G	5 - 6.5 feet	Y	N		
Q43.H	6.5 - 26 feet	Y	N		
Q43.I	> 26 feet	Y	N		

Evaluation Site: ______________________ Date: _______ Evaluator: __________

Subsample Location: ______________________ Subsample Number: _______

WET Question	Summary				
	Secondary Water Depth:				
Q44.A	< 1 inch	Y	N		
Q44.B	1 - 4 inches	Y	N		
Q44.C	5 - 8 inches	Y	N		
Q44.D	9 - 20 inches	Y	N		
Q44.E	21 - 39 inches	Y	N		
Q44.F	40 - 59 inches	Y	N		
Q44.G	5 - 6.5 feet	Y	N		
Q44.H	6.5 - 26 feet	Y	N		
Q44.I	> 26 feet	Y	N		
	Substrate:	Y	N		
Q45.A	mud?				
Q45.B	Muck?	Y	N		
Q45.C	peat?	Y	N		
Q45.D	sand?	Y	N		
Q45.E	cobble-gravel?	Y	N		
Q45.F	rubble?	Y	N		
	Physical Habitat Interspersion:				
Q46.A	uniform	Y	N		
Q46.B	intermediate	Y	N		
Q46.C	mosaic	Y	N		
Q49.1.1	20%-80% Pools?	Y	N	I	
Q49.1.2	Riffles?	Y	N	I	
Q49.2	Fish cover?	Y	N	I	
Q50	Plants: waterfowl value?	Y	N		
Q51.1	Plant productivity < 500 g/sq.m/yr	Y	N	U	
Q51.2	Plant productivity > 1500 g/sq.m/yr	Y	N	U	

Evaluation Site: ______________________ Date: _______ Evaluator: ______________

Subsample Location: ______________________ Subsample Number: _______

WET Question	Summary				
	Suspended Solids:				
Q55.1	< 25 mg/l	Y	N	U	
Q55.2	> 80 mg/l	Y	N	U	
Q55.3	> 1200 mg/l	Y	N	U	
Q55.4	> 4000 mg/l	Y	N	U	
Q61	DO limiting to fish?	Y	N	I	U
Q63.1	Floodpeaks: inlet > outlet ?	Y	N	I	U
Q63.2	Surface water inflows > outflows ?	Y	N	I	U
Q64	Total Suspended Solids at inlet > outlet?	Y	N	I	U
Q65.3	Warm Freshwater Fish present?	Y	N		
Q66.1.1	Group 1 Waterfowl Breeding present?	Y	N		
Q66.2.1	Waterfowl Group 1 Mig/Wint present?	Y	N		
Q66.2.3	Black Duck Mig/Wint present?	Y	N		
Q66.2.5	Mergansers Mig/Wint present?	Y	N		
Q66.2.7	Bufflehead/Goldeneye Mig/Wint present?	Y	N		
Q66.2.10	Geese Mig/Wint present?	Y	N		

Additional Comments:

WETLAND EVALUATION FORM

Evaluation Site: ______________________ Date: ______ Evaluator: ____________

Subsample Location: ______________________ Subsample Number: ______

BEST PROFESSIONAL JUDGEMENT EVALUATION

On a scale of 0 to 10 (with 0 being lowest and 10 being highest) rate the following wetland functions and attributes relative to the reference wetland. Please give extensive reasons!

WILDLIFE HABITAT ATTRIBUTE

Aquatic Diversity and Abundance Rating: ______ Reason:

General Fish Habitat Rating: ______ Reason:

General Waterfowl Habitat Rating: ______ Reason:

General Wildlife Habitat Rating: ______ Reason:

Production Export Rating: _____ Reason:

OVERALL WILDLIFE HABITAT ATTRIBUTE RATING: _____ Reason:

Evaluation Site: ______________________ Date: ______ Evaluator: ______________

Subsample Location: ______________________ Subsample Number: ______

WATER QUALITY IMPROVEMENT ATTRIBUTE

Nutrient Removal/Transformation Rating: ______ Reason:

Sediment/Toxicant Retention Rating: ______ Reason:

OVERALL WATER QUALITY IMPROVEMENT ATTRIBUTE RATING: ______ Reason:

SOCIAL SIGNIFICANCE ATTRIBUTE

Recreation Rating: ______ Reason:

Floodflow Alteration Rating: ______ Reason:

Conservation Potential Rating: ______ Reason:

OVERALL SOCIAL SIGNIFICANCE ATTRIBUTE RATING: ______ Reason:

ATTACHMENT 4

DAILY BIRD LIST FORM

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DAILY BIRD LIST

DATE: WEATHER: TEMP.:

TIMES:

LOCATION(S):

	SPECIES							
10.								
20.								
30.								
40.								

QC_____

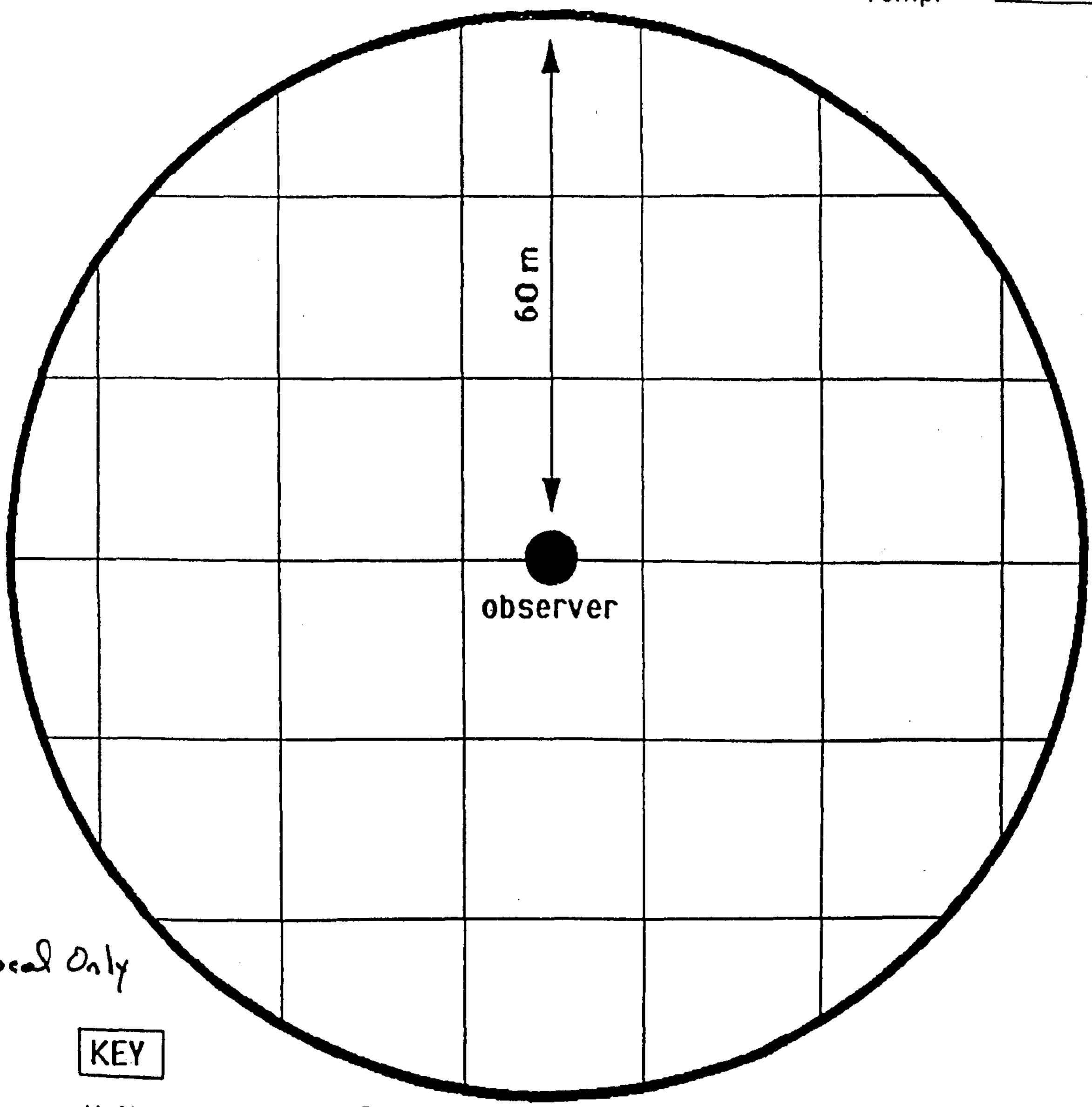
ATTACHMENT 5

CIRCULAR PLOT - BIRD DENSITY MEASUREMENT FORM

CIRCULAR PLOT - BIRD DENSITY MEASUREMENT

Site: ____________
Plot #: ____________
Obs: ____________
Census #: ____________

Date: ____________
Time: ____________
Sky: ____________
Wind: ____________
Temp: ____________



Notes:

O = Vocal Only

KEY

Common Yellowthroat - C
Marsh Wren - M
Red-winged Blackbird - R
Seaside Sparrow - S
Sharp-tailed Sparrow - St
Song Sparrow - S
____
____
____

ATTACHMENT 6

LINEAR REGRESSION STATISTICS

LINEAR REGRESSION STATISTICS

Avg BPJ vs. AVID Baseline	Slope	Intercept	r-squared
Wildlife Habitat	0.15	-5.6	0.85
Water Quality Improvement	0.10	-1.5	0.59
Social Significance	0.09	0.9	0.87

	Wildlife Habitat Attribute			Water Quality Improvement Attribut			Social Significance Attribute		
vs. AVID Baseline	Slope	Intercept	r-squared	Slope	Intercept	r-squared	Slope	Intercept	r-squared
Avg Percent IVA	1.1	-28	0.87	-0.02	70	0.03	0.7	4	0.86
Avg Compos IVA	0.9	-2	0.84	-0.11	84	0.18	0.6	7	0.83
Consens Percent IVA	1.2	-34	0.84	0.02	72	0.01	0.8	2	0.78
Consens Compos IVA	0.9	1	0.78	-0.12	88	0.09	0.8	2	0.78

	Wildlife Habitat Attribute			Water Quality Improvement Attribut			Social Significance Attribute		
vs. Avg BPJ	Slope	Intercept	r-squared	Slope	Intercept	r-squared	Slope	Intercept	r-squared
Avg Percent IVA	7.6	13	0.96	0.3	65	0.02	6.3	-1	0.60
Avg Compos IVA	6.0	28	0.86	-0.9	79	0.10	6.1	1	0.59
Consens Percent IVA	8.1	10	0.96	-0.6	75	0.05	7.6	-5	0.61
Consens Compos IVA	5.9	31	0.79	-1.5	87	0.25	7.6	-5	0.61

Appendix N

APPENDIX N

INDIRECT WETLAND IMPACTS AND MANAGEMENT TECHNIQUES

HACKENSACK MEADOWLANDS DISTRICT SAMP/EIS

Appendix Prepared by:

CAMP DRESSER & McKEE

FEBRUARY 1995

Appendix N
Indirect Wetland Impacts and Management Techniques

Table N-1 presents the direct wetland impacts from the various Planning Area, Satellite Areas, and Transportation Improvements that comprise the Preferred Alternative. These impacts are calculated using the IVA Method (see Appendix F and Section 5.1.1 of the EIS). For each Planning Area, Satellite Area, or Transportation Improvement, the *maximum* acreage of fill is presented, along with the corresponding attribute values for that acreage calculated from the baseline conditions. The assumption is that the existing attribute values for the filled wetlands will be completely lost.

Indirect impacts were assessed by determining wetland functional indicators that would likely be lost due to develop adjacent to, or upstream of wetland areas. Table N-2 lists all of the wetland functional indicators that might change due to development activities. The first column in Table N-2 lists the WET question that pertains to the functional indicator, and the last column presents a short mnemonic for the WET question (please refer to the WET methodology for the full text of the question, as the mnemonic is only a "reminder" to the actual question, which is often much more specific). The "Impact Direction" column of Table N-2 lists the change in the WET question answer that would be caused by an indirect impact ("Y->N" means that a "Yes" in existing conditions would be changed to a "No" after the indirect impact). The remaining columns of Table N-2 are discussed later in this Appendix.

Because the analysis of potential indirect impacts was done considering all proposed development (including cumulative impacts), specific indirect impacts cannot be assigned to specific development projects. Instead, potential indirect impacts are presented for each alternative for each wetland assessment area (AA), as delineated in the WET/AVID. Attachments N-1a through N-1g present the indirect impacts assessed for each of the screening alternatives. They are presented by listing the AA number with potential indirect impacts (e.g., "110"), followed by a list of changed functional indicators (referenced by the WET question number and short mnemonic for the question) made to determine indirect impacts to that wetland (e.g., "Q25_2_A (Primary source of sediment = sheetflow?) was changed from Y to N"). The first wetland (AA 110) listed in Attachment N-1a shows that the indirect impact was to change the primary source of sediment from sheetflow to channel flow, and increase the peak flow velocity to above 10 cm/s.

Attachment N-2 lists the indirect impacts assessed for the Preferred Alternative, assuming that no SAMP management actions would be used to minimize indirect impacts. This condition is referred to in future tables as "No Management." However, many of the indirect impacts assessed under this "worst-case" scenario can be avoided if particular management techniques are required by the SAMP. Table N-2 lists the management techniques available to minimize the indirect impacts from the Preferred Alternative. The particular indirect impacts to functional indicators that each management technique would remove are listed in the "Mgmt Technique" column of Table N-2. Attachment N-3a lists, for each AA to which they are applicable, the particular indirect impacts that would be avoided by using these management techniques. The functional indicator changes in Attachment N-3a are presented as: from the "no management" condition, to the "SAMP Management" condition. Thus, for AA 100, the first two lines show that, by using SAMP management actions, the primary source of nutrients into the wetland is changed back to sheetflow. The remaining impacts, after SAMP management actions are imposed, are presented in Attachment N-3b.

Certain indirect impacts, while not avoidable through SAMP management action, can be corrected (and thus mitigated) after construction is completed. These impacts are identified in Table N-3, which lists those indirect impacts which can be corrected, or mitigated, on-site, to place the wetland back in the pre-impact condition. Attachment N-4 lists, for each AA, the particular impacts which can be mitigated on-site.

Table N-4 presents the IVA scores for the three attributes, for four different scenarios: (1) the baseline, or existing conditions; (2) the "No Management" post-impact condition; (3) the "SAMP Management" ("with management") post-impact condition; and (4) the "Post-Onsite Mitigation" condition. These IVA scores have been calculated, using the IVA method, using the baseline indicators, with modifications representing indirect impact and on-site mitigation as discussed above.

Tables N-5 through N-7 present the IVA-calculated attribute values for the four scenarios, for each of the three attributes. Above each column is a column number, and (if applicable) the equation used to calculate that column from the other columns on Tables N-3 through N-7.

TABLE N-1
DIRECT WETLAND IMPACTS OF PREFERRED ALTERNATIVE
(in acre-points)

Planning Area	Wetland Fill (Acres)	WQ Attribute Direct Impact	WH Attribute Direct Impact	SS Attribute Direct Impact
1	2.3	NA	NA	NA
3	165.0	13,258	11,304	3,840
4	119.6	9,808	8,492	2,871
5	15.0	594	746	532
7	72.7	4,367	6,301	1,778
10	65.1	4,689	3,908	4,299
12	49.7	4,369	3,227	1,638
13	9.1	557	493	310
Subtotal	498.5	37,642	34,472	15,268

Satellite Area	Wetland Fill (Acres)	WQ Attribute Direct Impact	WH Attribute Direct Impact	SS Attribute Direct Impact
f	7.1	622	447	7
h	7.8	701	576	405
j	37.5	2,630	2,558	587
k	5.6	297	230	22
p	6.5	442	325	111
q	1.8	NA	NA	NA
v	23.3	1,745	1,502	313
w	35.0	2,358	2,666	1,792
x	35.9	2,514	3,592	2,730
aa	9.5	820	639	0
ac	2.9	126	56	0
as	64.4	5,408	3,798	2,318
av	2.5	225	185	130
bb	11.5	930	884	207
Subtotal	251.3	18,818	17,458	8,621

Transportation Improvement	Wetland Fill (Acres)	WQ Attribute Direct Impact	WH Attribute Direct Impact	SS Attribute Direct Impact
t9	0.2	7	10	7
t10	2.1	NA	NA	NA
t12	5.4	346	273	144
t20	1.8	108	57	17
t21	5.0	413	270	0
t26	6.3	490	389	360
t27	2.9	215	139	87
t28	16.8	770	534	339
t29	1.6	83	96	56
t30	0.7	54	33	33
t31	7.3	586	472	0
t32	0.4	22	14	2
t33	0.1	5	3	1
t34	0.1	13	11	7
t40	11.0	642	569	294
t41	1.0	43	30	18
t42	29.2	1,980	1,922	647
Subtotal	91.8	5,776	4,823	2,014
TOTAL	841.6	62,237	56,753	25,903

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TABLE N-2
INDIRECT WETLAND IMPACTS
AVOIDABILITY THROUGH SAMP MANAGEMENT CONTROLS

WET Question	Impact Direction	Avoidable?	Mgmt Technique	Mnemonic
I24	Y->N			Research resource?
Q2_1_1	N->Y			Area < 5 acres?
Q2_1_2	Y->N			Area > 40 acres?
Q2_1_3	Y->N			Area > 200 acres?
Q5_1_2	Y->N			AA > 20% of watershed?
Q5_2	Y->N			Upslope wet depressions > 5% of watershed?
Q8_1	Y->N	Y	(a)	Permanent inlet?
Q8_2	N->Y	Y	(a)	Intermittent inlet?
Q8_3	Y->N	Y	(a)	Permanent outlet?
Q8_4	N->Y	Y	(a)	Intermittent outlet?
Q9_1	Y->N			Outlet < one third average width?
Q11	Y->N			Fringe or island wetland?
Q14_1	Y->N			AA contains 25 square foot island?
Q13_CA	Y->N			Secondary veg: Aquatic bed and algal
Q15_1_A	N->Y			Vegetation<-->Water = solid form
Q15_1_B	Y->N			Vegetation<-->Water = intermediate
Q15_2	Y->N			Channel flow spreading?
Q16_A	N->Y			Vegetation class = solid
Q16_B	Y->N			Vegetation class = intermediate
Q18	Y->N	Y	(b)	Upland<-->Wetland edge irregular?
Q19_1_A	Y->N	Y	(c)	Wind shelter?
Q19_3	Y->N	Y	(b)	Upland habitat wind shelter?
Q22_1_1	Y->N			AA contains a Channel?
Q22_1_2	Y->N			AA contains a Sinuous channel?
Q23	Y->N			Is the AA Channelized?
Q25_2_A	Y->N	Y	(d)	Primary source of sediment = sheetflow?
Q25_2_B	N->Y	Y	(d)	Primary source of sediment = channel flow?
Q26_2	Y->N	Y	(d)	Primary source of nutrients = sheetflow?
Q26_3	N->Y	Y	(d)	Primary source of nutrients = channel flow?
Q27_2	Y->N	Y	(d)	Primary source of toxics = sheetflow?
Q27_3	N->Y	Y	(d)	Primary source of toxics = channel flow?
Q29_1	Y->N	Y	(b)	Dense understory edge?
Q29_2	Y->N	Y	(e)	Buffer zone slopes < 5%?
Q31_2	Y->N			Area of Zone B > 10% of AA?
Q31_3	Y->N			Area of Zone B > Zone A?
Q31_5	Y->N			Area of Zone A >= 10% of Zone B and C?
Q32_A	Y->N			Spatial Dominant Hydroperiod = perm flooded nontidal?
Q32_D	N->Y			Spatial Dominant Hydroperiod = seasonally flooded nontidal?
Q32_I	Y->N			Spatial Dominant Hydroperiod = regularly flooded tidal?
Q33_A	Y->N			Permanent Hydroperiod = permanent flooded nontidal?
Q33_D	N->Y			Permanent Hydroperiod = seasonally flooded nontidal?
Q33_J	Y->N			Permanent Hydroperiod = irregularly exposed tidal?
Q34_1	Y->N			Local dams?
Q37	Y->N			Open water (d>2ft,w>6ft,l>1000ft)?
Q41_1	Y->N	Y	(d)	Peak flow velocity < 10 cm/s?
Q44_B	Y->N			5 in < secondary water depth < 8 inches
Q44_C	Y->N			9 in < secondary water depth < 20 inches
Q44_D	Y->N			21 in < secondary water depth < 39 inches
Q44_E	Y->N			40 in < secondary water depth < 59 inches
Q46_A	N->Y			Physical Habitat Interspersion = uniform
Q46_C	Y->N			Physical Habitat Interspersion = mosaic
Q49_1_1	Y->N			20%-80% Pools?
Q49_2	Y->N			Fish cover?
Q50	Y->N			Plants: waterfowl value?
Q65_3	Y->N			Warm Freshwater Fish present?
Q66_1_1	Y->N			Group 1 Waterfowl Breeding present?
Q66_2_1	Y->N			Waterfowl Group 1 Mig/Wint present?
Q66_2_3	Y->N			Black Duck Mig/Wint present?
Q66_2_5	Y->N			Mergansers Mig/Wint present?
Q66_2_7	Y->N			Bufflehead/Goldeneye Mig/Wint present?
Q66_2_10	Y->N			Geese Mig/Wint present?

Management Techniques

(a) Maintain existing inlet/outlet configuration through channels/culverts
(b) Maintain existing (irregular) wetland/upland edge
(c) Plant wind barrier along edge of development
(d) Use of stormwater detention basins with flow spreaders
(e) Grade edge of development with gently sloping vegetated buffer zones

TABLE N-3
INDIRECT WETLAND IMPACTS
ON-SITE MITIGATABILITY

WET Question	Direction of Impact	Mitigatable On-Site?	Mnemonic
I24	Y->N		Research resource?
Q2_1_1	N->Y		Area < 5 acres?
Q2_1_2	Y->N		Area > 40 acres?
Q2_1_3	Y->N		Area > 200 acres?
Q5_1_2	Y->N		AA > 20% of watershed?
Q5_2	Y->N		Upslope wet depressions > 5% of watershed?
Q9_1	Y->N	Y	Outlet < one third average width?
Q11	Y->N		Fringe or island wetland?
Q14_1	Y->N		AA contains 25 square foot island?
Q13_CA	Y->N	Y	Secondary veg: Aquatic bed and algal
Q15_1_A	N->Y	Y	Vegetation<--->Water = solid form
Q15_1_B	Y->N	Y	Vegetation<--->Water = intermediate
Q15_2	Y->N	Y	Channel flow spreading?
Q16_A	N->Y	Y	Vegetation class = solid
Q16_B	Y->N	Y	Vegetation class = intermediate
Q22_1_1	Y->N	Y	AA contains a Channel?
Q22_1_2	Y->N	Y	AA contains a Sinuous channel?
Q23	Y->N	Y	Is the AA Channelized?
Q31_2	Y->N	Y	Area of Zone B > 10% of AA?
Q31_3	Y->N	Y	Area of Zone B > Zone A?
Q31_5	Y->N	Y	Area of Zone A >= 10% of Zone B and C?
Q32_A	Y->N		Spatial Dominant Hydroperiod = perm flooded nontidal?
Q32_D	N->Y		Spatial Dominant Hydroperiod = seasonally flooded nontidal?
Q32_I	Y->N		Spatial Dominant Hydroperiod = regularly flooded tidal?
Q33_A	Y->N		Permanent Hydroperiod = permanent flooded nontidal?
Q33_D	N->Y		Permanent Hydroperiod = seasonally flooded nontidal?
Q33_J	Y->N		Permanent Hydroperiod = irregularly exposed tidal?
Q34_1	Y->N		Local dams?
Q37	Y->N	Y	Open water (d>2ft,w>6ft,l>1000ft)?
Q44_B	Y->N	Y	5 in < secondary water depth < 8 inches
Q44_C	Y->N	Y	9 in < secondary water depth < 20 inches
Q44_D	Y->N	Y	21 in < secondary water depth < 39 inches
Q44_E	Y->N	Y	40 in < secondary water depth < 59 inches
Q46_A	N->Y	Y	Physical Habitat Interspersion = uniform
Q46_C	Y->N	Y	Physical Habitat Interspersion = mosaic
Q49_1_1	Y->N	Y	20%-80% Pools?
Q49_2	Y->N	Y	Fish cover?
Q50	Y->N	Y	Plants: waterfowl value?
Q65_3	Y->N	Y	Warm Freshwater Fish present?
Q66_1_1	Y->N		Group 1 Waterfowl Breeding present?
Q66_2_1	Y->N		Waterfowl Group 1 Mig/Wint present?
Q66_2_3	Y->N		Black Duck Mig/Wint present?
Q66_2_5	Y->N		Mergansers Mig/Wint present?
Q66_2_7	Y->N		Bufflehead/Goldeneye Mig/Wint present?
Q66_2_10	Y->N		Geese Mig/Wint present?

TABLE N-4
INDIRECT WETLAND IMPACTS AND ON-SITE MITIGATION
CHANGES TO ATTRIBUTE SCORES

(1)	(2)	(3)	(4)	(5) (3) - (4)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
					Baseline Scores			Post-Impact Scores (no management)			Post-Impact Scores (with management)			Post-Onsite Mitigation Scores		
AANO	Planning Area	Total Acres	Fill Acres	Remain Acres	WQ	WH	SS	WQ	WH	SS	WQ	WH	SS	WQ	WH	SS
2 2	7	97.2	12.20	85.0	65	85	12	60	85	12	65	85	12	65	85	12
2 3	7,x	180.1	50.17	129.9	70	100	76	37	85	26	55	95	26	70	100	76
2 4A	7,TR	19.0	17.64	1.3	57	78	12	31	60	12	37	62	12	52	70	12
2 6_a	TR	222.4	0.94	221.4	53	69	48	45	58	32	50	64	48	52	66	48
2 6_b	TR	0.5	0.00	0.5	53	69	48	0	0	0	0	0	0	0	0	0
2 9_a	TR	10.7	0.63	10.1	52	50	17	45	46	17	50	47	17	52	48	17
2 9_b	TR	0.7	0.00	0.7	52	50	17	26	11	17	50	47	17	52	48	17
2 10	TR	60.0	1.17	58.9	48	64	33	48	64	33	48	64	33	48	64	33
2 11	TR	274.7	3.09	271.6	61	78	32	61	78	32	61	78	32	61	78	32
2 C	TR	64.5	1.18	63.3	30	56	28	30	56	28	30	56	28	30	56	28
2 D	TR	50.3	2.16	48.1	38	54	12	38	54	12	38	54	12	38	54	12
2 E_a	3,4,TR	432.6	277.48	155.1	82	71	24	45	55	24	68	61	24	68	61	24
2 E_b	3,4	9.3	0.00	9.3	82	71	24	38	26	24	62	38	24	65	49	24
2 E_c	3,4	1.0	0.00	1.0	82	71	24	38	24	24	62	35	24	65	45	24
2 E_d	TR	22.1	0.00	22.1	82	71	24	37	30	24	67	58	24	68	61	24
2 F	3,k	19.8	6.97	12.8	53	41	4	35	40	4	53	41	4	53	41	4
2 G_a	3,TR	37.9	25.64	12.3	72	55	20	38	46	20	64	52	20	64	52	20
2 G_b	3	3.4	0.00	3.4	72	55	20	36	18	20	60	29	20	62	35	20
2 G_c	TR	3.1	0.00	3.1	72	55	20	28	14	20	64	52	20	64	52	20
2 H_a	3,TR	96.3	4.28	92.1	33	55	12	33	55	12	33	55	12	33	55	12
2 H_b	TR	3.5	0.00	3.5	33	55	12	21	10	12	33	55	12	33	55	12
2 M	v,bb	74.5	17.59	56.9	81	77	18	50	67	17	67	74	17	81	77	17
2 Q	10	185.4	65.13	120.2	72	60	66	53	53	63	67	60	63	67	60	63
2 R	11,TR	215.7	0.14	215.6	92	78	50	85	76	0	92	78	50	92	78	50
2 T	4,5,TR	90.6	6.53	84.1	52	36	17	41	32	17	52	36	17	52	36	17
2 U	5,TR	154.3	9.06	145.2	31	59	48	31	59	48	31	59	48	31	59	48
2 W	TR	9.1	0.20	8.9	71	56	0	71	56	0	71	56	0	71	56	0
3 1_a	12,az,ba,TR	170.9	50.57	120.3	88	65	33	58	57	33	83	65	33	83	65	33
3 1_b	12,az,ba,TR	2.7	0.25	2.4	88	65	33	51	15	33	75	26	33	76	45	33
3 2	TR	349.6	2.75	346.9	89	84	100	89	84	100	89	84	100	89	84	100
3 3	TR	58.6	0.38	58.2	100	85	92	100	85	92	100	85	92	100	85	92
3 4	TR	42.4	1.41	41.0	75	55	8	75	55	8	75	55	8	75	55	8
3 5	TR	77.3	0.31	76.9	86	80	90	86	80	90	86	80	90	86	80	90
3 6	TR	74.2	0.14	74.0	92	80	90	92	80	90	92	80	90	92	80	90
4 A	f	2.0	1.81	0.2	88	38	1	0	0	0	0	0	0	0	0	0
4 B	f,at	40.7	5.32	35.4	87	71	1	63	64	0	87	71	0	87	71	0
4 C	1,h,av,TR	65.5	10.29	55.3	90	74	52	73	67	3	90	74	52	90	74	52
4 D_a	1,i,j,w,TR	217.5	35.63	181.9	75	89	69	55	73	19	66	80	19	66	80	19
4 D_b	1,i/j,w	4.6	0.00	4.6	75	89	69	48	29	17	60	41	17	62	51	17

TABLE N-4
INDIRECT WETLAND IMPACTS AND ON-SITE MITIGATION
CHANGES TO ATTRIBUTE SCORES

(1)	(2)	(3)	(4)	(5) (3) − (4)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
					Baseline Scores			Post-Impact Scores (no management)			Post-Impact Scores (with management)			Post-Onsite Mitigation Scores		
AANO	Planning Area	Total Acres	Fill Acres	Remain Acres	WQ	WH	SS	WQ	WH	SS	WQ	WH	SS	WQ	WH	SS
4 F	n	7.4	0.00	7.4	53	61	0	37	53	0	53	59	0	53	59	0
4 G	p	21.2	6.50	14.7	68	50	17	52	45	17	68	50	17	68	50	17
18	w	4.0	2.83	1.2	71	56	0	45	47	0	71	54	0	71	54	0
19	w,TR	7.8	4.35	3.4	63	59	0	42	46	0	62	53	0	63	53	0
23	j	11.8	11.67	0.1	67	61	0	0	0	0	0	0	0	0	0	0
24	i,j	17.3	17.29	0.0	70	63	0	0	0	0	0	0	0	0	0	0
27_a	TR	16.2	2.45	13.7	89	62	0	62	53	0	88	61	0	89	62	0
27_b	TR	7.8	0.00	7.8	89	62	0	61	20	0	88	61	0	89	62	0
28	TR	29.5	0.12	29.4	87	55	0	87	55	0	87	55	0	87	55	0
32	s,TR	10.8	1.36	9.4	58	71	0	46	65	0	58	71	0	58	71	0
33 A	s	13.4	0.00	13.4	73	68	0	56	60	0	73	68	0	73	68	0
33 B	s	12.0	0.00	12.0	69	70	0	51	60	0	69	68	0	69	68	0
35	v	4.1	3.99	0.1	59	42	0	0	0	0	0	0	0	0	0	0
37	v	1.2	1.22	0.0	68	33	0	0	0	0	0	0	0	0	0	0
38 A	v	13.3	11.94	1.4	78	69	17	43	31	17	61	43	17	78	51	17
39	aa,TR	15.7	12.78	2.9	86	67	0	41	12	0	68	25	0	86	39	0
48	6,TR	12.9	4.80	8.1	83	54	0	66	45	0	83	50	0	83	50	0
54_a	TR	35.5	2.74	32.7	100	70	50	70	46	0	100	70	50	100	70	50
54_b	TR	12.3	0.00	12.3	100	70	50	76	58	0	100	70	50	100	70	50
76	TR	1.7	0.15	1.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
77	TR	10.6	0.21	10.4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
78	TR	4.3	0.62	3.6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
82	TR	6.7	0.64	6.1	72	53	0	72	53	0	72	53	0	72	53	0
87 A	TR	3.8	0.47	3.4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
87 B1	TR	1.6	0.10	1.5	65	39	17	65	39	17	65	39	17	65	39	17
90	TR	5.4	0.80	4.6	65	53	0	65	53	0	65	53	0	65	53	0
91	TR	2.3	0.88	1.4	58	33	0	58	33	0	58	33	0	58	33	0
92	TR	2.0	0.90	1.1	56	19	0	56	19	0	56	19	0	56	19	0
97_a	TR	9.4	2.32	7.1	79	42	50	55	37	50	79	42	50	79	42	50
97_b	TR	4.3	0.53	3.8	79	42	50	55	34	50	79	42	50	79	42	50
98	TR	4.9	1.35	3.5	54	10	33	54	10	33	54	10	33	54	10	33
99	13,TR	28.0	14.09	13.9	61	54	34	37	43	34	61	48	34	61	48	34
100	13,TR	22.1	3.43	18.7	73	57	17	56	52	17	73	57	17	73	57	17
107	TR	23.2	4.65	18.6	67	40	33	67	40	33	67	40	33	67	40	33
108	as,aw,TR	117.1	64.89	52.2	84	59	36	58	50	33	84	59	33	84	59	33
109	TR	0.9	0.46	0.5	NA	NA	NA	0	0	0	0	0	0	0	0	0
112	ae/af	12.2	0.00	12.2	69	56	33	44	48	33	69	55	33	69	55	33
113	ae/af	16.6	0.00	16.6	67	60	17	41	48	17	67	58	17	67	58	17
119	TR	2.3	0.07	2.3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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TABLE N−4
INDIRECT WETLAND IMPACTS AND ON−SITE MITIGATION
CHANGES TO ATTRIBUTE SCORES

(1)	(2)	(3)	(4)	(5) (3) − (4)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
					Baseline Scores			Post−Impact Scores (no management)			Post−Impact Scores (with management)			Post−Onsite Mitigation Scores		
AANO	Planning Area	Total Acres	Fill Acres	Remain Acres	WQ	WH	SS	WQ	WH	SS	WQ	WH	SS	WQ	WH	SS
133 B	TR	3.7	0.09	3.6	61	29	17	61	29	17	61	29	17	61	29	17
138	TR	33.2	1.19	32.0	69	48	0	69	48	0	69	48	0	69	48	0
148	TR	0.9	0.55	0.4	NA	NA	NA	0	0	0	0	0	0	0	0	0
149	TR	4.5	0.36	4.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
150 B	TR	18.9	3.72	15.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
151	TR	1.8	0.18	1.6	61	45	50	45	27	50	59	43	50	61	45	50
152	TR	2.2	0.41	1.8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
154	TR	3.5	0.66	2.9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
155	TR	2.6	0.39	2.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
200	TR	9.1	0.94	8.1	56	13	0	56	13	0	56	13	0	56	13	0
201	q	1.9	1.79	0.1	NA	NA	NA	0	0	0	0	0	0	0	0	0
214	w	4.3	2.85	1.4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
220	ac	3.6	2.93	0.7	43	19	0	23	13	0	43	16	0	43	18	0
221	TR	2.7	0.13	2.6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
224	TR	1.4	0.86	0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
226	TR	2.7	0.00	2.7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
304	7	96.6	28.07	68.6	55	87	12	34	80	12	40	82	12	55	87	12
311	TR	3.1	0.08	3.1	60	36	17	60	36	17	60	36	17	60	36	17
312	TR	71.3	0.33	71.0	67	44	16	67	44	16	67	44	16	67	44	16
401	1	2.3	2.29	0.0	NA	NA	NA	0	0	0	0	0	0	0	0	0
421	TR	1.1	0.16	1.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
422	TR	2.5	0.51	1.9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
502	TR	2.7	0.93	1.8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
505	7	0.5	0.51	0.0	54	42	0	0	0	0	0	0	0	0	0	0
Unimpacted Wetlands		4,272.1	0.0	4,272.1												
District Total		8,527.3	841.6	7,685.7												

Notes
Management includes structural and non−structural controls on stormwater and development, e.g., detention basins, flow spreaders, vegetated gently sloping buffer zones (see Table N−2)
On−site Mitigation consists of replacing lost wetland indicators, where possible (see Table N−3)

TABLE N-5
DIRECT & INDIRECT WETLAND IMPACTS
WATER QUALITY IMPROVEMENT ATTRIBUTE
PREFERRED ALTERNATIVE

(1)	(2)	(3)	(4)	(5) (3) - (4)	(18)	(19)	(20) (6) * (3)	(21) (6) * (4)	(22) [(6)-(9)]*(5)	(23) [(6)-(12)]*(5)	(24) (22) - (23)	(25) (24) / (22)	(26) (21) + (23)	(27) (26) / (20)	(28) (20) - (26)	(29) [(15)-(12)]*(5)	(30) (29) / (26)
							Water Quality Improvement Value (acre-points)										
AANO	Planning Area	Total Acres	Fill Acres	Remain Acres	Impact Type (no mgm	(w/mgmt)	Base-line	Direct Impact	Indirect Impact (no mgmt)	(w/mgmt)	Gain from Management		Total Impact (w/mgmt)		Remaining Value	Gain From On-site Mit.	
2 2	7	97.2	12.20	85.0	BA	DA	6,315	793	425	0	425	7%	793	13%	5,522	0	0%
2 3	7,x	180.1	50.17	129.9	BA	BA	12,607	3511.9	4,288	1,949	2,339	19%	5,461	43%	7,146	1,949	15%
2 4A	7,TR	19.0	17.64	1.3	BA	BA	1,081	1005.4	35	27	8	1%	1,032	95%	49	20	2%
2 6_a	TR	222.4	0.94	221.4	BA	BA	11,785	49.82	1,771	664	1,107	9%	714	6%	11,071	443	4%
2 6_b	TR	0.5	0.00	0.5	IA	IA	25	0	25	25	0	0%	25	100%	0	0	0%
2 9_a	TR	10.7	0.63	10.1	BA	BA	556	32.76	70	20	50	9%	53	10%	504	20	4%
2 9_b	TR	0.7	0.00	0.7	IA	IA	36	0	18	1	17	46%	1	4%	35	1	4%
2 10	TR	60.0	1.17	58.9	DA	DA	2,882	56.16	0	0	0	0%	56	2%	2,826	0	0%
2 11	TR	274.7	3.09	271.6	DA	DA	16,759	188.49	0	0	0	0%	188	1%	16,570	0	0%
2 C	TR	64.5	1.18	63.3	DA	DA	1,934	35.4	0	0	0	0%	35	2%	1,899	0	0%
2 D	TR	50.3	2.16	48.1	DA	DA	1,911	82.08	0	0	0	0%	82	4%	1,829	0	0%
2 E_a	3,4,TR	432.6	277.48	155.1	BA	BA	35,473	22753.	5,740	2,172	3,568	10%	24,925	70%	10,548	0	0%
2 E_b	3,4	9.3	0.00	9.3	IA	IA	766	0	411	187	224	29%	187	24%	579	28	4%
2 E_c	3,4	1.0	0.00	1.0	IA	IA	81	0	43	20	24	29%	20	24%	61	3	4%
2 E_d	TR	22.1	0.00	22.1	IA	IA	1,812	0	995	332	663	37%	332	18%	1,481	22	1%
2 F	3,k	19.8	6.97	12.8	BA	DA	1,047	369.41	230	0	230	22%	369	35%	677	0	0%
2 G_a	3,TR	37.9	25.64	12.3	BA	BA	2,731	1846.0	418	98	319	12%	1,944	71%	786	0	0%
2 G_b	3	3.4	0.00	3.4	IA	IA	245	0	122	41	82	33%	41	17%	204	7	3%
2 G_c	TR	3.1	0.00	3.1	IA	IA	221	0	135	25	110	50%	25	11%	196	0	0%
2 H_a	3,TR	96.3	4.28	92.1	DA	DA	3,179	141.24	0	0	0	0%	141	4%	3,038	0	0%
2 H_b	TR	3.5	0.00	3.5	IA	UA	114	0	42	0	42	36%	0	0%	114	0	0%
2 M	v,bb	74.5	17.59	56.9	BA	BA	6,037	1424.7	1,765	797	968	16%	2,222	37%	3,815	797	13%
2 Q	10	185.4	65.13	120.2	BA	BA	13,347	4689.3	2,285	601	1,683	13%	5,291	40%	8,056	0	0%
2 R	11,TR	215.7	0.14	215.6	BA	DA	19,846	12.88	1,509	0	1,509	8%	13	0%	19,833	0	0%
2 T	4,5,TR	90.6	6.53	84.1	BA	DA	4,712	339.56	925	0	925	20%	340	7%	4,373	0	0%
2 U	5,TR	154.3	9.06	145.2	DA	DA	4,783	280.86	0	0	0	0%	281	6%	4,502	0	0%
2 W	TR	9.1	0.20	8.9	DA	DA	648	14.2	0	0	0	0%	14	2%	634	0	0%
3 1_a	12,az,ba,TR	170.9	50.57	120.3	BA	BA	15,041	4450.1	3,610	602	3,009	20%	5,052	34%	9,989	0	0%
3 1_b	12,az,ba,TR	2.7	0.25	2.4	BA	BA	235	22	90	31	58	25%	53	23%	182	2	1%
3 2	TR	349.6	2.75	346.9	DA	DA	31,116	244.75	0	0	0	0%	245	1%	30,871	0	0%
3 3	TR	58.6	0.38	58.2	DA	DA	5,856	38	0	0	0	0%	38	1%	5,818	0	0%
3 4	TR	42.4	1.41	41.0	DA	DA	3,181	105.75	0	0	0	0%	106	3%	3,075	0	0%
3 5	TR	77.3	0.31	76.9	DA	DA	6,644	26.66	0	0	0	0%	27	0%	6,617	0	0%
3 6	TR	74.2	0.14	74.0	DA	DA	6,824	12.88	0	0	0	0%	13	0%	6,811	0	0%
4 A	f	2.0	1.81	0.2	BA	BA	174	159.28	15	15	0	0%	174	100%	0	0	0%
4 B	f,at	40.7	5.32	35.4	BA	DA	3,543	462.84	850	0	850	24%	463	13%	3,080	0	0%
4 C	1,h,av,TR	65.5	10.29	55.3	BA	DA	5,899	926.1	939	0	939	16%	926	16%	4,973	0	0%
4 D_a	1,i,j,w,TR	217.5	35.63	181.9	BA	BA	16,315	2672.2	3,638	1,637	2,001	12%	4,309	26%	12,006	0	0%
4 D_b	1,i/j,w	4.6	0.00	4.6	IA	IA	348	0	125	70	56	16%	70	20%	279	9	3%
4 F	n	7.4	0.00	7.4	IA	UA	390	0	118	0	118	30%	0	0%	390	0	0%
4 G	p	21.2	6.50	14.7	BA	DA	1,440	442	235	0	235	16%	442	31%	998	0	0%
18	w	4.0	2.83	1.2	BA	DA	284	200.93	30	0	30	11%	201	71%	83	0	0%

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TABLE N-5
DIRECT & INDIRECT WETLAND IMPACTS
WATER QUALITY IMPROVEMENT ATTRIBUTE
PREFERRED ALTERNATIVE

(1)	(2)	(3)	(4)	(5) (3) - (4)	(18)	(19)	(20) (6) * (3)	(21) (6) * (4)	(22) [(6)-(9)]*(5)	(23) [(6)-(12)]*(5)	(24) (22) - (23)	(25) (24) / (22)	(26) (21) + (23)	(27) (26) / (20)	(28) (20) - (26)	(29) [(15)-(12)]*(5)	(30) (29) / (28)
							Water Quality Improvement Value (acre-points)										
AANO	Planning Area	Total Acres	Fill Acres	Remain Acres	Impact Type (no mgm	(w/mgmt)	Base-line	Direct Impact	Indirect Impact (no mgmt)	(w/mgmt)	Gain from Management		Total Impact (w/mgmt)		Remaining Value	Gain From On-site Mit.	
19	w,TR	7.8	4.35	3.4	BA	BA	489	274.05	72	3	68	14%	277	57%	211	3	1%
23	j	11.8	11.67	0.1	BA	BA	787	781.89	5	5	0	0%	787	100%	0	0	0%
24	i,j	17.3	17.29	0.0	DA	DA	1,210	1210.3	0	0	0	0%	1,210	100%	0	0	0%
27_a	TR	16.2	2.45	13.7	BA	BA	1,440	218.05	371	14	357	25%	232	16%	1,208	14	1%
27_b	TR	7.8	0.00	7.8	IA	IA	695	0	219	8	211	30%	8	1%	687	8	1%
28	TR	29.5	0.12	29.4	DA	DA	2,568	10.44	0	0	0	0%	10	0%	2,558	0	0%
32	s,TR	10.8	1.36	9.4	BA	DA	624	78.88	113	0	113	18%	79	13%	545	0	0%
33 A	s	13.4	0.00	13.4	IA	UA	978	0	228	0	228	23%	0	0%	978	0	0%
33 B	s	12.0	0.00	12.0	IA	UA	825	0	215	0	215	26%	0	0%	825	0	0%
35	v	4.1	3.99	0.1	BA	BA	239	235.41	4	4	0	0%	239	100%	0	0	0%
37	v	1.2	1.22	0.0	BA	BA	84	82.96	1	1	0	0%	84	100%	0	0	0%
38 A	v	13.3	11.94	1.4	BA	BA	1,041	931.32	49	24	25	2%	955	92%	85	24	2%
39	aa,TR	15.7	12.78	2.9	BA	BA	1,351	1099.0	132	53	79	6%	1,152	85%	199	53	4%
48	6,TR	12.9	4.80	8.1	BA	DA	1,067	398.4	137	0	137	13%	398	37%	668	0	0%
54_a	TR	35.5	2.74	32.7	BA	DA	3,548	274	982	0	982	28%	274	8%	3,274	0	0%
54_b	TR	12.3	0.00	12.3	IA	UA	1,230	0	295	0	295	24%	0	0%	1,230	0	0%
76	TR	1.7	0.15	1.5	BN	BN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
77	TR	10.6	0.21	10.4	BN	BN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
78	TR	4.3	0.62	3.6	BN	BN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
82	TR	6.7	0.64	6.1	DA	DA	482	46.08	0	0	0	0%	46	10%	436	0	0%
87 A	TR	3.8	0.47	3.4	BN	BN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
87 B1	TR	1.6	0.10	1.5	DA	DA	101	6.5	0	0	0	0%	7	6%	95	0	0%
90	TR	5.4	0.80	4.6	DA	DA	351	52	0	0	0	0%	52	15%	299	0	0%
91	TR	2.3	0.88	1.4	DA	DA	132	51.04	0	0	0	0%	51	39%	81	0	0%
92	TR	2.0	0.90	1.1	DA	DA	111	50.4	0	0	0	0%	50	45%	60	0	0%
97_a	TR	9.4	2.32	7.1	BA	DA	746	183.28	171	0	171	23%	183	25%	562	0	0%
97_b	TR	4.3	0.53	3.8	BA	DA	342	41.87	91	0	91	27%	42	12%	300	0	0%
98	TR	4.9	1.35	3.5	DA	DA	262	72.9	0	0	0	0%	73	28%	189	0	0%
99	13,TR	28.0	14.09	13.9	BA	DA	1,707	859.49	334	0	334	20%	859	50%	848	0	0%
100	13,TR	22.1	3.43	18.7	BA	DA	1,614	250.39	318	0	318	20%	250	16%	1,364	0	0%
107	TR	23.2	4.65	18.6	DA	DA	1,557	311.55	0	0	0	0%	312	20%	1,246	0	0%
108	as,aw,TR	117.1	64.89	52.2	BA	DA	9,834	5450.7	1,357	0	1,357	14%	5,451	55%	4,383	0	0%
109	TR	0.9	0.46	0.5	BN	BN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
112	ae/af	12.2	0.00	12.2	IA	UA	842	0	305	0	305	36%	0	0%	842	0	0%
113	ae/af	16.6	0.00	16.6	IA	UA	1,114	0	432	0	432	39%	0	0%	1,114	0	0%
119	TR	2.3	0.07	2.3	BN	BN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
133 B	TR	3.7	0.09	3.6	DA	DA	228	5.49	0	0	0	0%	5	2%	222	0	0%
138	TR	33.2	1.19	32.0	DA	DA	2,293	82.11	0	0	0	0%	82	4%	2,211	0	0%
148	TR	0.9	0.55	0.4	BN	BN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
149	TR	4.5	0.36	4.1	BN	BN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
150 B	TR	18.9	3.72	15.2	BN	BN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
151	TR	1.8	0.18	1.6	BA	BA	110	10.98	26	3	23	21%	14	13%	96	3	3%

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TABLE N-5
DIRECT & INDIRECT WETLAND IMPACTS
WATER QUALITY IMPROVEMENT ATTRIBUTE
PREFERRED ALTERNATIVE

(1)	(2)	(3)	(4)	(5) (3) − (4)	(18)	(19)	(20) (6) * (3)	(21) (6) * (4)	(22) [(6)−(9)]*(5)	(23) [(6)−(12)]*(5)	(24) (22) − (23)	(25) (24) / (22)	(26) (21) + (23)	(27) (26) / (20)	(28) (20) − (26)	(29) [(15)−(12)]*(5)	(30) (29) / (26)
							Water Quality Improvement Value (acre-points)										
AANO	Planning Area	Total Acres	Fill Acres	Remain Acres	Impact Type (no mgm	(w/mgmt)	Base-line	Direct Impact	Indirect Impact (no mgmt)	(w/mgmt)	Gain from Management		Total Impact (w/mgmt)		Remaining Value	Gain From On-site Mit.	
152	TR	2.2	0.41	1.8	BN	BN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
154	TR	3.5	0.66	2.9	BN	BN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
155	TR	2.6	0.39	2.2	BN	BN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
200	TR	9.1	0.94	8.1	DA	DA	508	52.64	0	0	0	0%	53	10%	455	0	0%
201	q	1.9	1.79	0.1	BN	BN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
214	w	4.3	2.85	1.4	BN	BN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
220	ac	3.6	2.93	0.7	BA	DA	156	125.99	14	0	14	9%	126	81%	30	0	0%
221	TR	2.7	0.13	2.6	BN	BN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
224	TR	1.4	0.86	0.5	BN	BN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
226	TR	2.7	0.00	2.7	IN	IN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
304	7	96.6	28.07	68.6	BA	BA	5,315	1543.8	1,440	1,029	411	8%	2,572	48%	2,743	1,029	19%
311	TR	3.1	0.08	3.1	DA	DA	188	4.8	0	0	0	0%	5	3%	183	0	0%
312	TR	71.3	0.33	71.0	DA	DA	4,776	22.11	0	0	0	0%	22	0%	4,754	0	0%
401	1	2.3	2.29	0.0	DN	DN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
421	TR	1.1	0.16	1.0	BN	BN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
422	TR	2.5	0.51	1.9	BN	BN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
502	TR	2.7	0.93	1.8	BN	BN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
505	7	0.5	0.51	0.0	DA	DA	28	27.54	0	0	0	0%	28	100%	0	0	0%
Unimpacted Wetlands		4,272.1	0.0	4,272.1			222,248										
District Total		8,527.3	841.6	7,685.7			521,445	62,237	38,211	10,456	27,754	5.3%	72,693	13.9%	448,752	4,435	0.9%

ACRES OF IMPACT

	District	Direct Impact		Indirect Impact (no mgmt)		(w/mgmt)	
AVID Assessed Wetlands	7,820.2	824.0	10.5%	1,884.3	24.1%	1,156.5	14.8%
Not Assessed by AVID	707.1	17.6	2.5%	60.2	8.5%	60.2	8.5%
Total Wetlands	8,527.3	841.6	9.9%	1,944.5	22.8%	1,216.8	14.3%

Notes

Management includes structural and non-structural controls on stormwater and development, e.g., detention basins, flow spreaders, vegetated gently sloping buffer zones (see Table N-2)

On-site Mitigation consists of replacing lost wetland indicators, where possible (see Table N-3)

For columns (6) through (17) (attribute scores), see Table N-4.

Impact type:
- DA = Direct impact only and Assessed by AVID;
- IA = Indirect only and Assessed;
- BA = Both direct and indirect and Assessed;
- UA = Unimpacted and Assessed;
- DN = Direct only and Not assessed by AVID;
- IN = Indirect only and Not assessed;
- BN = Not assessed and Both

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TABLE N-6
DIRECT & INDIRECT WETLAND IMPACTS
WILDLIFE HABITAT ATTRIBUTE
PREFERRED ALTERNATIVE

(1)	(2)	(3)	(4)	(5) (3) − (4)	(31)	(32)	(33) (7) * (3)	(34) (7) * (4)	(35) [(7)−(10)]*(5)	(36) [(7)−(13)]*(5)	(37) (35) − (36)	(38) (37) / (35)	(39) (34) + (36)	(40) (39) / (33)	(41) (33) − (39)	(42) [(16)−(13)]*(5)	(43) (42) / (39)
							Wildlife Habitat Value (acre−points)										
AANO	Planning Area	Total Acres	Fill Acres	Remain Acres	Impact Type (no mgm	(w/mgmt)	Base−line	Direct Impact	Indirect Impact (no mgmt)	(w/mgmt)	Gain from Management		Total Impact (w/mgmt)		Remaining Value	Gain From On−site Mit.	
2 2	7	97.2	12.20	85.0	DA	DA	8,259	1,037	0	0	0	0%	1,037	13%	7,222	0	0%
2 3	7,x	180.1	50.17	129.9	BA	BA	18,010	5,017	1,949	650	1,299	7%	5,667	31%	12,343	650	4%
2 4A	7,TR	19.0	17.64	1.3	BA	BA	1,480	1,376	24	21	3	0%	1,397	94%	82	11	1%
2 6_a	TR	222.4	0.94	221.4	BA	BA	15,342	65	2,436	1,107	1,328	9%	1,172	8%	14,170	443	3%
2 6_b	TR	0.5	0.00	0.5	IA	IA	33	0	33	33	0	0%	33	100%	0	0	0%
2 9_a	TR	10.7	0.63	10.1	BA	BA	535	32	40	30	10	2%	62	12%	473	10	2%
2 9_b	TR	0.7	0.00	0.7	IA	IA	35	0	27	2	25	72%	2	6%	33	1	2%
2 10	TR	60.0	1.17	58.9	DA	DA	3,843	75	0	0	0	0%	75	2%	3,768	0	0%
2 11	TR	274.7	3.09	271.6	DA	DA	21,429	241	0	0	0	0%	241	1%	21,188	0	0%
2 C	TR	64.5	1.18	63.3	DA	DA	3,611	66	0	0	0	0%	66	2%	3,545	0	0%
2 D	TR	50.3	2.16	48.1	DA	DA	2,716	117	0	0	0	0%	117	4%	2,599	0	0%
2 E_a	3,4,TR	432.6	277.48	155.1	BA	BA	30,715	19,701	2,482	1,551	931	3%	21,252	69%	9,463	0	0%
2 E_b	3,4	9.3	0.00	9.3	IA	IA	663	0	420	308	112	17%	308	46%	355	103	15%
2 E_c	3,4	1.0	0.00	1.0	IA	IA	70	0	46	35	11	15%	35	51%	34	10	14%
2 E_d	TR	22.1	0.00	22.1	IA	IA	1,569	0	906	287	619	39%	287	18%	1,282	66	4%
2 F	3,k	19.8	6.97	12.8	BA	DA	810	286	13	0	13	2%	286	35%	524	0	0%
2 G_a	3,TR	37.9	25.64	12.3	BA	BA	2,086	1,410	111	37	74	4%	1,447	69%	639	0	0%
2 G_b	3	3.4	0.00	3.4	IA	IA	187	0	126	88	37	20%	88	47%	99	20	11%
2 G_c	TR	3.1	0.00	3.1	IA	IA	169	0	126	9	117	69%	9	5%	159	0	0%
2 H_a	3,TR	96.3	4.28	92.1	DA	DA	5,299	235	0	0	0	0%	235	4%	5,063	0	0%
2 H_b	TR	3.5	0.00	3.5	IA	UA	190	0	156	0	156	82%	0	0%	190	0	0%
2 M	v,bb	74.5	17.59	56.9	BA	BA	5,739	1,354	569	171	399	7%	1,525	27%	4,214	171	3%
2 Q	10	185.4	65.13	120.2	BA	DA	11,122	3,908	842	0	842	8%	3,908	35%	7,214	0	0%
2 R	11,TR	215.7	0.14	215.6	BA	DA	16,826	11	431	0	431	3%	11	0%	16,815	0	0%
2 T	4,5,TR	90.6	6.53	84.1	BA	DA	3,262	235	336	0	336	10%	235	7%	3,027	0	0%
2 U	5,TR	154.3	9.06	145.2	DA	DA	9,103	535	0	0	0	0%	535	6%	8,569	0	0%
2 W	TR	9.1	0.20	8.9	DA	DA	511	11	0	0	0	0%	11	2%	500	0	0%
3 1_a	12,az,ba,TR	170.9	50.57	120.3	BA	DA	11,110	3,287	963	0	963	9%	3,287	30%	7,823	0	0%
3 1_b	12,az,ba,TR	2.7	0.25	2.4	BA	BA	174	16	121	94	27	15%	111	64%	63	46	26%
3 2	TR	349.6	2.75	346.9	DA	DA	29,368	231	0	0	0	0%	231	1%	29,137	0	0%
3 3	TR	58.6	0.38	58.2	DA	DA	4,978	32	0	0	0	0%	32	1%	4,945	0	0%
3 4	TR	42.4	1.41	41.0	DA	DA	2,333	78	0	0	0	0%	78	3%	2,255	0	0%
3 5	TR	77.3	0.31	76.9	DA	DA	6,180	25	0	0	0	0%	25	0%	6,155	0	0%
3 6	TR	74.2	0.14	74.0	DA	DA	5,934	11	0	0	0	0%	11	0%	5,922	0	0%
4 A	f	2.0	1.81	0.2	BA	BA	75	69	6	6	0	0%	75	100%	0	0	0%
4 B	f,at	40.7	5.32	35.4	BA	DA	2,891	378	248	0	248	9%	378	13%	2,513	0	0%
4 C	1,h,av,TR	65.5	10.29	55.3	BA	DA	4,850	761	387	0	387	8%	761	16%	4,089	0	0%
4 D_a	1,i,j,w,TR	217.5	35.63	181.9	BA	BA	19,361	3,171	2,910	1,637	1,273	7%	4,808	25%	14,552	0	0%
4 D_b	1,i/j,w	4.6	0.00	4.6	IA	IA	413	0	279	223	56	13%	223	54%	190	46	11%
4 F	n	7.4	0.00	7.4	IA	IA	449	0	59	15	44	10%	15	3%	434	0	0%
4 G	p	21.2	6.50	14.7	BA	DA	1,059	325	73	0	73	7%	325	31%	734	0	0%
18	w	4.0	2.83	1.2	BA	BA	224	158	11	2	8	4%	161	72%	63	0	0%

TABLE N-6
DIRECT & INDIRECT WETLAND IMPACTS
WILDLIFE HABITAT ATTRIBUTE
PREFERRED ALTERNATIVE

(1)	(2)	(3)	(4)	(5) (3) - (4)	(31)	(32)	(33) (7) * (3)	(34) (7) * (4)	(35) [(7)-(10)]*(5)	(36) [(7)-(13)]*(5)	(37) (35) - (36)	(38) (37) / (35)	(39) (34) + (36)	(40) (39) / (33)	(41) (33) - (39)	(42) [(16)-(13)]*(5)	(43) (42) / (39)
							Wildlife Habitat Value (acre-points)										
AANO	Planning Area	Total Acres	Fill Acres	Remain Acres	Impact Type (no mgm	(w/mgmt)	Base-line	Direct Impact	Indirect Impact (no mgmt)	(w/mgmt)	Gain from Management		Total Impact (w/mgmt)		Remaining Value	Gain From On-site Mit.	
19	w,TR	7.8	4.35	3.4	BA	BA	458	257	44	20	24	5%	277	61%	181	0	0%
23	j	11.8	11.67	0.1	BA	BA	717	712	5	5	0	0%	717	100%	0	0	0%
24	i,j	17.3	17.29	0.0	DA	DA	1,089	1,089	0	0	0	0%	1,089	100%	0	0	0%
27_a	TR	16.2	2.45	13.7	BA	BA	1,003	152	124	14	110	11%	166	17%	838	14	1%
27_b	TR	7.8	0.00	7.8	IA	IA	484	0	328	8	320	66%	8	2%	476	8	2%
28	TR	29.5	0.12	29.4	DA	DA	1,624	7	0	0	0	0%	7	0%	1,617	0	0%
32	s,TR	10.8	1.36	9.4	BA	DA	763	97	56	0	56	7%	97	13%	667	0	0%
33 A	s	13.4	0.00	13.4	IA	UA	911	0	107	0	107	12%	0	0%	911	0	0%
33 B	s	12.0	0.00	12.0	IA	IA	837	0	120	24	96	11%	24	3%	813	0	0%
35	v	4.1	3.99	0.1	BA	BA	170	168	3	3	0	0%	170	100%	0	0	0%
37	v	1.2	1.22	0.0	BA	BA	41	40	0	0	0	0%	41	100%	0	0	0%
38 A	v	13.3	11.94	1.4	BA	BA	920	824	53	36	17	2%	860	93%	60	11	1%
39	aa,TR	15.7	12.78	2.9	BA	BA	1,053	856	161	123	38	4%	979	93%	73	41	4%
48	6,TR	12.9	4.80	8.1	BA	BA	694	259	72	32	40	6%	291	42%	403	0	0%
54_a	TR	35.5	2.74	32.7	BA	DA	2,484	192	786	0	786	32%	192	8%	2,292	0	0%
54_b	TR	12.3	0.00	12.3	IA	UA	861	0	148	0	148	17%	0	0%	861	0	0%
76	TR	1.7	0.15	1.5	BN	BN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
77	TR	10.6	0.21	10.4	BN	BN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
78	TR	4.3	0.62	3.6	BN	BN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
82	TR	6.7	0.64	6.1	DA	DA	355	34	0	0	0	0%	34	10%	321	0	0%
87 A	TR	3.8	0.47	3.4	BN	BN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
87 B1	TR	1.6	0.10	1.5	DA	DA	61	4	0	0	0	0%	4	6%	57	0	0%
90	TR	5.4	0.80	4.6	DA	DA	286	42	0	0	0	0%	42	15%	244	0	0%
91	TR	2.3	0.88	1.4	DA	DA	75	29	0	0	0	0%	29	39%	46	0	0%
92	TR	2.0	0.90	1.1	DA	DA	38	17	0	0	0	0%	17	45%	21	0	0%
97_a	TR	9.4	2.32	7.1	BA	DA	396	97	36	0	36	9%	97	25%	299	0	0%
97_b	TR	4.3	0.53	3.8	BA	DA	182	22	30	0	30	17%	22	12%	160	0	0%
98	TR	4.9	1.35	3.5	DA	DA	49	14	0	0	0	0%	14	28%	35	0	0%
99	13,TR	28.0	14.09	13.9	BA	BA	1,511	761	153	83	69	5%	844	56%	667	0	0%
100	13,TR	22.1	3.43	18.7	BA	DA	1,260	196	93	0	93	7%	196	16%	1,065	0	0%
107	TR	23.2	4.65	18.6	DA	DA	930	186	0	0	0	0%	186	20%	744	0	0%
108	as,aw,TR	117.1	64.89	52.2	BA	DA	6,907	3,829	470	0	470	7%	3,829	55%	3,079	0	0%
109	TR	0.9	0.46	0.5	BN	BN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
112	ae/af	12.2	0.00	12.2	IA	IA	684	0	98	12	85	13%	12	2%	672	0	0%
113	ae/af	16.6	0.00	16.6	IA	IA	998	0	200	33	166	17%	33	3%	965	0	0%
119	TR	2.3	0.07	2.3	BN	BN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
133 B	TR	3.7	0.09	3.6	DA	DA	108	3	0	0	0	0%	3	2%	106	0	0%
138	TR	33.2	1.19	32.0	DA	DA	1,595	57	0	0	0	0%	57	4%	1,538	0	0%
148	TR	0.9	0.55	0.4	BN	BN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
149	TR	4.5	0.36	4.1	BN	BN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
150 B	TR	18.9	3.72	15.2	BN	BN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
151	TR	1.8	0.18	1.6	BA	BA	81	8	29	3	26	32%	11	14%	70	3	4%

TABLE N-6
DIRECT & INDIRECT WETLAND IMPACTS
WILDLIFE HABITAT ATTRIBUTE
PREFERRED ALTERNATIVE

(1)	(2)	(3)	(4)	(5) (3) − (4)	(31)	(32)	(33) (7) * (3)	(34) (7) * (4)	(35) [(7)−(10)]*(5)	(36) [(7)−(13)]*(5)	(37) (35) − (36)	(38) (37) / (33)	(39) (34) + (36)	(40) (39) / (33)	(41) (33) − (39)	(42) [(16)−(13)]*(5)	(43) (42) / (33)
							Wildlife Habitat Value (acre−points)										
AANO	Planning Area	Total Acres	Fill Acres	Remain Acres	Impact Type (no mgm	(w/mgmt)	Base−line	Direct Impact	Indirect Impact (no mgmt)	(w/mgmt)	Gain from Management		Total Impact (w/mgmt)		Remaining Value	Gain From On−site Mit.	
152	TR	2.2	0.41	1.8	BN	BN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
154	TR	3.5	0.66	2.9	BN	BN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
155	TR	2.6	0.39	2.2	BN	BN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
200	TR	9.1	0.94	8.1	DA	DA	118	12	0	0	0	0%	12	10%	106	0	0%
201	q	1.9	1.79	0.1	BN	BN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
214	w	4.3	2.85	1.4	BN	BN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
220	ac	3.6	2.93	0.7	BA	BA	69	56	4	2	2	3%	58	84%	11	1	2%
221	TR	2.7	0.13	2.6	BN	BN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
224	TR	1.4	0.86	0.5	BN	BN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
226	TR	2.7	0.00	2.7	IN	IN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
304	7	96.6	28.07	68.6	BA	BA	8,408	2,442	480	343	137	2%	2,785	33%	5,623	343	4%
311	TR	3.1	0.08	3.1	DA	DA	113	3	0	0	0	0%	3	3%	110	0	0%
312	TR	71.3	0.33	71.0	DA	DA	3,137	15	0	0	0	0%	15	0%	3,122	0	0%
401	1	2.3	2.29	0.0	DN	DN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
421	TR	1.1	0.16	1.0	BN	BN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
422	TR	2.5	0.51	1.9	BN	BN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
502	TR	2.7	0.93	1.8	BN	BN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
505	7	0.5	0.51	0.0	DA	DA	21	21	0	0	0	0%	21	100%	0	0	0%
Unimpacted Wetlands		4,272.1	0.0	4,272.1			298,109										
District Total		8,527.3	841.6	7,685.7			592,609	56,753	19,729	7,051	12,678	2.1%	63,804	10.8%	528,805	1,998	0.3%

ACRES OF IMPACT

	District	Direct Impact		Indirect Impact (no mgmt)		(w/mgmt)	
AVID Assessed Wetlands	7,820.2	824.0	10.5%	1,799.3	23.0%	987.9	12.6%
Not Assessed by AVID	707.1	17.6	2.5%	60.2	8.5%	60.2	8.5%
Total Wetlands	8,527.3	841.6	9.9%	1,859.6	21.8%	1,048.1	12.3%

Notes

Management includes structural and non−structural controls on stormwater and development, e.g., detention basins, flow spreaders, vegetated gently sloping buffer zones (see Table N−2)

On−site Mitigation consists of replacing lost wetland indicators, where possible (see Table N−3)

For columns (6) through (17) (attribute scores), see Table N−4.

Impact type:
- DA = Direct impact only and Assessed by AVID;
- IA = Indirect only and Assessed;
- BA = Both direct and indirect and Assessed;
- UA = Unimpacted and Assessed;
- DN = Direct only and Not assessed by AVID;
- IN = Indirect only and Not assessed;
- BN = Not assessed and Both

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TABLE N-7
DIRECT & INDIRECT WETLAND IMPACTS
SOCIAL SIGNIFICANCE ATTRIBUTE
PREFERRED ALTERNATIVE

(1)	(2)	(3)	(4)	(5)	(44)	(45)	(46)	(47)	(48)	(49)	(50)	(51)	(52)	(53)	(54)	(55)	(56)
				(3) - (4)			(8) * (3)	(8) * (4)	[(8)-(11)]*(5)	[(8)-(14)]*(5)	(48) - (49)	(50) / (48)	(47) + (49)	(52) / (46)	(36) - (52)	[(17)-(14)]*(5)	(55) / (52)
							Social Significance Value (acre-points)										
AANO	Planning Area	Total Acres	Fill Acres	Remain Acres	Impact Type (no mgm	(w/mgmt)	Base-line	Direct Impact	Indirect Impact (no mgmt)	(w/mgmt)	Gain from Management		Total Impact (w/mgmt)		Remaining Value	Gain From On-site Mit.	
2 2	7	97.2	12.20	85.0	DA	DA	1,166	146	0	0	0	0%	146	13%	1,020	0	0%
2 3	7,x	180.1	50.17	129.9	BA	BA	13,688	3,813	6,497	6,497	0	0%	10,309	75%	3,378	6,497	47%
2 4A	7,TR	19.0	17.64	1.3	DA	DA	228	212	0	0	0	0%	212	93%	16	0	0%
2 6_a	TR	222.4	0.94	221.4	BA	DA	10,673	45	3,543	0	3,543	33%	45	0%	10,628	0	0%
2 6_b	TR	0.5	0.00	0.5	IA	IA	23	0	23	23	0	0%	23	100%	0	0	0%
2 9_a	TR	10.7	0.63	10.1	DA	DA	182	11	0	0	0	0%	11	6%	171	0	0%
2 9_b	TR	0.7	0.00	0.7	UA	UA	12	0	0	0	0	0%	0	0%	12	0	0%
2 10	TR	60.0	1.17	58.9	DA	DA	1,981	39	0	0	0	0%	39	2%	1,943	0	0%
2 11	TR	274.7	3.09	271.6	DA	DA	8,791	99	0	0	0	0%	99	1%	8,692	0	0%
2 C	TR	64.5	1.18	63.3	DA	DA	1,805	33	0	0	0	0%	33	2%	1,772	0	0%
2 D	TR	50.3	2.16	48.1	DA	DA	603	26	0	0	0	0%	26	4%	578	0	0%
2 E_a	3,4,TR	432.6	277.48	155.1	DA	DA	10,382	6,660	0	0	0	0%	6,660	64%	3,723	0	0%
2 E_b	3,4	9.3	0.00	9.3	UA	UA	224	0	0	0	0	0%	0	0%	224	0	0%
2 E_c	3,4	1.0	0.00	1.0	UA	UA	24	0	0	0	0	0%	0	0%	24	0	0%
2 E_d	TR	22.1	0.00	22.1	UA	UA	530	0	0	0	0	0%	0	0%	530	0	0%
2 F	3,k	19.8	6.97	12.8	DA	DA	79	28	0	0	0	0%	28	35%	51	0	0%
2 G_a	3,TR	37.9	25.64	12.3	DA	DA	759	513	0	0	0	0%	513	68%	246	0	0%
2 G_b	3	3.4	0.00	3.4	UA	UA	68	0	0	0	0	0%	0	0%	68	0	0%
2 G_c	TR	3.1	0.00	3.1	UA	UA	61	0	0	0	0	0%	0	0%	61	0	0%
2 H_a	3,TR	96.3	4.28	92.1	DA	DA	1,156	51	0	0	0	0%	51	4%	1,105	0	0%
2 H_b	TR	3.5	0.00	3.5	UA	UA	42	0	0	0	0	0%	0	0%	42	0	0%
2 M	v,bb	74.5	17.59	56.9	BA	BA	1,342	317	57	57	0	0%	374	28%	968	0	0%
2 Q	10	185.4	65.13	120.2	BA	BA	12,234	4,299	361	361	0	0%	4,659	38%	7,575	0	0%
2 R	11,TR	215.7	0.14	215.6	BA	DA	10,786	7	10,779	0	10,779	100%	7	0%	10,779	0	0%
2 T	4,5,TR	90.6	6.53	84.1	DA	DA	1,541	111	0	0	0	0%	111	7%	1,430	0	0%
2 U	5,TR	154.3	9.06	145.2	DA	DA	7,406	435	0	0	0	0%	435	6%	6,971	0	0%
2 W	TR	9.1	0.20	8.9	DA	DA	0	0	0	0	0	0%	0	0%	0	0	0%
3 1_a	12,az,ba,TR	170.9	50.57	120.3	DA	DA	5,640	1,669	0	0	0	0%	1,669	30%	3,972	0	0%
3 1_b	12,az,ba,TR	2.7	0.25	2.4	DA	DA	88	8	0	0	0	0%	8	9%	80	0	0%
3 2	TR	349.6	2.75	346.9	DA	DA	34,962	275	0	0	0	0%	275	1%	34,687	0	0%
3 3	TR	58.6	0.38	58.2	DA	DA	5,388	35	0	0	0	0%	35	1%	5,353	0	0%
3 4	TR	42.4	1.41	41.0	DA	DA	339	11	0	0	0	0%	11	3%	328	0	0%
3 5	TR	77.3	0.31	76.9	DA	DA	6,953	28	0	0	0	0%	28	0%	6,925	0	0%
3 6	TR	74.2	0.14	74.0	DA	DA	6,675	13	0	0	0	0%	13	0%	6,663	0	0%
4 A	f	2.0	1.81	0.2	BA	BA	2	2	0	0	0	0%	2	100%	0	0	0%
4 B	f,at	40.7	5.32	35.4	BA	BA	41	5	35	35	0	0%	41	100%	0	0	0%
4 C	1,h,av,TR	65.5	10.29	55.3	BA	DA	3,408	535	2,707	0	2,707	79%	535	16%	2,873	0	0%
4 D_a	1,i,j,w,TR	217.5	35.63	181.9	BA	BA	15,010	2,458	9,095	9,095	0	0%	11,554	77%	3,456	0	0%
4 D_b	1,i/j,w	4.6	0.00	4.6	IA	IA	321	0	242	242	0	0%	242	75%	79	0	0%
4 F	n	7.4	0.00	7.4	UA	UA	0	0	0	0	0	0%	0	0%	0	0	0%
4 G	p	21.2	6.50	14.7	DA	DA	360	111	0	0	0	0%	111	31%	250	0	0%
18	w	4.0	2.83	1.2	DA	DA	0	0	0	0	0	0%	0	0%	0	0	0%

TABLE N-7
DIRECT & INDIRECT WETLAND IMPACTS
SOCIAL SIGNIFICANCE ATTRIBUTE
PREFERRED ALTERNATIVE

(1)	(2)	(3)	(4)	(5) (3) - (4)	(44)	(45)	(46) (6) * (3)	(47) (6) * (4)	(48) [(6)-(11)]*(5)	(49) [(6)-(14)]*(5)	(50) (48) - (49)	(51) (50) / (48)	(52) (47) + (49)	(53) (52) / (46)	(54) (36) - (52)	(55) [(17)-(14)]*(5)	(56) (55) / (52)
							Social Significance Value (acre-points)										
AANO	Planning Area	Total Acres	Fill Acres	Remain Acres	Impact Type (no mgm	(w/mgmt)	Base-line	Direct Impact	Indirect Impact (no mgmt)	(w/mgmt)	Gain from Management		Total Impact (w/mgmt)		Remaining Value	Gain From On-site Mit.	
19	w,TR	7.8	4.35	3.4	DA	DA	0	0	0	0	0	0%	0	0%	0	0	0%
23	j	11.8	11.67	0.1	DA	DA	0	0	0	0	0	0%	0	0%	0	0	0%
24	i,j	17.3	17.29	0.0	DA	DA	0	0	0	0	0	0%	0	0%	0	0	0%
27_a	TR	16.2	2.45	13.7	DA	DA	0	0	0	0	0	0%	0	0%	0	0	0%
27_b	TR	7.8	0.00	7.8	UA	UA	0	0	0	0	0	0%	0	0%	0	0	0%
28	TR	29.5	0.12	29.4	DA	DA	0	0	0	0	0	0%	0	0%	0	0	0%
32	s,TR	10.8	1.36	9.4	DA	DA	0	0	0	0	0	0%	0	0%	0	0	0%
33 A	s	13.4	0.00	13.4	UA	UA	0	0	0	0	0	0%	0	0%	0	0	0%
33 B	s	12.0	0.00	12.0	UA	UA	0	0	0	0	0	0%	0	0%	0	0	0%
35	v	4.1	3.99	0.1	DA	DA	0	0	0	0	0	0%	0	0%	0	0	0%
37	v	1.2	1.22	0.0	DA	DA	0	0	0	0	0	0%	0	0%	0	0	0%
38 A	v	13.3	11.94	1.4	DA	DA	227	203	0	0	0	0%	203	90%	24	0	0%
39	aa,TR	15.7	12.78	2.9	DA	DA	0	0	0	0	0	0%	0	0%	0	0	0%
48	6,TR	12.9	4.80	8.1	DA	DA	0	0	0	0	0	0%	0	0%	0	0	0%
54_a	TR	35.5	2.74	32.7	BA	DA	1,774	137	1,637	0	1,637	92%	137	8%	1,637	0	0%
54_b	TR	12.3	0.00	12.3	IA	UA	615	0	615	0	615	100%	0	0%	615	0	0%
76	TR	1.7	0.15	1.5	BN	BN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
77	TR	10.6	0.21	10.4	BN	BN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
78	TR	4.3	0.62	3.6	BN	BN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
82	TR	6.7	0.64	6.1	DA	DA	0	0	0	0	0	0%	0	0%	0	0	0%
87 A	TR	3.8	0.47	3.4	BN	BN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
87 B1	TR	1.6	0.10	1.5	DA	DA	27	2	0	0	0	0%	2	6%	25	0	0%
90	TR	5.4	0.80	4.6	DA	DA	0	0	0	0	0	0%	0	0%	0	0	0%
91	TR	2.3	0.88	1.4	DA	DA	0	0	0	0	0	0%	0	0%	0	0	0%
92	TR	2.0	0.90	1.1	DA	DA	0	0	0	0	0	0%	0	0%	0	0	0%
97_a	TR	9.4	2.32	7.1	DA	DA	472	116	0	0	0	0%	116	25%	356	0	0%
97_b	TR	4.3	0.53	3.8	DA	DA	217	27	0	0	0	0%	27	12%	190	0	0%
98	TR	4.9	1.35	3.5	DA	DA	160	45	0	0	0	0%	45	28%	116	0	0%
99	13,TR	28.0	14.09	13.9	DA	DA	952	479	0	0	0	0%	479	50%	473	0	0%
100	13,TR	22.1	3.43	18.7	DA	DA	376	58	0	0	0	0%	58	16%	318	0	0%
107	TR	23.2	4.65	18.6	DA	DA	767	153	0	0	0	0%	153	20%	613	0	0%
108	as,aw,TR	117.1	64.89	52.2	BA	BA	4,215	2,336	157	157	0	0%	2,493	59%	1,722	0	0%
109	TR	0.9	0.46	0.5	BN	BN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
112	ae/af	12.2	0.00	12.2	UA	UA	403	0	0	0	0	0%	0	0%	403	0	0%
113	ae/af	16.6	0.00	16.6	UA	UA	283	0	0	0	0	0%	0	0%	283	0	0%
119	TR	2.3	0.07	2.3	BN	BN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
133 B	TR	3.7	0.09	3.6	DA	DA	63	2	0	0	0	0%	2	2%	62	0	0%
138	TR	33.2	1.19	32.0	DA	DA	0	0	0	0	0	0%	0	0%	0	0	0%
148	TR	0.9	0.55	0.4	BN	BN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
149	TR	4.5	0.36	4.1	BN	BN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
150 B	TR	18.9	3.72	15.2	BN	BN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
151	TR	1.8	0.18	1.6	DA	DA	91	9	0	0	0	0%	9	10%	82	0	0%

TABLE N-7
DIRECT & INDIRECT WETLAND IMPACTS
SOCIAL SIGNIFICANCE ATTRIBUTE
PREFERRED ALTERNATIVE

(1)	(2)	(3)	(4)	(5) (3) − (4)	(44)	(45)	(46) (6) * (3)	(47) (6) * (4)	(48) [(6) − (11)] * (5)	(49) [(6) − (14)] * (5)	(50) (48) − (49)	(51) (50) / (46)	(52) (47) + (49)	(53) (52) / (46)	(54) (46) − (52)	(55) [(17) − (14)] * (5)	(56) (55) / (46)
							Social Significance Value (acre-points)										
AANO	Planning Area	Total Acres	Fill Acres	Remain Acres	Impact Type (no mgm	(w/mgmt)	Base-line	Direct Impact	Indirect Impact (no mgmt)	(w/mgmt)	Gain from Management		Total Impact (w/mgmt)		Remaining Value	Gain From On-site Mit.	
152	TR	2.2	0.41	1.8	BN	BN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
154	TR	3.5	0.66	2.9	BN	BN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
155	TR	2.6	0.39	2.2	BN	BN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
200	TR	9.1	0.94	8.1	DA	DA	0	0	0	0	0	0%	0	0%	0	0	0%
201	q	1.9	1.79	0.1	BN	BN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
214	w	4.3	2.85	1.4	BN	BN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
220	ac	3.6	2.93	0.7	DA	DA	0	0	0	0	0	0%	0	0%	0	0	0%
221	TR	2.7	0.13	2.6	BN	BN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
224	TR	1.4	0.86	0.5	BN	BN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
226	TR	2.7	0.00	2.7	IN	IN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
304	7	96.6	28.07	68.6	DA	DA	1,160	337	0	0	0	0%	337	29%	823	0	0%
311	TR	3.1	0.08	3.1	DA	DA	53	1	0	0	0	0%	1	3%	52	0	0%
312	TR	71.3	0.33	71.0	DA	DA	1,141	5	0	0	0	0%	5	0%	1,135	0	0%
401	1	2.3	2.29	0.0	DN	DN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
421	TR	1.1	0.16	1.0	BN	BN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
422	TR	2.5	0.51	1.9	BN	BN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
502	TR	2.7	0.93	1.8	BN	BN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
505	7	0.5	0.51	0.0	DA	DA	0	0	0	0	0	0%	0	0%	0	0	0%
Unimpacted Wetlands		4,272.1	0.0	4,272.1			131,557										
District Total		8,527.3	841.6	7,685.7			309,522	25,903	35,747	16,466	19,281	6.2%	42,369	13.7%	267,153	6,497	2.1%

ACRES OF IMPACT

	District	Direct Impact		Indirect Impact (no mgmt)		(w/mgmt)	
AVID Assessed Wetlands	7,820.2	824.0	10.5%	1,119.2	14.3%	581.9	7.4%
Not Assessed by AVID	707.1	17.6	2.5%	60.2	8.5%	60.2	8.5%
Total Wetlands	8,527.3	841.6	9.9%	1,179.4	13.8%	642.1	7.5%

Notes

Management includes structural and non-structural controls on stormwater and development, e.g., detention basins, flow spreaders, vegetated gently sloping buffer zones (see Table N-2)

On-site Mitigation consists of replacing lost wetland indicators, where possible (see Table N-3)

For columns (6) through (17) (attribute scores), see Table N-4.

Impact type:
- DA = Direct impact only and Assessed by AVID;
- IA = Indirect only and Assessed;
- BA = Both direct and indirect and Assessed;
- UA = Unimpacted and Assessed;
- DN = Direct only and Not assessed by AVID;
- IN = Indirect only and Not assessed;
- BN = Not assessed and Both

wetimpp3.wk1

Attachment N-1a

Indirect Impacts from Upland Alternative
01/21/92

108
Q25_2_A (Primary source of sediment = sheetflow?) was changed from Y to N
Q25_2_B (Primary source of sediment = channel flow?) was changed from N to Y
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N
112
Q25_2_A (Primary source of sediment = sheetflow?) was changed from Y to N
Q25_2_B (Primary source of sediment = channel flow?) was changed from N to Y
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N
113
Q25_2_A (Primary source of sediment = sheetflow?) was changed from Y to N
Q25_2_B (Primary source of sediment = channel flow?) was changed from N to Y
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N
2 3
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N
2 4
Q25_2_B (Primary source of sediment = channel flow?) was changed from N to Y
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N
2 8
Q29_2 (Buffer zone slopes < 5%?) was changed from Y to N
2 R
Q25_2_A (Primary source of sediment = sheetflow?) was changed from Y to N
Q25_2_B (Primary source of sediment = channel flow?) was changed from N to Y
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N
2 U
Q29_2 (Buffer zone slopes < 5%?) was changed from Y to N
2 W
Q25_2_B (Primary source of sediment = channel flow?) was changed from N to Y
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N
208
Q25_2_B (Primary source of sediment = channel flow?) was changed from N to Y
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N
24
Q25_2_A (Primary source of sediment = sheetflow?) was changed from Y to N
Q25_2_B (Primary source of sediment = channel flow?) was changed from N to Y
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N
301
Q25_2_A (Primary source of sediment = sheetflow?) was changed from Y to N
Q25_2_B (Primary source of sediment = channel flow?) was changed from N to Y
33 A
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N
33 B
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N
4 D
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N
4 E
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N
4 F
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N
48
Q8_1 (Permanent inlet?) was changed from Y to N
Q25_2_B (Primary source of sediment = channel flow?) was changed from N to Y
Q29_2 (Buffer zone slopes < 5%?) was changed from Y to N
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N

Attachment N-1b

Indirect Impacts from Redevelopment Alternative
01/09/92

18
Q25_2_A (Primary source of sediment = sheetflow?) was changed from Y to N
Q25_2_B (Primary source of sediment = channel flow?) was changed from N to Y
Q26_2 (Primary source of nutrients = sheetflow?) was changed from Y to N
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to N

19
Q25_2_A (Primary source of sediment = sheetflow?) was changed from Y to N
Q25_2_B (Primary source of sediment = channel flow?) was changed from N to Y
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to N
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N

2 M
I24 (Research resource?) was changed from Y to N
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to N
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N

225
Q16_A (Vegetation class = solid) was changed from N to Y
Q16_B (Vegetation class = intermediate) was changed from Y to N
Q19_1_A (Wind shelter?) was changed from Y to N
Q19_3 (Upland habitat wind shelter?) was changed from Y to N
Q25_2_A (Primary source of sediment = sheetflow?) was changed from Y to N
Q25_2_B (Primary source of sediment = channel flow?) was changed from N to Y
Q26_2 (Primary source of nutrients = sheetflow?) was changed from Y to N
Q26_3 (Primary source of nutrients = channel flow?) was changed from N to Y
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to N
Q27_3 (Primary source of toxics = channel flow?) was changed from N to Y
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N
Q50 (Plants: waterfowl value?) was changed from Y to N

24
Q25_2_A (Primary source of sediment = sheetflow?) was changed from Y to N
Q25_2_B (Primary source of sediment = channel flow?) was changed from N to Y
Q26_2 (Primary source of nutrients = sheetflow?) was changed from Y to N
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to N
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N

3 1
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N

3 2
Q25_2_A (Primary source of sediment = sheetflow?) was changed from Y to N
Q25_2_B (Primary source of sediment = channel flow?) was changed from N to Y
Q26_2 (Primary source of nutrients = sheetflow?) was changed from Y to N
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to N
Q29_1 (Dense understory edge?) was changed from Y to N
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N

33 B
Q26_2 (Primary source of nutrients = sheetflow?) was changed from Y to N
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to N

38 A
Q29_1 (Dense understory edge?) was changed from Y to N

4 C
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N

4 D
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N

4 E
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N

Attachment N-1c

Indirect Impacts from Highway Corridors Alternative
01/05/92

108
Q25_2_A (Primary source of sediment = sheetflow?) was changed from Y to N
Q25_2_B (Primary source of sediment = channel flow?) was changed from N to Y
Q26_2 (Primary source of nutrients = sheetflow?) was changed from Y to N
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to N
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N
113
Q19_1_A (Wind shelter?) was changed from Y to N
Q25_2_A (Primary source of sediment = sheetflow?) was changed from Y to N
Q25_2_B (Primary source of sediment = channel flow?) was changed from N to Y
Q26_2 (Primary source of nutrients = sheetflow?) was changed from Y to N
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to N
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N
19
Q25_2_A (Primary source of sediment = sheetflow?) was changed from Y to N
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N
2 2
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N
2 3
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N
2 T
Q16_A (Vegetation class = solid) was changed from N to Y
Q16_B (Vegetation class = intermediate) was changed from Y to N
Q19_3 (Upland habitat wind shelter?) was changed from Y to N
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to N
Q27_3 (Primary source of toxics = channel flow?) was changed from N to Y
Q29_2 (Buffer zone slopes < 5%?) was changed from Y to N
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N
2 V
Q5_1_2 (AA > 20% of watershed?) was changed from Y to N
Q19_1_A (Wind shelter?) was changed from Y to N
Q25_2_B (Primary source of sediment = channel flow?) was changed from N to Y
Q26_2 (Primary source of nutrients = sheetflow?) was changed from Y to N
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to N
Q27_3 (Primary source of toxics = channel flow?) was changed from N to Y
Q29_1 (Dense understory edge?) was changed from Y to N
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N
2 W
Q19_1_A (Wind shelter?) was changed from Y to N
Q26_2 (Primary source of nutrients = sheetflow?) was changed from Y to N
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to N
Q27_3 (Primary source of toxics = channel flow?) was changed from N to Y
Q29_1 (Dense understory edge?) was changed from Y to N
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N
2 YB
Q15_2 (Channel flow spreading?) was changed from Y to N
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N
Q49_2 (Fish cover?) was changed from Y to N
Q50 (Plants: waterfowl value?) was changed from Y to N
200
Q29_2 (Buffer zone slopes < 5%?) was changed from Y to N
3 1
Q2_1_2 (Area > 40 acres?) was changed from Y to N
Q5_1_2 (AA > 20% of watershed?) was changed from Y to N
Q14_1 (AA on 25 square foot island?) was changed from Y to N
Q19_1_A (Wind shelter?) was changed from Y to N
Q25_2_A (Primary source of sediment = sheetflow?) was changed from Y to N
Q25_2_B (Primary source of sediment = channel flow?) was changed from N to Y
Q26_2 (Primary source of nutrients = sheetflow?) was changed from Y to N
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to N
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N
Q49_1_1 (20%-80% Pools?) was changed from Y to N
Q49_2 (Fish cover?) was changed from Y to N
Q50 (Plants: waterfowl value?) was changed from Y to N
304
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N
Q49_2 (Fish cover?) was changed from Y to N

Attachment N-1d

Indirect Impacts from Dispersed Development Areas Alternative
01/21/92

100
Q26_2 (Primary source of nutrients = sheetflow?) was changed from Y to N
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to N
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N
108
Q25_2_A (Primary source of sediment = sheetflow?) was changed from Y to N
Q25_2_B (Primary source of sediment = channel flow?) was changed from N to Y
Q26_2 (Primary source of nutrients = sheetflow?) was changed from Y to N
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to N
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N
113
Q8_3 (Permanent outlet?) was changed from Y to N
Q8_4 (Intermittent outlet?) was changed from N to Y
Q25_2_A (Primary source of sediment = sheetflow?) was changed from Y to N
Q25_2_B (Primary source of sediment = channel flow?) was changed from N to Y
Q26_2 (Primary source of nutrients = sheetflow?) was changed from Y to N
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to N
Q29_1 (Dense understory edge?) was changed from Y to N
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N
2 11
Q26_2 (Primary source of nutrients = sheetflow?) was changed from Y to N
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to N
2 12
Q26_2 (Primary source of nutrients = sheetflow?) was changed from Y to N
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to N
2 13
Q26_2 (Primary source of nutrients = sheetflow?) was changed from Y to N
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to N
2 3
Q26_2 (Primary source of nutrients = sheetflow?) was changed from Y to N
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to N
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N
2 4A
Q2_1_1 (Area < 5 acres?) was changed from N to Y
2 E
Q26_2 (Primary source of nutrients = sheetflow?) was changed from Y to N
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to N
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N
2 Q
I24 (Research resource?) was changed from Y to N
Q5_1_2 (AA > 20% of watershed?) was changed from Y to N
Q25_2_A (Primary source of sediment = sheetflow?) was changed from Y to N
Q25_2_B (Primary source of sediment = channel flow?) was changed from N to Y
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to N
Q29_1 (Dense understory edge?) was changed from Y to N
2 R
Q25_2_A (Primary source of sediment = sheetflow?) was changed from Y to N
Q25_2_B (Primary source of sediment = channel flow?) was changed from N to Y
Q26_2 (Primary source of nutrients = sheetflow?) was changed from Y to N
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to N
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N
2 T
Q19_3 (Upland habitat wind shelter?) was changed from Y to N
Q25_3 (Wetland stabilizes erosion?) was changed from Y to N
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to N
Q27_3 (Primary source of toxics = channel flow?) was changed from N to Y
Q31_5 (Area of Zone A >= 10% of Zone B and C?) was changed from Y to N
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N
2 U
Q25_3 (Wetland stabilizes erosion?) was changed from Y to N
2 X
Q5_2 (Upslope wet depressions > 5% of watershed?) was changed from N to Y
Q25_2_A (Primary source of sediment = sheetflow?) was changed from Y to N

Q25_2_B (Primary source of sediment = channel flow?) was changed from N to Y
Q26_3 (Primary source of nutrients = channel flow?) was changed from N to Y
Q27_3 (Primary source of toxics = channel flow?) was changed from N to Y

200

Q25_2_A (Primary source of sediment = sheetflow?) was changed from Y to N
Q25_2_B (Primary source of sediment = channel flow?) was changed from N to Y
Q26_2 (Primary source of nutrients = sheetflow?) was changed from Y to N
Q26_3 (Primary source of nutrients = channel flow?) was changed from N to Y
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to N
Q27_3 (Primary source of toxics = channel flow?) was changed from N to Y
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N

3 1

Q5_1_2 (AA > 20% of watershed?) was changed from Y to N
Q25_2_A (Primary source of sediment = sheetflow?) was changed from Y to N
Q25_2_B (Primary source of sediment = channel flow?) was changed from N to Y
Q26_2 (Primary source of nutrients = sheetflow?) was changed from Y to N
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to N
Q29_1 (Dense understory edge?) was changed from Y to N
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N
Q49_1_1 (20%-80% Pools?) was changed from Y to N

301

Q25_2_A (Primary source of sediment = sheetflow?) was changed from Y to N
Q25_2_B (Primary source of sediment = channel flow?) was changed from N to Y
Q26_2 (Primary source of nutrients = sheetflow?) was changed from Y to N
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to N

304

Q31_5 (Area of Zone A >= 10% of Zone B and C?) was changed from Y to N
Q49_2 (Fish cover?) was changed from Y to N

97

Q25_2_A (Primary source of sediment = sheetflow?) was changed from Y to N
Q25_2_B (Primary source of sediment = channel flow?) was changed from N to Y
Q26_2 (Primary source of nutrients = sheetflow?) was changed from Y to N
Q26_3 (Primary source of nutrients = channel flow?) was changed from N to Y
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to N
Q27_3 (Primary source of toxics = channel flow?) was changed from N to Y
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N

98

Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N

99

Q8_1 (Permanent inlet?) was changed from Y to N
Q8_2 (Intermittent inlet?) was changed from N to Y
Q25_2_A (Primary source of sediment = sheetflow?) was changed from Y to N
Q25_2_B (Primary source of sediment = channel flow?) was changed from N to Y
Q26_2 (Primary source of nutrients = sheetflow?) was changed from Y to N
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to N
Q29_1 (Dense understory edge?) was changed from Y to N
Q34_1 (Local dams?) was changed from Y to N
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N

Indirect Impacts from Growth Centers Alternative
01/23/92

108
Q25_2_A (Primary source of sediment = sheetflow?) was changed from Y to N
Q25_2_B (Primary source of sediment = channel flow?) was changed from N to Y
Q26_2 (Primary source of nutrients = sheetflow?) was changed from Y to N
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to N
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N

2 10
Q29_2 (Buffer zone slopes < 5%?) was changed from Y to N

2 2
Q15_1_A (Vegetation<-->Water = solid form) was changed from N to Y
Q15_1_B (Vegetation<-->Water = intermediate) was changed from Y to N
Q22_1_2 (AA contains a Sinuous channel?) was changed from Y to N
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N
Q49_2 (Fish cover?) was changed from Y to N
Q50 (Plants: waterfowl value?) was changed from Y to N

2 3
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N

2 4A
Q5_1_2 (AA > 20% of watershed?) was changed from Y to N
Q29_1 (Dense understory edge?) was changed from Y to N
Q31_5 (Area of Zone A >= 10% of Zone B and C?) was changed from Y to N
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N
Q49_2 (Fish cover?) was changed from Y to N
Q50 (Plants: waterfowl value?) was changed from Y to N

2 E
Q22_1_2 (AA contains a Sinuous channel?) was changed from Y to N
Q25_2_A (Primary source of sediment = sheetflow?) was changed from Y to N
Q25_2_B (Primary source of sediment = channel flow?) was changed from N to Y
Q26_2 (Primary source of nutrients = sheetflow?) was changed from Y to N
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to N
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N

2 F
Q25_2_A (Primary source of sediment = sheetflow?) was changed from Y to N
Q25_2_B (Primary source of sediment = channel flow?) was changed from N to Y
Q26_2 (Primary source of nutrients = sheetflow?) was changed from Y to N
Q26_3 (Primary source of nutrients = channel flow?) was changed from N to Y
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N

2 G
Q2_1_2 (Area > 40 acres?) was changed from Y to N
Q25_2_A (Primary source of sediment = sheetflow?) was changed from Y to N
Q25_2_B (Primary source of sediment = channel flow?) was changed from N to Y
Q26_2 (Primary source of nutrients = sheetflow?) was changed from Y to N
Q26_3 (Primary source of nutrients = channel flow?) was changed from N to Y
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to N
Q27_3 (Primary source of toxics = channel flow?) was changed from N to Y
Q29_1 (Dense understory edge?) was changed from Y to N
Q29_2 (Buffer zone slopes < 5%?) was changed from Y to N
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N

2 N
Q29_2 (Buffer zone slopes < 5%?) was changed from Y to N
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N

2 Q
I24 (Research resource?) was changed from Y to N
Q25_2_A (Primary source of sediment = sheetflow?) was changed from Y to N
Q25_2_B (Primary source of sediment = channel flow?) was changed from N to Y
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to N
Q29_1 (Dense understory edge?) was changed from Y to N
Q29_2 (Buffer zone slopes < 5%?) was changed from Y to N

2 R
Q25_2_A (Primary source of sediment = sheetflow?) was changed from Y to N
Q25_2_B (Primary source of sediment = channel flow?) was changed from N to Y
Q26_2 (Primary source of nutrients = sheetflow?) was changed from Y to N
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to N

Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N

2 T

Q16_A (Vegetation class = solid) was changed from N to Y
Q16_B (Vegetation class = intermediate) was changed from Y to N
Q19_3 (Upland habitat wind shelter?) was changed from Y to N
Q29_2 (Buffer zone slopes < 5%?) was changed from Y to N
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N

2 X

Q25_2_A (Primary source of sediment = sheetflow?) was changed from Y to N
Q25_2_B (Primary source of sediment = channel flow?) was changed from N to Y
Q26_3 (Primary source of nutrients = channel flow?) was changed from N to Y
Q27_3 (Primary source of toxics = channel flow?) was changed from N to Y
Q29_1 (Dense understory edge?) was changed from Y to N
Q31_5 (Area of Zone A >= 10% of Zone B and C?) was changed from Y to N
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N

3 1

Q26_2 (Primary source of nutrients = sheetflow?) was changed from Y to N
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to N
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N

304

Q2_1_2 (Area > 40 acres?) was changed from Y to N
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N

90

Q25_2_A (Primary source of sediment = sheetflow?) was changed from Y to N
Q25_2_B (Primary source of sediment = channel flow?) was changed from N to Y
Q26_2 (Primary source of nutrients = sheetflow?) was changed from Y to N
Q26_3 (Primary source of nutrients = channel flow?) was changed from N to Y
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to N
Q27_3 (Primary source of toxics = channel flow?) was changed from N to Y
Q29_2 (Buffer zone slopes < 5%?) was changed from Y to N
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N

99

I24 (Research resource?) was changed from Y to N
Q26_2 (Primary source of nutrients = sheetflow?) was changed from Y to N
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to N
Q29_1 (Dense understory edge?) was changed from Y to N
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N

Attachment N-If

Indirect Impacts from No Action Alternative
01/21/92

100
Q26_2 (Primary source of nutrients = sheetflow?) was changed from Y to N
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to N
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N

108
Q25_2_A (Primary source of sediment = sheetflow?) was changed from Y to N
Q25_2_B (Primary source of sediment = channel flow?) was changed from N to Y
Q26_2 (Primary source of nutrients = sheetflow?) was changed from Y to N
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to N
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N

2 2
Q2_1_2 (Area > 40 acres?) was changed from Y to N
Q15_1_A (Vegetation<-->Water = solid form) was changed from N to Y
Q15_1_B (Vegetation<-->Water = intermediate) was changed from Y to N
Q22_1_2 (AA contains a Sinuous channel?) was changed from Y to N
Q29_1 (Dense understory edge?) was changed from Y to N
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N
Q49_2 (Fish cover?) was changed from Y to N
Q50 (Plants: waterfowl value?) was changed from Y to N

2 3
I24 (Research resource?) was changed from Y to N
Q15_1_A (Vegetation<-->Water = solid form) was changed from N to Y
Q15_1_B (Vegetation<-->Water = intermediate) was changed from Y to N
Q26_2 (Primary source of nutrients = sheetflow?) was changed from Y to N
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to N
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N

2 4A
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N
Q49_2 (Fish cover?) was changed from Y to N
Q50 (Plants: waterfowl value?) was changed from Y to N

2 8
Q29_1 (Dense understory edge?) was changed from Y to N
Q29_2 (Buffer zone slopes < 5%?) was changed from Y to N

2 E
Q25_2_A (Primary source of sediment = sheetflow?) was changed from Y to N
Q25_2_B (Primary source of sediment = channel flow?) was changed from N to Y
Q26_2 (Primary source of nutrients = sheetflow?) was changed from Y to N
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to N
Q29_2 (Buffer zone slopes < 5%?) was changed from Y to N
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N

2 G
Q25_2_A (Primary source of sediment = sheetflow?) was changed from Y to N
Q25_2_B (Primary source of sediment = channel flow?) was changed from N to Y
Q26_2 (Primary source of nutrients = sheetflow?) was changed from Y to N
Q26_3 (Primary source of nutrients = channel flow?) was changed from N to Y
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to N
Q27_3 (Primary source of toxics = channel flow?) was changed from N to Y
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N

2 J
Q2_1_1 (Area < 5 acres?) was changed from N to Y
Q26_2 (Primary source of nutrients = sheetflow?) was changed from Y to N
Q26_3 (Primary source of nutrients = channel flow?) was changed from N to Y
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to N
Q27_3 (Primary source of toxics = channel flow?) was changed from N to Y
Q29_1 (Dense understory edge?) was changed from Y to N
Q29_2 (Buffer zone slopes < 5%?) was changed from Y to N
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N

2 K
Q22_1_2 (AA contains a Sinuous channel?) was changed from Y to N
Q39 (Special habitat features?) was changed from Y to N

2 Q
Q25_2_A (Primary source of sediment = sheetflow?) was changed from Y to N
Q25_2_B (Primary source of sediment = channel flow?) was changed from N to Y

Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to N
Q29_2 (Buffer zone slopes < 5%?) was changed from Y to N

2 R

Q2_1_3 (Area > 200 acres?) was changed from Y to N
Q25_2_A (Primary source of sediment = sheetflow?) was changed from Y to N
Q25_2_B (Primary source of sediment = channel flow?) was changed from N to Y
Q26_2 (Primary source of nutrients = sheetflow?) was changed from Y to N
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to N
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N

2 T

Q19_3 (Upland habitat wind shelter?) was changed from Y to N
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to N
Q27_3 (Primary source of toxics = channel flow?) was changed from N to Y
Q29_2 (Buffer zone slopes < 5%?) was changed from Y to N
Q31_3 (Area of Zone B > Zone A?) was changed from N to Y
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N

2 X

Q25_2_A (Primary source of sediment = sheetflow?) was changed from Y to N
Q25_2_B (Primary source of sediment = channel flow?) was changed from N to Y
Q29_1 (Dense understory edge?) was changed from Y to N
Q31_3 (Area of Zone B > Zone A?) was changed from N to Y
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N

2 YA

Q25_2_A (Primary source of sediment = sheetflow?) was changed from Y to N
Q25_2_B (Primary source of sediment = channel flow?) was changed from N to Y
Q26_2 (Primary source of nutrients = sheetflow?) was changed from Y to N
Q26_3 (Primary source of nutrients = channel flow?) was changed from N to Y
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to N
Q27_3 (Primary source of toxics = channel flow?) was changed from N to Y
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N

2 YB

Q15_1_A (Vegetation<-->Water = solid form) was changed from N to Y
Q15_1_B (Vegetation<-->Water = intermediate) was changed from Y to N
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N
Q49_2 (Fish cover?) was changed from Y to N
Q50 (Plants: waterfowl value?) was changed from Y to N

200

Q29_2 (Buffer zone slopes < 5%?) was changed from Y to N

208

Q25_2_B (Primary source of sediment = channel flow?) was changed from N to Y
Q26_2 (Primary source of nutrients = sheetflow?) was changed from Y to N
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to N
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N

211

Q25_2_A (Primary source of sediment = sheetflow?) was changed from Y to N
Q25_2_B (Primary source of sediment = channel flow?) was changed from N to Y
Q26_2 (Primary source of nutrients = sheetflow?) was changed from Y to N
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to N
Q29_1 (Dense understory edge?) was changed from Y to N
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N

222

Q19_1_A (Wind shelter?) was changed from Y to N
Q25_2_A (Primary source of sediment = sheetflow?) was changed from Y to N
Q25_2_B (Primary source of sediment = channel flow?) was changed from N to Y
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to N
Q29_1 (Dense understory edge?) was changed from Y to N
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N
Q49_2 (Fish cover?) was changed from Y to N
Q50 (Plants: waterfowl value?) was changed from Y to N

3 1

Q14_1 (AA on 25 square foot island?) was changed from Y to N
Q19_1_A (Wind shelter?) was changed from Y to N
Q25_2_A (Primary source of sediment = sheetflow?) was changed from Y to N
Q25_2_B (Primary source of sediment = channel flow?) was changed from N to Y
Q26_2 (Primary source of nutrients = sheetflow?) was changed from Y to N
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to N
Q29_1 (Dense understory edge?) was changed from Y to N
Q29_2 (Buffer zone slopes < 5%?) was changed from Y to N

3 2
Q25_2_A (Primary source of sediment = sheetflow?) was changed from Y to N
Q25_2_B (Primary source of sediment = channel flow?) was changed from N to Y
Q26_2 (Primary source of nutrients = sheetflow?) was changed from Y to N
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to N
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N
3 3
I24 (Research resource?) was changed from Y to N
Q2_1_2 (Area > 40 acres?) was changed from Y to N
Q15_1_A (Vegetation<-->Water = solid form) was changed from N to Y
Q15_1_C (Vegetation<-->Water = checkerboard) was changed from Y to N
Q16_A (Vegetation class = solid) was changed from N to Y
Q16_C (Vegetation class = mosaic) was changed from Y to N
Q26_2 (Primary source of nutrients = sheetflow?) was changed from Y to N
Q26_3 (Primary source of nutrients = channel flow?) was changed from N to Y
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to N
Q27_3 (Primary source of toxics = channel flow?) was changed from N to Y
Q29_1 (Dense understory edge?) was changed from Y to N
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N
Q50 (Plants: waterfowl value?) was changed from Y to N
3 4
Q2_1_2 (Area > 40 acres?) was changed from Y to N
Q5_1_2 (AA > 20% of watershed?) was changed from Y to N
Q15_1_A (Vegetation<-->Water = solid form) was changed from N to Y
Q15_1_B (Vegetation<-->Water = intermediate) was changed from Y to N
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to N
Q27_3 (Primary source of toxics = channel flow?) was changed from N to Y
Q29_1 (Dense understory edge?) was changed from Y to N
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N
Q49_1_1 (20%-80% Pools?) was changed from Y to N
3 5
Q2_1_2 (Area > 40 acres?) was changed from Y to N
Q15_1_A (Vegetation<-->Water = solid form) was changed from N to Y
Q15_1_C (Vegetation<-->Water = checkerboard) was changed from Y to N
Q16_A (Vegetation class = solid) was changed from N to Y
Q16_C (Vegetation class = mosaic) was changed from Y to N
Q19_1_A (Wind shelter?) was changed from Y to N
Q26_2 (Primary source of nutrients = sheetflow?) was changed from Y to N
Q26_3 (Primary source of nutrients = channel flow?) was changed from N to Y
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to N
Q27_3 (Primary source of toxics = channel flow?) was changed from N to Y
Q29_1 (Dense understory edge?) was changed from Y to N
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N
Q50 (Plants: waterfowl value?) was changed from Y to N
3 6
Q2_1_1 (Area < 5 acres?) was changed from N to Y
Q2_1_2 (Area > 40 acres?) was changed from Y to N
Q15_1_A (Vegetation<-->Water = solid form) was changed from N to Y
Q15_1_C (Vegetation<-->Water = checkerboard) was changed from Y to N
Q16_A (Vegetation class = solid) was changed from N to Y
Q16_C (Vegetation class = mosaic) was changed from Y to N
Q19_1_A (Wind shelter?) was changed from Y to N
Q26_2 (Primary source of nutrients = sheetflow?) was changed from Y to N
Q26_3 (Primary source of nutrients = channel flow?) was changed from N to Y
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to N
Q27_3 (Primary source of toxics = channel flow?) was changed from N to Y
Q29_1 (Dense understory edge?) was changed from Y to N
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N
Q50 (Plants: waterfowl value?) was changed from Y to N
3 8
Q26_2 (Primary source of nutrients = sheetflow?) was changed from Y to N
Q26_3 (Primary source of nutrients = channel flow?) was changed from N to Y
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to N
Q27_3 (Primary source of toxics = channel flow?) was changed from N to Y
Q29_1 (Dense understory edge?) was changed from Y to N
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N
303
Q2_1_2 (Area > 40 acres?) was changed from Y to N

Q15_1_B (Vegetation<-->Water = intermediate) was changed from N to Y
Q15_1_C (Vegetation<-->Water = checkerboard) was changed from Y to N
Q29_1 (Dense understory edge?) was changed from Y to N
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N
Q49_2 (Fish cover?) was changed from Y to N
Q50 (Plants: waterfowl value?) was changed from Y to N

304

Q2_1_2 (Area > 40 acres?) was changed from Y to N
Q29_1 (Dense understory edge?) was changed from Y to N
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N

505

Q29_1 (Dense understory edge?) was changed from Y to N

81

Q25_2_A (Primary source of sediment = sheetflow?) was changed from Y to N
Q25_2_B (Primary source of sediment = channel flow?) was changed from N to Y
Q26_2 (Primary source of nutrients = sheetflow?) was changed from Y to N
Q26_3 (Primary source of nutrients = channel flow?) was changed from N to Y
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to N
Q27_3 (Primary source of toxics = channel flow?) was changed from N to Y
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N

97

Q25_2_A (Primary source of sediment = sheetflow?) was changed from Y to N
Q25_2_B (Primary source of sediment = channel flow?) was changed from N to Y
Q26_2 (Primary source of nutrients = sheetflow?) was changed from Y to N
Q26_3 (Primary source of nutrients = channel flow?) was changed from N to Y
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to N
Q27_3 (Primary source of toxics = channel flow?) was changed from N to Y
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N

99

124 (Research resource?) was changed from Y to N
Q25_2_A (Primary source of sediment = sheetflow?) was changed from Y to N
Q25_2_B (Primary source of sediment = channel flow?) was changed from N to Y
Q26_2 (Primary source of nutrients = sheetflow?) was changed from Y to N
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to N
Q29_1 (Dense understory edge?) was changed from Y to N
Q34_1 (Local dams?) was changed from Y to N
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N

Attachment N-1g

Indirect Impacts from Conservation Management (Satellite) Areas
for ALL Alteratives
01/23/92

108
I24 (Research resource?) was changed from Y to N
Q25_2_A (Primary source of sediment = sheetflow?) was changed from Y to N
Q25_2_B (Primary source of sediment = channel flow?) was changed from N to Y
Q26_2 (Primary source of nutrients = sheetflow?) was changed from Y to N
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to N
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N
Q49_1_1 (20%-80% Pools?) was changed from Y to N
Q49_2 (Fish cover?) was changed from Y to N
112
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N
113
Q25_2_A (Primary source of sediment = sheetflow?) was changed from Y to N
Q25_2_B (Primary source of sediment = channel flow?) was changed from N to Y
Q25_3 (Wetland stabilizes erosion?) was changed from Y to N
Q26_2 (Primary source of nutrients = sheetflow?) was changed from Y to N
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to N
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N
Q49_1_1 (20%-80% Pools?) was changed from Y to N
Q49_2 (Fish cover?) was changed from Y to N
Q50 (Plants: waterfowl value?) was changed from Y to N
145
Q25_3 (Wetland stabilizes erosion?) was changed from Y to N
Q26_2 (Primary source of nutrients = sheetflow?) was changed from Y to N
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to N
Q29_2 (Buffer zone slopes < 5%?) was changed from Y to N
18
Q25_2_A (Primary source of sediment = sheetflow?) was changed from Y to N
Q25_2_B (Primary source of sediment = channel flow?) was changed from N to Y
Q25_3 (Wetland stabilizes erosion?) was changed from Y to N
Q26_2 (Primary source of nutrients = sheetflow?) was changed from Y to N
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to N
Q29_2 (Buffer zone slopes < 5%?) was changed from Y to N
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N
2 11
Q29_2 (Buffer zone slopes < 5%?) was changed from Y to N
2 13
Q29_2 (Buffer zone slopes < 5%?) was changed from Y to N
2 3
I24 (Research resource?) was changed from Y to N
Q2_1_2 (Area > 40 acres?) was changed from Y to N
Q18 (Upland<-->Wetland edge irregular?) was changed from Y to N
Q26_2 (Primary source of nutrients = sheetflow?) was changed from Y to N
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to N
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N
2 4
Q26_2 (Primary source of nutrients = sheetflow?) was changed from Y to N
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to N
Q29_2 (Buffer zone slopes < 5%?) was changed from Y to N
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N
2 E
Q25_2_A (Primary source of sediment = sheetflow?) was changed from Y to N
Q25_2_B (Primary source of sediment = channel flow?) was changed from N to Y
Q26_2 (Primary source of nutrients = sheetflow?) was changed from Y to N
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to N
Q29_2 (Buffer zone slopes < 5%?) was changed from Y to N
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N
2 F
Q2_1_1 (Area < 5 acres?) was changed from N to Y
Q25_2_A (Primary source of sediment = sheetflow?) was changed from Y to N
Q25_2_B (Primary source of sediment = channel flow?) was changed from N to Y
Q26_2 (Primary source of nutrients = sheetflow?) was changed from Y to N

Q26_3 (Primary source of nutrients = channel flow?) was changed from N to Y
Q29_2 (Buffer zone slopes < 5%?) was changed from Y to N
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N

2 M

Q2_1_2 (Area > 40 acres?) was changed from Y to N
Q26_2 (Primary source of nutrients = sheetflow?) was changed from Y to N
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to N
Q29_2 (Buffer zone slopes < 5%?) was changed from Y to N
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N

2 R

Q25_2_A (Primary source of sediment = sheetflow?) was changed from Y to N
Q25_2_B (Primary source of sediment = channel flow?) was changed from N to Y
Q26_2 (Primary source of nutrients = sheetflow?) was changed from Y to N
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to N
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N

220

Q29_1 (Dense understory edge?) was changed from Y to N
Q29_2 (Buffer zone slopes < 5%?) was changed from Y to N
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N

222

Q25_2_A (Primary source of sediment = sheetflow?) was changed from Y to N
Q25_2_B (Primary source of sediment = channel flow?) was changed from N to Y
Q25_3 (Wetland stabilizes erosion?) was changed from Y to N
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N
Q49_2 (Fish cover?) was changed from Y to N
Q50 (Plants: waterfowl value?) was changed from Y to N

23

Q25_2_A (Primary source of sediment = sheetflow?) was changed from Y to N
Q25_2_B (Primary source of sediment = channel flow?) was changed from N to Y
Q26_2 (Primary source of nutrients = sheetflow?) was changed from Y to N
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to N
Q29_2 (Buffer zone slopes < 5%?) was changed from Y to N
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N

24

Q25_2_A (Primary source of sediment = sheetflow?) was changed from Y to N
Q25_2_B (Primary source of sediment = channel flow?) was changed from N to Y
Q26_2 (Primary source of nutrients = sheetflow?) was changed from Y to N
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to N
Q29_2 (Buffer zone slopes < 5%?) was changed from Y to N
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N

3 1

Q25_2_A (Primary source of sediment = sheetflow?) was changed from Y to N
Q25_2_B (Primary source of sediment = channel flow?) was changed from N to Y
Q26_2 (Primary source of nutrients = sheetflow?) was changed from Y to N
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to N
Q29_2 (Buffer zone slopes < 5%?) was changed from Y to N
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N

3 2

Q25_2_A (Primary source of sediment = sheetflow?) was changed from Y to N
Q25_2_B (Primary source of sediment = channel flow?) was changed from N to Y
Q26_2 (Primary source of nutrients = sheetflow?) was changed from Y to N
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to N
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N

3 6

Q26_2 (Primary source of nutrients = sheetflow?) was changed from Y to N
Q26_3 (Primary source of nutrients = channel flow?) was changed from N to Y
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to N
Q27_3 (Primary source of toxics = channel flow?) was changed from N to Y
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N

33 A

Q26_2 (Primary source of nutrients = sheetflow?) was changed from Y to N
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to N
Q29_2 (Buffer zone slopes < 5%?) was changed from Y to N
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N

33 B

Q26_2 (Primary source of nutrients = sheetflow?) was changed from Y to N
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to N
Q29_1 (Dense understory edge?) was changed from Y to N

Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N

34

Q25_2_A (Primary source of sediment = sheetflow?) was changed from Y to N
Q25_2_B (Primary source of sediment = channel flow?) was changed from N to Y
Q26_2 (Primary source of nutrients = sheetflow?) was changed from Y to N
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to N
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N

38 A

Q18 (Upland<-->Wetland edge irregular?) was changed from Y to N
Q26_2 (Primary source of nutrients = sheetflow?) was changed from Y to N
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to N
Q29_1 (Dense understory edge?) was changed from Y to N
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N
Q50 (Plants: waterfowl value?) was changed from Y to N

39

Q26_2 (Primary source of nutrients = sheetflow?) was changed from Y to N
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to N
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N
Q50 (Plants: waterfowl value?) was changed from Y to N

4 B

Q25_2_A (Primary source of sediment = sheetflow?) was changed from Y to N
Q25_2_B (Primary source of sediment = channel flow?) was changed from N to Y
Q26_2 (Primary source of nutrients = sheetflow?) was changed from Y to N
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to N
Q29_1 (Dense understory edge?) was changed from Y to N
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N

4 C

Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N

4 D

Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N

4 F

Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N

4 G

Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N

6

Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to N

Attachment N-2

Indirect Impacts from Preferred Alternative w/o SAMP Management Actions
04/12/94

100
Q26_2 (Primary source of nutrients = sheetflow?) was changed from Y to n
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to n
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to n
108
I24 (Research resource?) was changed from Y to n
Q18 (Upland<-->Wetland edge irregular?) was changed from Y to n
Q25_2_A (Primary source of sediment = sheetflow?) was changed from Y to n
Q25_2_B (Primary source of sediment = channel flow?) was changed from N to y
Q26_2 (Primary source of nutrients = sheetflow?) was changed from Y to n
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to n
Q29_1 (Dense understory edge?) was changed from Y to n
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to n
112
Q25_2_A (Primary source of sediment = sheetflow?) was changed from Y to n
Q25_2_B (Primary source of sediment = channel flow?) was changed from N to y
Q26_2 (Primary source of nutrients = sheetflow?) was changed from Y to n
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to n
Q29_1 (Dense understory edge?) was changed from Y to n
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to n
Q66_1_1 (Group 1 Waterfowl Breeding present?) was changed from Y to n
113
Q19_1_A (Wind shelter?) was changed from Y to n
Q25_2_A (Primary source of sediment = sheetflow?) was changed from Y to n
Q25_2_B (Primary source of sediment = channel flow?) was changed from N to y
Q26_2 (Primary source of nutrients = sheetflow?) was changed from Y to n
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to n
Q29_1 (Dense understory edge?) was changed from Y to n
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to n
Q66_1_1 (Group 1 Waterfowl Breeding present?) was changed from Y to n
151
Q8_1 (Permanent inlet?) was changed from Y to n
Q8_3 (Permanent outlet?) was changed from Y to n
Q13_CB (Secondary veg: Aquatic bed and floating vascular) was changed from Y to n
Q25_2_A (Primary source of sediment = sheetflow?) was changed from Y to n
Q25_2_B (Primary source of sediment = channel flow?) was changed from N to y
Q26_2 (Primary source of nutrients = sheetflow?) was changed from Y to n
Q26_3 (Primary source of nutrients = channel flow?) was changed from N to y
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to n
Q27_3 (Primary source of toxics = channel flow?) was changed from N to y
Q29_1 (Dense understory edge?) was changed from Y to n
Q29_2 (Buffer zone slopes < 5%?) was changed from Y to n
Q31_6_B (emergent in Zone B = 1% - 30% of Zones B and C?) was changed from Y to n
Q31_6_D (emergent in Zone B = 61% - 99% of Zones B and C?) was changed from N to y
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to n
Q50 (Plants: waterfowl value?) was changed from Y to n
18
Q25_2_A (Primary source of sediment = sheetflow?) was changed from Y to n
Q25_2_B (Primary source of sediment = channel flow?) was changed from N to y
Q26_2 (Primary source of nutrients = sheetflow?) was changed from Y to n
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to n
Q29_1 (Dense understory edge?) was changed from Y to n
Q29_2 (Buffer zone slopes < 5%?) was changed from Y to n
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to n
Q66_1_1 (Group 1 Waterfowl Breeding present?) was changed from Y to n
19
Q2_1_1 (Area < 5 acres?) was changed from N to y
Q9_1 (Outlet < one third average width?) was changed from Y to n
Q25_2_A (Primary source of sediment = sheetflow?) was changed from Y to n
Q25_2_B (Primary source of sediment = channel flow?) was changed from N to y
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to n
Q29_1 (Dense understory edge?) was changed from Y to n
Q29_2 (Buffer zone slopes < 5%?) was changed from Y to n

Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to n
Q66_1_1 (Group 1 Waterfowl Breeding present?) was changed from Y to n

2 2

Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to n

2 3

Q15_1_A (Vegetation<-->Water = solid form) was changed from N to y
Q15_1_B (Vegetation<-->Water = intermediate) was changed from Y to n
Q15_2 (Channel flow spreading?) was changed from Y to n
Q18 (Upland<-->Wetland edge irregular?) was changed from Y to n
Q26_2 (Primary source of nutrients = sheetflow?) was changed from Y to n
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to n
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to n

2 4A

Q2_1_1 (Area < 5 acres?) was changed from N to y
Q5_1_2 (AA > 20% of watershed?) was changed from Y to n
Q9_1 (Outlet < one third average width?) was changed from Y to n
Q15_2 (Channel flow spreading?) was changed from Y to n
Q29_1 (Dense understory edge?) was changed from Y to n
Q31_5 (Area of Zone A >= 10% of Zone B and C?) was changed from Y to n
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to n
Q49_2 (Fish cover?) was changed from Y to n
Q50 (Plants: waterfowl value?) was changed from Y to n
Q66_1_1 (Group 1 Waterfowl Breeding present?) was changed from Y to n

2 6_a

Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to n
Q29_1 (Dense understory edge?) was changed from Y to n
Q29_2 (Buffer zone slopes < 5%?) was changed from Y to n
Q46_B (Physical Habitat Interspersion = intermediate) was changed from N to y
Q46_C (Physical Habitat Interspersion = mosaic) was changed from Y to n
Q66_1_1 (Group 1 Waterfowl Breeding present?) was changed from Y to n
Q99 (Proximity to public transportation) was changed from Y to n

2 6_b

Q2_1_1 (Area < 5 acres?) was changed from N to y
Q2_1_2 (Area > 40 acres?) was changed from Y to n
Q5_2 (Upslope wet depressions > 5% of watershed?) was changed from Y to n
Q8_1 (Permanent inlet?) was changed from Y to n
Q8_2 (Intermittent inlet?) was changed from Y to n
Q8_3 (Permanent outlet?) was changed from Y to n
Q9_1 (Outlet < one third average width?) was changed from Y to n
Q14_1 (AA on 25 square foot island?) was changed from Y to n
Q15_1_A (Vegetation<-->Water = solid form) was changed from N to y
Q15_1_B (Vegetation<-->Water = intermediate) was changed from Y to n
Q22_1_1 (AA contains a Channel?) was changed from Y to n
Q22_1_2 (AA contains a Sinuous channel?) was changed from Y to n
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to n
Q29_1 (Dense understory edge?) was changed from Y to n
Q29_2 (Buffer zone slopes < 5%?) was changed from Y to n
Q31_6_C (emergent in Zone B = 31% - 60% of Zones B and C?) was changed from Y to n
Q31_6_E (emergent in Zone B = 100% of Zones B and C or not present?) was changed from N to y
Q32_I (Spatial Dominant Hydroperiod = regularly flooded tidal?) was changed from Y to n
Q32_K (Spatial Dominant Hydroperiod = irregularly flooded tidal?) was changed from N to y
Q33_I (Permanent Hydroperiod = regularly flooded tidal?) was changed from Y to n
Q33_K (Permanent Hydroperiod = irregularly flooded tidal?) was changed from N to y
Q36_1_2 (Average width of erect veg in Zones A and B > 500 feet?) was changed from Y to n
Q37 (Open water (d>2ft,w>6ft,l>1000ft)?) was changed from Y to n
Q41_2 (Peak flow velocity > 30 cm/s?) was changed from Y to n
Q43_B (1 in < dominant water depth < 4 inches) was changed from N to y
Q43_H (6.5 feet < dominant water depth < 26 feet) was changed from Y to n
Q44_C (5 in < secondary water depth < 8 inches) was changed from Y to n
Q44_D (9 in < secondary water depth < 20 inches) was changed from Y to n
Q44_E (21 in < secondary water depth < 39 inches) was changed from Y to n
Q44_F (40 in < secondary water depth < 59 inches) was changed from Y to n
Q44_G (5 feet < secondary water depth < 6.5 feet) was changed from Y to n
Q44_H (6.5 feet < secondary water depth < 26 feet) was changed from Y to n
Q44_I (secondary water depth > 26 feet) was changed from Y to n
Q46_A (Physical Habitat Interspersion = uniform) was changed from N to y
Q46_C (Physical Habitat Interspersion = mosaic) was changed from Y to n
Q66_1_1 (Group 1 Waterfowl Breeding present?) was changed from Y to n

Q66_2_1 (Waterfowl Group 1 Mig/Wint present?) was changed from Y to n
Q66_2_3 (Black Duck Mig/Wint present?) was changed from Y to n
Q66_2_5 (Mergansers Mig/Wint present?) was changed from Y to n
Q66_2_7 (Bufflehead/Goldeneye Mig/Wint present?) was changed from Y to n
Q66_2_10 (Geese Mig/Wint present?) was changed from Y to n

2 6_c
Q2_1_1 (Area < 5 acres?) was changed from N to y
Q2_1_2 (Area > 40 acres?) was changed from Y to n
Q5_2 (Upslope wet depressions > 5% of watershed?) was changed from Y to n
Q8_1 (Permanent inlet?) was changed from Y to n
Q8_2 (Intermittent inlet?) was changed from Y to n
Q8_3 (Permanent outlet?) was changed from Y to n
Q9_1 (Outlet < one third average width?) was changed from Y to n
Q14_1 (AA on 25 square foot island?) was changed from Y to n
Q15_1_A (Vegetation<-->Water = solid form) was changed from N to y
Q15_1_B (Vegetation<-->Water = intermediate) was changed from Y to n
Q22_1_1 (AA contains a Channel?) was changed from Y to n
Q22_1_2 (AA contains a Sinuous channel?) was changed from Y to n
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to n
Q29_1 (Dense understory edge?) was changed from Y to n
Q29_2 (Buffer zone slopes < 5%?) was changed from Y to n
Q31_6_C (emergent in Zone B = 31% - 60% of Zones B and C?) was changed from Y to n
Q31_6_E (emergent in Zone B = 100% of Zones B and C or not present?) was changed from N to y
Q32_I (Spatial Dominant Hydroperiod = regularly flooded tidal?) was changed from Y to n
Q32_K (Spatial Dominant Hydroperiod = irregularly flooded tidal?) was changed from N to y
Q33_I (Permanent Hydroperiod = regularly flooded tidal?) was changed from Y to n
Q33_K (Permanent Hydroperiod = irregularly flooded tidal?) was changed from N to y
Q36_1_2 (Average width of erect veg in Zones A and B > 500 feet?) was changed from Y to n
Q37 (Open water (d>2ft,w>6ft,l>1000ft)?) was changed from Y to n
Q41_2 (Peak flow velocity > 30 cm/s?) was changed from Y to n
Q43_B (1 in < dominant water depth < 4 inches) was changed from N to y
Q43_H (6.5 feet < dominant water depth < 26 feet) was changed from Y to n
Q44_C (5 in < secondary water depth < 8 inches) was changed from Y to n
Q44_D (9 in < secondary water depth < 20 inches) was changed from Y to n
Q44_E (21 in < secondary water depth < 39 inches) was changed from Y to n
Q44_F (40 in < secondary water depth < 59 inches) was changed from Y to n
Q44_G (5 feet < secondary water depth < 6.5 feet) was changed from Y to n
Q44_H (6.5 feet < secondary water depth < 26 feet) was changed from Y to n
Q44_I (secondary water depth > 26 feet) was changed from Y to n
Q46_A (Physical Habitat Interspersion = uniform) was changed from N to y
Q46_C (Physical Habitat Interspersion = mosaic) was changed from Y to n
Q66_1_1 (Group 1 Waterfowl Breeding present?) was changed from Y to n
Q66_2_1 (Waterfowl Group 1 Mig/Wint present?) was changed from Y to n
Q66_2_3 (Black Duck Mig/Wint present?) was changed from Y to n
Q66_2_5 (Mergansers Mig/Wint present?) was changed from Y to n
Q66_2_7 (Bufflehead/Goldeneye Mig/Wint present?) was changed from Y to n
Q66_2_10 (Geese Mig/Wint present?) was changed from Y to n

2 9_a
Q26_2 (Primary source of nutrients = sheetflow?) was changed from Y to n
Q29_1 (Dense understory edge?) was changed from Y to n
Q29_2 (Buffer zone slopes < 5%?) was changed from Y to n
Q66_1_1 (Group 1 Waterfowl Breeding present?) was changed from Y to n
Q99 (Proximity to public transportation) was changed from Y to n

2 9_b
Q8_1 (Permanent inlet?) was changed from Y to n
Q8_2 (Intermittent inlet?) was changed from Y to n
Q8_3 (Permanent outlet?) was changed from Y to n
Q9_1 (Outlet < one third average width?) was changed from Y to n
Q22_1_1 (AA contains a Channel?) was changed from Y to n
Q22_1_2 (AA contains a Sinuous channel?) was changed from Y to n
Q26_2 (Primary source of nutrients = sheetflow?) was changed from Y to n
Q29_1 (Dense understory edge?) was changed from Y to n
Q29_2 (Buffer zone slopes < 5%?) was changed from Y to n
Q31_6_D (emergent in Zone B = 61% - 99% of Zones B and C?) was changed from Y to n
Q31_6_E (emergent in Zone B = 100% of Zones B and C or not present?) was changed from N to y
Q32_I (Spatial Dominant Hydroperiod = regularly flooded tidal?) was changed from Y to n
Q32_K (Spatial Dominant Hydroperiod = irregularly flooded tidal?) was changed from N to y
Q33_I (Permanent Hydroperiod = regularly flooded tidal?) was changed from Y to n

Q33_K (Permanent Hydroperiod = irregularly flooded tidal?) was changed from N to y
Q37 (Open water (d>2ft,w>6ft,l>1000ft)?) was changed from Y to n
Q41_2 (Peak flow velocity > 30 cm/s?) was changed from Y to n
Q43_B (1 in < dominant water depth < 4 inches) was changed from N to y
Q43_D (9 in < dominant water depth < 20 inches) was changed from Y to n
Q44_C (5 in < secondary water depth < 8 inches) was changed from Y to n
Q44_D (9 in < secondary water depth < 20 inches) was changed from Y to n
Q44_E (21 in < secondary water depth < 39 inches) was changed from Y to n
Q44_F (40 in < secondary water depth < 59 inches) was changed from Y to n
Q44_G (5 feet < secondary water depth < 6.5 feet) was changed from Y to n
Q44_H (6.5 feet < secondary water depth < 26 feet) was changed from Y to n
Q44_I (secondary water depth > 26 feet) was changed from Y to n
Q46_A (Physical Habitat Interspersion = uniform) was changed from N to y
Q46_B (Physical Habitat Interspersion = intermediate) was changed from Y to n
Q66_1_1 (Group 1 Waterfowl Breeding present?) was changed from Y to n
Q66_2_1 (Waterfowl Group 1 Mig/Wint present?) was changed from Y to n
Q66_2_3 (Black Duck Mig/Wint present?) was changed from Y to n

2 E_a

Q2_1_3 (Area > 200 acres?) was changed from Y to n
Q5_1_2 (AA > 20% of watershed?) was changed from Y to n
Q25_2_A (Primary source of sediment = sheetflow?) was changed from Y to n
Q25_2_B (Primary source of sediment = channel flow?) was changed from N to y
Q26_2 (Primary source of nutrients = sheetflow?) was changed from Y to n
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to n
Q31_5 (Area of Zone A >= 10% of Zone B and C?) was changed from Y to n
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to n

2 E_b

Q2_1_2 (Area > 40 acres?) was changed from Y to n
Q2_1_3 (Area > 200 acres?) was changed from Y to n
Q5_1_2 (AA > 20% of watershed?) was changed from Y to n
Q8_1 (Permanent inlet?) was changed from Y to n
Q8_3 (Permanent outlet?) was changed from Y to n
Q8_4 (Intermittent outlet?) was changed from N to y
Q9_1 (Outlet < one third average width?) was changed from Y to n
Q22_1_1 (AA contains a Channel?) was changed from Y to n
Q22_1_2 (AA contains a Sinuous channel?) was changed from Y to n
Q23 (Is the AA Channelized?) was changed from Y to n
Q25_2_A (Primary source of sediment = sheetflow?) was changed from Y to n
Q25_2_B (Primary source of sediment = channel flow?) was changed from N to y
Q26_2 (Primary source of nutrients = sheetflow?) was changed from Y to n
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to n
Q37 (Open water (d>2ft,w>6ft,l>1000ft)?) was changed from Y to n
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to n
Q43_B (1 in < dominant water depth < 4 inches) was changed from N to y
Q43_D (9 in < dominant water depth < 20 inches) was changed from Y to n
Q44_C (5 in < secondary water depth < 8 inches) was changed from Y to n
Q44_D (9 in < secondary water depth < 20 inches) was changed from Y to n
Q44_E (21 in < secondary water depth < 39 inches) was changed from Y to n
Q44_F (40 in < secondary water depth < 59 inches) was changed from Y to n
Q44_G (5 feet < secondary water depth < 6.5 feet) was changed from Y to n
Q44_H (6.5 feet < secondary water depth < 26 feet) was changed from Y to n
Q44_I (secondary water depth > 26 feet) was changed from Y to n

2 E_c

Q2_1_1 (Area < 5 acres?) was changed from N to y
Q2_1_2 (Area > 40 acres?) was changed from Y to n
Q2_1_3 (Area > 200 acres?) was changed from Y to n
Q5_1_2 (AA > 20% of watershed?) was changed from Y to n
Q8_1 (Permanent inlet?) was changed from Y to n
Q8_3 (Permanent outlet?) was changed from Y to n
Q8_4 (Intermittent outlet?) was changed from N to y
Q9_1 (Outlet < one third average width?) was changed from Y to n
Q22_1_1 (AA contains a Channel?) was changed from Y to n
Q22_1_2 (AA contains a Sinuous channel?) was changed from Y to n
Q23 (Is the AA Channelized?) was changed from Y to n
Q25_2_A (Primary source of sediment = sheetflow?) was changed from Y to n
Q25_2_B (Primary source of sediment = channel flow?) was changed from N to y
Q26_2 (Primary source of nutrients = sheetflow?) was changed from Y to n
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to n

Q29_2 (Buffer zone slopes < 5%?) was changed from Y to n
Q37 (Open water (d>2ft,w>6ft,l>1000ft)?) was changed from Y to n
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to n
Q43_B (1 in < dominant water depth < 4 inches) was changed from N to y
Q43_D (9 in < dominant water depth < 20 inches) was changed from Y to n
Q44_C (5 in < secondary water depth < 8 inches) was changed from Y to n
Q44_D (9 in < secondary water depth < 20 inches) was changed from Y to n
Q44_E (21 in < secondary water depth < 39 inches) was changed from Y to n
Q44_F (40 in < secondary water depth < 59 inches) was changed from Y to n
Q44_G (5 feet < secondary water depth < 6.5 feet) was changed from Y to n
Q44_H (6.5 feet < secondary water depth < 26 feet) was changed from Y to n
Q44_I (secondary water depth > 26 feet) was changed from Y to n

2 E_d

Q2_1_2 (Area > 40 acres?) was changed from Y to n
Q2_1_3 (Area > 200 acres?) was changed from Y to n
Q5_1_2 (AA > 20% of watershed?) was changed from Y to n
Q8_2 (Intermittent inlet?) was changed from Y to n
Q25_2_A (Primary source of sediment = sheetflow?) was changed from Y to n
Q25_2_B (Primary source of sediment = channel flow?) was changed from N to y
Q26_2 (Primary source of nutrients = sheetflow?) was changed from Y to n
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to n
Q29_1 (Dense understory edge?) was changed from Y to n
Q29_2 (Buffer zone slopes < 5%?) was changed from Y to n
Q31_5 (Area of Zone A >= 10% of Zone B and C?) was changed from Y to n
Q31_6_B (emergent in Zone B = 1% - 30% of Zones B and C?) was changed from Y to n
Q31_6_E (emergent in Zone B = 100% of Zones B and C or not present?) was changed from N to y
Q37 (Open water (d>2ft,w>6ft,l>1000ft)?) was changed from Y to n
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to n
Q44_E (21 in < secondary water depth < 39 inches) was changed from Y to n
Q44_F (40 in < secondary water depth < 59 inches) was changed from Y to n
Q44_G (5 feet < secondary water depth < 6.5 feet) was changed from Y to n
Q44_H (6.5 feet < secondary water depth < 26 feet) was changed from Y to n
Q44_I (secondary water depth > 26 feet) was changed from Y to n
Q66_2_1 (Waterfowl Group 1 Mig/Wint present?) was changed from Y to n
Q66_2_3 (Black Duck Mig/Wint present?) was changed from Y to n

2 F

Q25_2_A (Primary source of sediment = sheetflow?) was changed from Y to n
Q25_2_B (Primary source of sediment = channel flow?) was changed from N to y
Q26_2 (Primary source of nutrients = sheetflow?) was changed from Y to n
Q26_3 (Primary source of nutrients = channel flow?) was changed from N to y
Q29_2 (Buffer zone slopes < 5%?) was changed from Y to n
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to n

2 G_a

Q2_1_2 (Area > 40 acres?) was changed from Y to n
Q5_1_2 (AA > 20% of watershed?) was changed from Y to n
Q9_1 (Outlet < one third average width?) was changed from Y to n
Q25_2_A (Primary source of sediment = sheetflow?) was changed from Y to n
Q25_2_B (Primary source of sediment = channel flow?) was changed from N to y
Q26_2 (Primary source of nutrients = sheetflow?) was changed from Y to n
Q26_3 (Primary source of nutrients = channel flow?) was changed from N to y
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to n
Q27_3 (Primary source of toxics = channel flow?) was changed from N to y
Q29_2 (Buffer zone slopes < 5%?) was changed from Y to n
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to n

2 G_b

Q2_1_1 (Area < 5 acres?) was changed from N to y
Q2_1_2 (Area > 40 acres?) was changed from Y to n
Q5_1_2 (AA > 20% of watershed?) was changed from Y to n
Q8_1 (Permanent inlet?) was changed from Y to n
Q8_2 (Intermittent inlet?) was changed from N to y
Q8_3 (Permanent outlet?) was changed from Y to n
Q8_4 (Intermittent outlet?) was changed from N to y
Q22_1_1 (AA contains a Channel?) was changed from Y to n
Q22_1_2 (AA contains a Sinuous channel?) was changed from Y to n
Q23 (Is the AA Channelized?) was changed from Y to n
Q25_2_A (Primary source of sediment = sheetflow?) was changed from Y to n
Q25_2_B (Primary source of sediment = channel flow?) was changed from N to y
Q26_2 (Primary source of nutrients = sheetflow?) was changed from Y to n

Q26_3 (Primary source of nutrients = channel flow?) was changed from N to y
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to n
Q27_3 (Primary source of toxics = channel flow?) was changed from N to y
Q29_1 (Dense understory edge?) was changed from Y to n
Q29_2 (Buffer zone slopes < 5%?) was changed from Y to n
Q34_1 (Local dams?) was changed from Y to n
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to n
Q43_B (1 in < dominant water depth < 4 inches) was changed from N to y
Q43_D (9 in < dominant water depth < 20 inches) was changed from Y to n
Q44_C (5 in < secondary water depth < 8 inches) was changed from Y to n
Q44_D (9 in < secondary water depth < 20 inches) was changed from Y to n
Q44_E (21 in < secondary water depth < 39 inches) was changed from Y to n
Q44_F (40 in < secondary water depth < 59 inches) was changed from Y to n
Q44_G (5 feet < secondary water depth < 6.5 feet) was changed from Y to n
Q44_H (6.5 feet < secondary water depth < 26 feet) was changed from Y to n
Q44_I (secondary water depth > 26 feet) was changed from Y to n
Q66_2_1 (Waterfowl Group 1 Mig/Wint present?) was changed from Y to n
Q66_2_3 (Black Duck Mig/Wint present?) was changed from Y to n

2 G_c

Q2_1_1 (Area < 5 acres?) was changed from N to y
Q2_1_2 (Area > 40 acres?) was changed from Y to n
Q5_1_2 (AA > 20% of watershed?) was changed from Y to n
Q8_1 (Permanent inlet?) was changed from Y to n
Q8_3 (Permanent outlet?) was changed from Y to n
Q9_1 (Outlet < one third average width?) was changed from Y to n
Q22_1_1 (AA contains a Channel?) was changed from Y to n
Q22_1_2 (AA contains a Sinuous channel?) was changed from Y to n
Q23 (Is the AA Channelized?) was changed from Y to n
Q25_2_A (Primary source of sediment = sheetflow?) was changed from Y to n
Q25_2_B (Primary source of sediment = channel flow?) was changed from N to y
Q26_2 (Primary source of nutrients = sheetflow?) was changed from Y to n
Q26_3 (Primary source of nutrients = channel flow?) was changed from N to y
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to n
Q27_3 (Primary source of toxics = channel flow?) was changed from N to y
Q29_1 (Dense understory edge?) was changed from Y to n
Q29_2 (Buffer zone slopes < 5%?) was changed from Y to n
Q31_6_B (emergent in Zone B = 1% - 30% of Zones B and C?) was changed from Y to n
Q31_6_E (emergent in Zone B = 100% of Zones B and C or not present?) was changed from N to y
Q36_1_2 (Average width of erect veg in Zones A and B > 500 feet?) was changed from Y to n
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to n
Q43_B (1 in < dominant water depth < 4 inches) was changed from N to y
Q43_D (9 in < dominant water depth < 20 inches) was changed from Y to n
Q44_C (5 in < secondary water depth < 8 inches) was changed from Y to n
Q44_D (9 in < secondary water depth < 20 inches) was changed from Y to n
Q44_E (21 in < secondary water depth < 39 inches) was changed from Y to n
Q44_F (40 in < secondary water depth < 59 inches) was changed from Y to n
Q44_G (5 feet < secondary water depth < 6.5 feet) was changed from Y to n
Q44_H (6.5 feet < secondary water depth < 26 feet) was changed from Y to n
Q44_I (secondary water depth > 26 feet) was changed from Y to n
Q66_2_1 (Waterfowl Group 1 Mig/Wint present?) was changed from Y to n
Q66_2_3 (Black Duck Mig/Wint present?) was changed from Y to n

2 H_b

Q2_1_1 (Area < 5 acres?) was changed from N to y
Q2_1_2 (Area > 40 acres?) was changed from Y to n
Q5_2 (Upslope wet depressions > 5% of watershed?) was changed from Y to n
Q8_1 (Permanent inlet?) was changed from Y to n
Q8_3 (Permanent outlet?) was changed from Y to n
Q9_1 (Outlet < one third average width?) was changed from Y to n
Q19_2 (Wave protection?) was changed from Y to n
Q22_1_1 (AA contains a Channel?) was changed from Y to n
Q23 (Is the AA Channelized?) was changed from Y to n
Q25_3 (Wetland stabilizes erosion?) was changed from Y to n
Q31_6_B (emergent in Zone B = 1% - 30% of Zones B and C?) was changed from Y to n
Q31_6_E (emergent in Zone B = 100% of Zones B and C or not present?) was changed from N to y
Q32_I (Spatial Dominant Hydroperiod = regularly flooded tidal?) was changed from Y to n
Q32_K (Spatial Dominant Hydroperiod = irregularly flooded tidal?) was changed from N to y
Q33_I (Permanent Hydroperiod = regularly flooded tidal?) was changed from Y to n
Q33_K (Permanent Hydroperiod = irregularly flooded tidal?) was changed from N to y

Q37 (Open water (d>2ft,w>6ft,l>1000ft)?) was changed from Y to n
Q39 (Special habitat features?) was changed from Y to n
Q41_2 (Peak flow velocity > 30 cm/s?) was changed from Y to n
Q43_B (1 in < dominant water depth < 4 inches) was changed from N to y
Q43_G (5 feet < dominant water depth < 6.5 feet) was changed from Y to n
Q44_C (5 in < secondary water depth < 8 inches) was changed from Y to n
Q44_D (9 in < secondary water depth < 20 inches) was changed from Y to n
Q44_E (21 in < secondary water depth < 39 inches) was changed from Y to n
Q44_F (40 in < secondary water depth < 59 inches) was changed from Y to n
Q44_G (5 feet < secondary water depth < 6.5 feet) was changed from Y to n
Q44_H (6.5 feet < secondary water depth < 26 feet) was changed from Y to n
Q44_I (secondary water depth > 26 feet) was changed from Y to n
Q46_A (Physical Habitat Interspersion = uniform) was changed from N to y
Q46_B (Physical Habitat Interspersion = intermediate) was changed from Y to n
Q66_1_1 (Group 1 Waterfowl Breeding present?) was changed from Y to n
Q66_2_1 (Waterfowl Group 1 Mig/Wint present?) was changed from Y to n
Q66_2_3 (Black Duck Mig/Wint present?) was changed from Y to n
Q66_2_5 (Mergansers Mig/Wint present?) was changed from Y to n
Q66_2_7 (Bufflehead/Goldeneye Mig/Wint present?) was changed from Y to n

2 M

I24 (Research resource?) was changed from Y to n
Q15_2 (Channel flow spreading?) was changed from Y to n
Q26_2 (Primary source of nutrients = sheetflow?) was changed from Y to n
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to n
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to n

2 Q

I24 (Research resource?) was changed from Y to n
Q5_1_2 (AA > 20% of watershed?) was changed from Y to n
Q25_2_A (Primary source of sediment = sheetflow?) was changed from Y to n
Q25_2_B (Primary source of sediment = channel flow?) was changed from N to y
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to n
Q29_1 (Dense understory edge?) was changed from Y to n
Q29_2 (Buffer zone slopes < 5%?) was changed from Y to n

2 R

Q29_1 (Dense understory edge?) was changed from Y to n
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to n

2 T

Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to n
Q27_3 (Primary source of toxics = channel flow?) was changed from N to y
Q29_2 (Buffer zone slopes < 5%?) was changed from Y to n
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to n

220

Q22_1_1 (AA contains a Channel?) was changed from Y to n
Q25_2_A (Primary source of sediment = sheetflow?) was changed from Y to n
Q25_2_B (Primary source of sediment = channel flow?) was changed from N to y
Q26_2 (Primary source of nutrients = sheetflow?) was changed from Y to n
Q26_3 (Primary source of nutrients = channel flow?) was changed from N to y
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to n
Q27_3 (Primary source of toxics = channel flow?) was changed from N to y
Q29_1 (Dense understory edge?) was changed from Y to n
Q29_2 (Buffer zone slopes < 5%?) was changed from Y to n
Q32_A (Spatial Dominant Hydroperiod = perm flooded nontidal?) was changed from Y to n
Q32_D (Spatial Dominant Hydroperiod = seasonally flooded nontidal?) was changed from N to y
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to n
Q66_1_1 (Group 1 Waterfowl Breeding present?) was changed from Y to n

27_a

Q8_1 (Permanent inlet?) was changed from Y to n
Q25_2_A (Primary source of sediment = sheetflow?) was changed from Y to n
Q25_2_B (Primary source of sediment = channel flow?) was changed from N to y
Q26_2 (Primary source of nutrients = sheetflow?) was changed from Y to n
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to n
Q29_1 (Dense understory edge?) was changed from Y to n
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to n

27_b

Q5_2 (Upslope wet depressions > 5% of watershed?) was changed from Y to n
Q8_1 (Permanent inlet?) was changed from Y to n
Q8_3 (Permanent outlet?) was changed from Y to n
Q9_1 (Outlet < one third average width?) was changed from Y to n

Q25_2_A (Primary source of sediment = sheetflow?) was changed from Y to n
Q25_2_B (Primary source of sediment = channel flow?) was changed from N to y
Q26_2 (Primary source of nutrients = sheetflow?) was changed from Y to n
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to n
Q29_1 (Dense understory edge?) was changed from Y to n
Q32_I (Spatial Dominant Hydroperiod = regularly flooded tidal?) was changed from Y to n
Q32_K (Spatial Dominant Hydroperiod = irregularly flooded tidal?) was changed from N to y
Q33_I (Permanent Hydroperiod = regularly flooded tidal?) was changed from Y to n
Q33_K (Permanent Hydroperiod = irregularly flooded tidal?) was changed from N to y
Q37 (Open water (d>2ft,w>6ft,l>1000ft)?) was changed from Y to n
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to n
Q44_C (5 in < secondary water depth < 8 inches) was changed from Y to n
Q44_D (9 in < secondary water depth < 20 inches) was changed from Y to n
Q44_E (21 in < secondary water depth < 39 inches) was changed from Y to n
Q44_F (40 in < secondary water depth < 59 inches) was changed from Y to n
Q44_G (5 feet < secondary water depth < 6.5 feet) was changed from Y to n
Q44_H (6.5 feet < secondary water depth < 26 feet) was changed from Y to n
Q44_I (secondary water depth > 26 feet) was changed from Y to n
Q46_A (Physical Habitat Interspersion = uniform) was changed from N to y
Q46_B (Physical Habitat Interspersion = intermediate) was changed from Y to n
Q66_1_1 (Group 1 Waterfowl Breeding present?) was changed from Y to n
Q66_2_1 (Waterfowl Group 1 Mig/Wint present?) was changed from Y to n
Q66_2_3 (Black Duck Mig/Wint present?) was changed from Y to n

3 1_a
Q5_1_2 (AA > 20% of watershed?) was changed from Y to n
Q25_2_A (Primary source of sediment = sheetflow?) was changed from Y to n
Q25_2_B (Primary source of sediment = channel flow?) was changed from N to y
Q26_2 (Primary source of nutrients = sheetflow?) was changed from Y to n
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to n
Q29_1 (Dense understory edge?) was changed from Y to n
Q29_2 (Buffer zone slopes < 5%?) was changed from Y to n
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to n

3 1_b
Q2_1_1 (Area < 5 acres?) was changed from N to y
Q2_1_2 (Area > 40 acres?) was changed from Y to n
Q5_1_2 (AA > 20% of watershed?) was changed from Y to n
Q8_3 (Permanent outlet?) was changed from Y to n
Q8_4 (Intermittent outlet?) was changed from N to y
Q14_1 (AA on 25 square foot island?) was changed from Y to n
Q19_1_A (Wind shelter?) was changed from Y to n
Q22_1_1 (AA contains a Channel?) was changed from Y to n
Q25_2_A (Primary source of sediment = sheetflow?) was changed from Y to n
Q25_2_B (Primary source of sediment = channel flow?) was changed from N to y
Q26_2 (Primary source of nutrients = sheetflow?) was changed from Y to n
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to n
Q29_1 (Dense understory edge?) was changed from Y to n
Q29_2 (Buffer zone slopes < 5%?) was changed from Y to n
Q31_3 (Area of Zone B > Zone A?) was changed from Y to n
Q33_A (Permanent Hydroperiod = perm flooded nontidal?) was changed from Y to n
Q33_D (Permanent Hydroperiod = seasonally flooded nontidal?) was changed from N to y
Q34_1 (Local dams?) was changed from Y to n
Q37 (Open water (d>2ft,w>6ft,l>1000ft)?) was changed from Y to n
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to n
Q44_C (5 in < secondary water depth < 8 inches) was changed from Y to n
Q44_D (9 in < secondary water depth < 20 inches) was changed from Y to n
Q44_E (21 in < secondary water depth < 39 inches) was changed from Y to n
Q49_1_1 (20%-80% Pools?) was changed from Y to n
Q49_2 (Fish cover?) was changed from Y to n
Q50 (Plants: waterfowl value?) was changed from Y to n
Q65_3 (Warm Freshwater Fish present?) was changed from Y to n
Q66_1_1 (Group 1 Waterfowl Breeding present?) was changed from Y to n
Q66_2_1 (Waterfowl Group 1 Mig/Wint present?) was changed from Y to n
Q66_2_3 (Black Duck Mig/Wint present?) was changed from Y to n

304
Q15_1_A (Vegetation<-->Water = solid form) was changed from N to y
Q15_1_B (Vegetation<-->Water = intermediate) was changed from Y to n
Q15_2 (Channel flow spreading?) was changed from Y to n
Q29_1 (Dense understory edge?) was changed from Y to n

Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to n

32

Q26_2 (Primary source of nutrients = sheetflow?) was changed from Y to n
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to n

33 A

Q26_2 (Primary source of nutrients = sheetflow?) was changed from Y to n
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to n
Q29_1 (Dense understory edge?) was changed from Y to n
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to n

33 B

Q26_2 (Primary source of nutrients = sheetflow?) was changed from Y to n
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to n
Q29_1 (Dense understory edge?) was changed from Y to n
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to n
Q66_1_1 (Group 1 Waterfowl Breeding present?) was changed from Y to n

38 A

Q2_1_1 (Area < 5 acres?) was changed from N to y
Q8_1 (Permanent inlet?) was changed from Y to n
Q8_2 (Intermittent inlet?) was changed from N to y
Q8_3 (Permanent outlet?) was changed from Y to n
Q8_4 (Intermittent outlet?) was changed from N to y
Q15_1_A (Vegetation<-->Water = solid form) was changed from N to y
Q15_1_B (Vegetation<-->Water = intermediate) was changed from Y to n
Q15_2 (Channel flow spreading?) was changed from Y to n
Q18 (Upland<-->Wetland edge irregular?) was changed from Y to n
Q22_1_1 (AA contains a Channel?) was changed from Y to n
Q22_1_2 (AA contains a Sinuous channel?) was changed from Y to n
Q26_2 (Primary source of nutrients = sheetflow?) was changed from Y to n
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to n
Q29_1 (Dense understory edge?) was changed from Y to n
Q29_2 (Buffer zone slopes < 5%?) was changed from Y to n
Q37 (Open water (d>2ft,w>6ft,l>1000ft)?) was changed from Y to n
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to n
Q50 (Plants: waterfowl value?) was changed from Y to n
Q66_1_1 (Group 1 Waterfowl Breeding present?) was changed from Y to n
Q66_2_1 (Waterfowl Group 1 Mig/Wint present?) was changed from Y to n
Q66_2_3 (Black Duck Mig/Wint present?) was changed from Y to n
Q66_2_10 (Geese Mig/Wint present?) was changed from Y to n

39

Q2_1_1 (Area < 5 acres?) was changed from N to y
Q8_1 (Permanent inlet?) was changed from Y to n
Q8_3 (Permanent outlet?) was changed from Y to n
Q8_4 (Intermittent outlet?) was changed from N to y
Q13_CA (Secondary veg: Aquatic bed and algal) was changed from Y to n
Q15_1_A (Vegetation<-->Water = solid form) was changed from N to y
Q15_1_B (Vegetation<-->Water = intermediate) was changed from Y to n
Q15_2 (Channel flow spreading?) was changed from Y to n
Q16_A (Vegetation class = solid) was changed from N to y
Q16_B (Vegetation class = intermediate) was changed from Y to n
Q22_1_1 (AA contains a Channel?) was changed from Y to n
Q25_2_A (Primary source of sediment = sheetflow?) was changed from Y to n
Q25_2_B (Primary source of sediment = channel flow?) was changed from N to y
Q26_2 (Primary source of nutrients = sheetflow?) was changed from Y to n
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to n
Q29_1 (Dense understory edge?) was changed from Y to n
Q29_2 (Buffer zone slopes < 5%?) was changed from Y to n
Q31_2 (Area of Zone B > 10% of AA?) was changed from Y to n
Q31_3 (Area of Zone B > Zone A?) was changed from Y to n
Q32_D (Spatial Dominant Hydroperiod = seasonally flooded nontidal?) was changed from N to y
Q32_I (Spatial Dominant Hydroperiod = regularly flooded tidal?) was changed from Y to n
Q33_D (Permanent Hydroperiod = seasonally flooded nontidal?) was changed from N to y
Q33_J (Permanent Hydroperiod = irregularly exposed tidal?) was changed from Y to n
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to n
Q44_B (1 in < secondary water depth < 4 inches) was changed from Y to n
Q44_C (5 in < secondary water depth < 8 inches) was changed from Y to n
Q44_D (9 in < secondary water depth < 20 inches) was changed from Y to n
Q44_E (21 in < secondary water depth < 39 inches) was changed from Y to n
Q46_A (Physical Habitat Interspersion = uniform) was changed from N to y

Q46_C (Physical Habitat Interspersion = mosaic) was changed from Y to n
Q50 (Plants: waterfowl value?) was changed from Y to n
Q66_1_1 (Group 1 Waterfowl Breeding present?) was changed from Y to n
Q66_2_1 (Waterfowl Group 1 Mig/Wint present?) was changed from Y to n
Q66_2_3 (Black Duck Mig/Wint present?) was changed from Y to n
Q66_2_10 (Geese Mig/Wint present?) was changed from Y to n

4 B
I24 (Research resource?) was changed from Y to n
Q25_2_A (Primary source of sediment = sheetflow?) was changed from Y to n
Q25_2_B (Primary source of sediment = channel flow?) was changed from N to y
Q26_2 (Primary source of nutrients = sheetflow?) was changed from Y to n
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to n
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to n

4 C
Q26_2 (Primary source of nutrients = sheetflow?) was changed from Y to n
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to n
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to n

4 D_a
Q2_1_3 (Area > 200 acres?) was changed from Y to n
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to n
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to n

4 D_b
I24 (Research resource?) was changed from Y to n
Q2_1_1 (Area < 5 acres?) was changed from N to y
Q2_1_2 (Area > 40 acres?) was changed from Y to n
Q2_1_3 (Area > 200 acres?) was changed from Y to n
Q5_2 (Upslope wet depressions > 5% of watershed?) was changed from Y to n
Q8_1 (Permanent inlet?) was changed from Y to n
Q8_3 (Permanent outlet?) was changed from Y to n
Q8_4 (Intermittent outlet?) was changed from N to y
Q11 (Fringe or island wetland?) was changed from Y to n
Q14_1 (AA on 25 square foot island?) was changed from Y to n
Q15_1_A (Vegetation<-->Water = solid form) was changed from N to y
Q15_1_B (Vegetation<-->Water = intermediate) was changed from Y to n
Q22_1_1 (AA contains a Channel?) was changed from Y to n
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to n
Q29_1 (Dense understory edge?) was changed from Y to n
Q29_2 (Buffer zone slopes < 5%?) was changed from Y to n
Q31_5 (Area of Zone A >= 10% of Zone B and C?) was changed from Y to n
Q37 (Open water (d>2ft,w>6ft,l>1000ft)?) was changed from Y to n
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to n
Q44_C (5 in < secondary water depth < 8 inches) was changed from Y to n
Q44_D (9 in < secondary water depth < 20 inches) was changed from Y to n
Q44_E (21 in < secondary water depth < 39 inches) was changed from Y to n
Q44_F (40 in < secondary water depth < 59 inches) was changed from Y to n
Q44_G (5 feet < secondary water depth < 6.5 feet) was changed from Y to n
Q44_H (6.5 feet < secondary water depth < 26 feet) was changed from Y to n
Q66_1_1 (Group 1 Waterfowl Breeding present?) was changed from Y to n
Q66_2_1 (Waterfowl Group 1 Mig/Wint present?) was changed from Y to n
Q66_2_3 (Black Duck Mig/Wint present?) was changed from Y to n
Q66_2_5 (Mergansers Mig/Wint present?) was changed from Y to n
Q66_2_7 (Bufflehead/Goldeneye Mig/Wint present?) was changed from Y to n
Q66_2_10 (Geese Mig/Wint present?) was changed from Y to n

4 F
Q26_2 (Primary source of nutrients = sheetflow?) was changed from Y to n
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to n
Q29_2 (Buffer zone slopes < 5%?) was changed from Y to n
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to n
Q66_1_1 (Group 1 Waterfowl Breeding present?) was changed from Y to n

4 G
Q26_2 (Primary source of nutrients = sheetflow?) was changed from Y to n
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to n
Q29_2 (Buffer zone slopes < 5%?) was changed from Y to n
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to n

48
Q26_2 (Primary source of nutrients = sheetflow?) was changed from Y to n
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to n
Q27_3 (Primary source of toxics = channel flow?) was changed from N to y

Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to n
Q44_F (40 in < secondary water depth < 59 inches) was changed from Y to n
Q66_1_1 (Group 1 Waterfowl Breeding present?) was changed from Y to n

54_a

Q2_1_2 (Area > 40 acres?) was changed from Y to n
Q8_3 (Permanent outlet?) was changed from Y to n
Q9_1 (Outlet < one third average width?) was changed from Y to n
Q15_1_A (Vegetation<-->Water = solid form) was changed from N to y
Q15_1_B (Vegetation<-->Water = intermediate) was changed from Y to n
Q25_2_A (Primary source of sediment = sheetflow?) was changed from Y to n
Q25_2_B (Primary source of sediment = channel flow?) was changed from N to y
Q26_2 (Primary source of nutrients = sheetflow?) was changed from Y to n
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to n
Q32_I (Spatial Dominant Hydroperiod = regularly flooded tidal?) was changed from Y to n
Q32_K (Spatial Dominant Hydroperiod = irregularly flooded tidal?) was changed from N to y
Q33_I (Permanent Hydroperiod = regularly flooded tidal?) was changed from Y to n
Q33_K (Permanent Hydroperiod = irregularly flooded tidal?) was changed from N to y
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to n

54_b

Q2_1_2 (Area > 40 acres?) was changed from Y to n
Q8_1 (Permanent inlet?) was changed from Y to n
Q25_2_A (Primary source of sediment = sheetflow?) was changed from Y to n
Q25_2_B (Primary source of sediment = channel flow?) was changed from N to y
Q26_2 (Primary source of nutrients = sheetflow?) was changed from Y to n
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to n

97_a

Q16_A (Vegetation class = solid) was changed from N to y
Q16_B (Vegetation class = intermediate) was changed from Y to n
Q25_2_A (Primary source of sediment = sheetflow?) was changed from Y to n
Q25_2_B (Primary source of sediment = channel flow?) was changed from N to y
Q26_2 (Primary source of nutrients = sheetflow?) was changed from Y to n
Q26_3 (Primary source of nutrients = channel flow?) was changed from N to y
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to n
Q27_3 (Primary source of toxics = channel flow?) was changed from N to y
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to n

97_b

Q2_1_1 (Area < 5 acres?) was changed from N to y
Q16_A (Vegetation class = solid) was changed from N to y
Q16_B (Vegetation class = intermediate) was changed from Y to n
Q25_2_A (Primary source of sediment = sheetflow?) was changed from Y to n
Q25_2_B (Primary source of sediment = channel flow?) was changed from N to y
Q26_2 (Primary source of nutrients = sheetflow?) was changed from Y to n
Q26_3 (Primary source of nutrients = channel flow?) was changed from N to y
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to n
Q27_3 (Primary source of toxics = channel flow?) was changed from N to y
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to n

99

Q25_2_A (Primary source of sediment = sheetflow?) was changed from Y to n
Q25_2_B (Primary source of sediment = channel flow?) was changed from N to y
Q26_2 (Primary source of nutrients = sheetflow?) was changed from Y to n
Q27_2 (Primary source of toxics = sheetflow?) was changed from Y to n
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to n
Q66_1_1 (Group 1 Waterfowl Breeding present?) was changed from Y to n
Q66_2_1 (Waterfowl Group 1 Mig/Wint present?) was changed from Y to n
Q66_2_3 (Black Duck Mig/Wint present?) was changed from Y to n

Attachment N-3a

Indirect Impacts Avoided by use of SAMP Management Actions
04/12/94

100
Q26_2 (Primary source of nutrients = sheetflow?) was changed from n to Y
Q26_3 (Primary source of nutrients = channel flow?) was changed from Y to n
Q27_2 (Primary source of toxics = sheetflow?) was changed from n to Y
Q27_3 (Primary source of toxics = channel flow?) was changed from Y to n
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from n to Y
108
Q18 (Upland<-->Wetland edge irregular?) was changed from n to Y
Q25_2_A (Primary source of sediment = sheetflow?) was changed from n to Y
Q25_2_B (Primary source of sediment = channel flow?) was changed from y to N
Q26_2 (Primary source of nutrients = sheetflow?) was changed from n to Y
Q26_3 (Primary source of nutrients = channel flow?) was changed from Y to n
Q27_2 (Primary source of toxics = sheetflow?) was changed from n to Y
Q27_3 (Primary source of toxics = channel flow?) was changed from Y to n
Q29_1 (Dense understory edge?) was changed from n to Y
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from n to Y
112
Q25_2_A (Primary source of sediment = sheetflow?) was changed from n to Y
Q25_2_B (Primary source of sediment = channel flow?) was changed from y to N
Q26_2 (Primary source of nutrients = sheetflow?) was changed from n to Y
Q26_3 (Primary source of nutrients = channel flow?) was changed from Y to n
Q27_2 (Primary source of toxics = sheetflow?) was changed from n to Y
Q27_3 (Primary source of toxics = channel flow?) was changed from Y to n
Q29_1 (Dense understory edge?) was changed from n to Y
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from n to Y
113
Q19_1_A (Wind shelter?) was changed from n to Y
Q25_2_A (Primary source of sediment = sheetflow?) was changed from n to Y
Q25_2_B (Primary source of sediment = channel flow?) was changed from y to N
Q26_2 (Primary source of nutrients = sheetflow?) was changed from n to Y
Q26_3 (Primary source of nutrients = channel flow?) was changed from Y to n
Q27_2 (Primary source of toxics = sheetflow?) was changed from n to Y
Q27_3 (Primary source of toxics = channel flow?) was changed from Y to n
Q29_1 (Dense understory edge?) was changed from n to Y
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from n to Y
151
Q8_1 (Permanent inlet?) was changed from n to Y
Q8_3 (Permanent outlet?) was changed from n to Y
Q13_CB (Secondary veg: Aquatic bed and floating vascular) was changed from n to Y
Q25_2_A (Primary source of sediment = sheetflow?) was changed from n to Y
Q25_2_B (Primary source of sediment = channel flow?) was changed from y to N
Q26_2 (Primary source of nutrients = sheetflow?) was changed from n to Y
Q26_3 (Primary source of nutrients = channel flow?) was changed from y to N
Q27_2 (Primary source of toxics = sheetflow?) was changed from n to Y
Q27_3 (Primary source of toxics = channel flow?) was changed from y to N
Q31_6_B (emergent in Zone B = 1% - 30% of Zones B and C?) was changed from n to Y
Q31_6_D (emergent in Zone B = 61% - 99% of Zones B and C?) was changed from y to N
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from n to Y
Q50 (Plants: waterfowl value?) was changed from n to Y
18
Q25_2_A (Primary source of sediment = sheetflow?) was changed from n to Y
Q25_2_B (Primary source of sediment = channel flow?) was changed from y to N
Q26_2 (Primary source of nutrients = sheetflow?) was changed from n to Y
Q26_3 (Primary source of nutrients = channel flow?) was changed from Y to n
Q27_2 (Primary source of toxics = sheetflow?) was changed from n to Y
Q27_3 (Primary source of toxics = channel flow?) was changed from Y to n
Q29_1 (Dense understory edge?) was changed from n to Y
Q29_2 (Buffer zone slopes < 5%?) was changed from n to Y
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from n to Y
19
Q25_2_A (Primary source of sediment = sheetflow?) was changed from n to Y
Q25_2_B (Primary source of sediment = channel flow?) was changed from y to N
Q27_2 (Primary source of toxics = sheetflow?) was changed from n to Y

Q27_3 (Primary source of toxics = channel flow?) was changed from Y to n
Q29_1 (Dense understory edge?) was changed from n to Y
Q29_2 (Buffer zone slopes < 5%?) was changed from n to Y
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from n to Y

2 2
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from n to Y

2 3
Q18 (Upland<-->Wetland edge irregular?) was changed from n to Y
Q26_2 (Primary source of nutrients = sheetflow?) was changed from n to Y
Q26_3 (Primary source of nutrients = channel flow?) was changed from Y to n
Q27_2 (Primary source of toxics = sheetflow?) was changed from n to Y
Q27_3 (Primary source of toxics = channel flow?) was changed from Y to n
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from n to Y

2 4A
Q29_1 (Dense understory edge?) was changed from n to Y
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from n to Y

2 6_a
Q27_2 (Primary source of toxics = sheetflow?) was changed from n to Y
Q99 (Proximity to public transportation) was changed from n to Y

2 6_b
Q2_1_1 (Area < 5 acres?) was changed from y to N
Q2_1_2 (Area > 40 acres?) was changed from n to Y
Q5_2 (Upslope wet depressions > 5% of watershed?) was changed from n to Y
Q8_1 (Permanent inlet?) was changed from n to Y
Q8_2 (Intermittent inlet?) was changed from n to Y
Q8_3 (Permanent outlet?) was changed from n to Y
Q9_1 (Outlet < one third average width?) was changed from n to Y
Q14_1 (AA on 25 square foot island?) was changed from n to Y
Q15_1_A (Vegetation<-->Water = solid form) was changed from y to N
Q15_1_B (Vegetation<-->Water = intermediate) was changed from n to Y
Q22_1_1 (AA contains a Channel?) was changed from n to Y
Q22_1_2 (AA contains a Sinuous channel?) was changed from n to Y
Q27_2 (Primary source of toxics = sheetflow?) was changed from n to Y
Q31_6_C (emergent in Zone B = 31% - 60% of Zones B and C?) was changed from n to Y
Q31_6_E (emergent in Zone B = 100% of Zones B and C or not present?) was changed from y to N
Q32_I (Spatial Dominant Hydroperiod = regularly flooded tidal?) was changed from n to Y
Q32_K (Spatial Dominant Hydroperiod = irregularly flooded tidal?) was changed from y to N
Q33_I (Permanent Hydroperiod = regularly flooded tidal?) was changed from n to Y
Q33_K (Permanent Hydroperiod = irregularly flooded tidal?) was changed from y to N
Q36_1_2 (Average width of erect veg in Zones A and B > 500 feet?) was changed from n to Y
Q37 (Open water (d>2ft,w>6ft,l>1000ft)?) was changed from n to Y
Q41_2 (Peak flow velocity > 30 cm/s?) was changed from n to Y
Q43_B (1 in < dominant water depth < 4 inches) was changed from y to N
Q43_H (6.5 feet < dominant water depth < 26 feet) was changed from n to Y
Q44_C (5 in < secondary water depth < 8 inches) was changed from n to Y
Q44_D (9 in < secondary water depth < 20 inches) was changed from n to Y
Q44_E (21 in < secondary water depth < 39 inches) was changed from n to Y
Q44_F (40 in < secondary water depth < 59 inches) was changed from n to Y
Q44_G (5 feet < secondary water depth < 6.5 feet) was changed from n to Y
Q44_H (6.5 feet < secondary water depth < 26 feet) was changed from n to Y
Q44_I (secondary water depth > 26 feet) was changed from n to Y
Q46_A (Physical Habitat Interspersion = uniform) was changed from y to N
Q46_B (Physical Habitat Interspersion = intermediate) was changed from N to y
Q66_2_1 (Waterfowl Group 1 Mig/Wint present?) was changed from n to Y
Q66_2_3 (Black Duck Mig/Wint present?) was changed from n to Y
Q66_2_5 (Mergansers Mig/Wint present?) was changed from n to Y
Q66_2_7 (Bufflehead/Goldeneye Mig/Wint present?) was changed from n to Y
Q66_2_10 (Geese Mig/Wint present?) was changed from n to Y

2 6_c
Q2_1_1 (Area < 5 acres?) was changed from y to N
Q2_1_2 (Area > 40 acres?) was changed from n to Y
Q5_2 (Upslope wet depressions > 5% of watershed?) was changed from n to Y
Q8_1 (Permanent inlet?) was changed from n to Y
Q8_2 (Intermittent inlet?) was changed from n to Y
Q8_3 (Permanent outlet?) was changed from n to Y
Q9_1 (Outlet < one third average width?) was changed from n to Y
Q14_1 (AA on 25 square foot island?) was changed from n to Y
Q15_1_A (Vegetation<-->Water = solid form) was changed from y to N

Q15_1_B (Vegetation<-->Water = intermediate) was changed from n to Y
Q22_1_1 (AA contains a Channel?) was changed from n to Y
Q22_1_2 (AA contains a Sinuous channel?) was changed from n to Y
Q27_2 (Primary source of toxics = sheetflow?) was changed from n to Y
Q31_6_C (emergent in Zone B = 31% - 60% of Zones B and C?) was changed from n to Y
Q31_6_E (emergent in Zone B = 100% of Zones B and C or not present?) was changed from y to N
Q32_I (Spatial Dominant Hydroperiod = regularly flooded tidal?) was changed from n to Y
Q32_K (Spatial Dominant Hydroperiod = irregularly flooded tidal?) was changed from y to N
Q33_I (Permanent Hydroperiod = regularly flooded tidal?) was changed from n to Y
Q33_K (Permanent Hydroperiod = irregularly flooded tidal?) was changed from y to N
Q36_1_2 (Average width of erect veg in Zones A and B > 500 feet?) was changed from n to Y
Q37 (Open water (d>2ft,w>6ft,l>1000ft)?) was changed from n to Y
Q41_2 (Peak flow velocity > 30 cm/s?) was changed from n to Y
Q43_B (1 in < dominant water depth < 4 inches) was changed from y to N
Q43_H (6.5 feet < dominant water depth < 26 feet) was changed from n to Y
Q44_C (5 in < secondary water depth < 8 inches) was changed from n to Y
Q44_D (9 in < secondary water depth < 20 inches) was changed from n to Y
Q44_E (21 in < secondary water depth < 39 inches) was changed from n to Y
Q44_F (40 in < secondary water depth < 59 inches) was changed from n to Y
Q44_G (5 feet < secondary water depth < 6.5 feet) was changed from n to Y
Q44_H (6.5 feet < secondary water depth < 26 feet) was changed from n to Y
Q44_I (secondary water depth > 26 feet) was changed from n to Y
Q46_A (Physical Habitat Interspersion = uniform) was changed from y to N
Q46_B (Physical Habitat Interspersion = intermediate) was changed from N to y
Q66_2_1 (Waterfowl Group 1 Mig/Wint present?) was changed from n to Y
Q66_2_3 (Black Duck Mig/Wint present?) was changed from n to Y
Q66_2_5 (Mergansers Mig/Wint present?) was changed from n to Y
Q66_2_7 (Bufflehead/Goldeneye Mig/Wint present?) was changed from n to Y
Q66_2_10 (Geese Mig/Wint present?) was changed from n to Y

2 9_a

Q26_2 (Primary source of nutrients = sheetflow?) was changed from n to Y
Q99 (Proximity to public transportation) was changed from n to Y

2 9_b

Q8_1 (Permanent inlet?) was changed from n to Y
Q8_2 (Intermittent inlet?) was changed from n to Y
Q8_3 (Permanent outlet?) was changed from n to Y
Q9_1 (Outlet < one third average width?) was changed from n to Y
Q22_1_1 (AA contains a Channel?) was changed from n to Y
Q22_1_2 (AA contains a Sinuous channel?) was changed from n to Y
Q26_2 (Primary source of nutrients = sheetflow?) was changed from n to Y
Q31_6_D (emergent in Zone B = 61% - 99% of Zones B and C?) was changed from n to Y
Q31_6_E (emergent in Zone B = 100% of Zones B and C or not present?) was changed from y to N
Q32_I (Spatial Dominant Hydroperiod = regularly flooded tidal?) was changed from n to Y
Q32_K (Spatial Dominant Hydroperiod = irregularly flooded tidal?) was changed from y to N
Q33_I (Permanent Hydroperiod = regularly flooded tidal?) was changed from n to Y
Q33_K (Permanent Hydroperiod = irregularly flooded tidal?) was changed from y to N
Q37 (Open water (d>2ft,w>6ft,l>1000ft)?) was changed from n to Y
Q41_2 (Peak flow velocity > 30 cm/s?) was changed from n to Y
Q43_B (1 in < dominant water depth < 4 inches) was changed from y to N
Q43_D (9 in < dominant water depth < 20 inches) was changed from n to Y
Q44_C (5 in < secondary water depth < 8 inches) was changed from n to Y
Q44_D (9 in < secondary water depth < 20 inches) was changed from n to Y
Q44_E (21 in < secondary water depth < 39 inches) was changed from n to Y
Q44_F (40 in < secondary water depth < 59 inches) was changed from n to Y
Q44_G (5 feet < secondary water depth < 6.5 feet) was changed from n to Y
Q44_H (6.5 feet < secondary water depth < 26 feet) was changed from n to Y
Q44_I (secondary water depth > 26 feet) was changed from n to Y
Q46_A (Physical Habitat Interspersion = uniform) was changed from y to N
Q46_B (Physical Habitat Interspersion = intermediate) was changed from n to Y
Q66_2_1 (Waterfowl Group 1 Mig/Wint present?) was changed from n to Y
Q66_2_3 (Black Duck Mig/Wint present?) was changed from n to Y

2 E_a

Q25_2_A (Primary source of sediment = sheetflow?) was changed from n to Y
Q25_2_B (Primary source of sediment = channel flow?) was changed from y to N
Q26_2 (Primary source of nutrients = sheetflow?) was changed from n to Y
Q26_3 (Primary source of nutrients = channel flow?) was changed from Y to n
Q27_2 (Primary source of toxics = sheetflow?) was changed from n to Y
Q27_3 (Primary source of toxics = channel flow?) was changed from Y to n

Q41_1 (Peak flow velocity < 10 cm/s?) was changed from n to Y

2 E_b

Q8_1 (Permanent inlet?) was changed from n to Y
Q8_3 (Permanent outlet?) was changed from n to Y
Q8_4 (Intermittent outlet?) was changed from y to N
Q25_2_A (Primary source of sediment = sheetflow?) was changed from n to Y
Q25_2_B (Primary source of sediment = channel flow?) was changed from y to N
Q26_2 (Primary source of nutrients = sheetflow?) was changed from n to Y
Q26_3 (Primary source of nutrients = channel flow?) was changed from Y to n
Q27_2 (Primary source of toxics = sheetflow?) was changed from n to Y
Q27_3 (Primary source of toxics = channel flow?) was changed from Y to n
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from n to Y

2 E_c

Q8_1 (Permanent inlet?) was changed from n to Y
Q8_3 (Permanent outlet?) was changed from n to Y
Q8_4 (Intermittent outlet?) was changed from y to N
Q25_2_A (Primary source of sediment = sheetflow?) was changed from n to Y
Q25_2_B (Primary source of sediment = channel flow?) was changed from y to N
Q26_2 (Primary source of nutrients = sheetflow?) was changed from n to Y
Q26_3 (Primary source of nutrients = channel flow?) was changed from Y to n
Q27_2 (Primary source of toxics = sheetflow?) was changed from n to Y
Q27_3 (Primary source of toxics = channel flow?) was changed from Y to n
Q29_2 (Buffer zone slopes < 5%?) was changed from n to Y
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from n to Y

2 E_d

Q2_1_2 (Area > 40 acres?) was changed from n to Y
Q8_2 (Intermittent inlet?) was changed from n to Y
Q25_2_A (Primary source of sediment = sheetflow?) was changed from n to Y
Q25_2_B (Primary source of sediment = channel flow?) was changed from y to N
Q26_2 (Primary source of nutrients = sheetflow?) was changed from n to Y
Q26_3 (Primary source of nutrients = channel flow?) was changed from Y to n
Q27_2 (Primary source of toxics = sheetflow?) was changed from n to Y
Q27_3 (Primary source of toxics = channel flow?) was changed from Y to n
Q31_6_B (emergent in Zone B = 1% - 30% of Zones B and C?) was changed from n to Y
Q31_6_E (emergent in Zone B = 100% of Zones B and C or not present?) was changed from y to N
Q37 (Open water (d>2ft,w>6ft,l>1000ft)?) was changed from n to Y
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from n to Y
Q44_E (21 in < secondary water depth < 39 inches) was changed from n to Y
Q44_F (40 in < secondary water depth < 59 inches) was changed from n to Y
Q44_G (5 feet < secondary water depth < 6.5 feet) was changed from n to Y
Q44_H (6.5 feet < secondary water depth < 26 feet) was changed from n to Y
Q44_I (secondary water depth > 26 feet) was changed from n to Y
Q66_2_1 (Waterfowl Group 1 Mig/Wint present?) was changed from n to Y
Q66_2_3 (Black Duck Mig/Wint present?) was changed from n to Y

2 F

Q25_2_A (Primary source of sediment = sheetflow?) was changed from n to Y
Q25_2_B (Primary source of sediment = channel flow?) was changed from y to N
Q26_2 (Primary source of nutrients = sheetflow?) was changed from n to Y
Q26_3 (Primary source of nutrients = channel flow?) was changed from y to N
Q29_2 (Buffer zone slopes < 5%?) was changed from n to Y
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from n to Y

2 G_a

Q9_1 (Outlet < one third average width?) was changed from n to Y
Q25_2_A (Primary source of sediment = sheetflow?) was changed from n to Y
Q25_2_B (Primary source of sediment = channel flow?) was changed from y to N
Q26_2 (Primary source of nutrients = sheetflow?) was changed from n to Y
Q26_3 (Primary source of nutrients = channel flow?) was changed from y to N
Q27_2 (Primary source of toxics = sheetflow?) was changed from n to Y
Q27_3 (Primary source of toxics = channel flow?) was changed from y to N
Q29_2 (Buffer zone slopes < 5%?) was changed from n to Y
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from n to Y

2 G_b

Q8_1 (Permanent inlet?) was changed from n to Y
Q8_2 (Intermittent inlet?) was changed from y to N
Q8_3 (Permanent outlet?) was changed from n to Y
Q8_4 (Intermittent outlet?) was changed from y to N
Q25_2_A (Primary source of sediment = sheetflow?) was changed from n to Y
Q25_2_B (Primary source of sediment = channel flow?) was changed from y to N

Q26_2 (Primary source of nutrients = sheetflow?) was changed from n to Y
Q26_3 (Primary source of nutrients = channel flow?) was changed from y to N
Q27_2 (Primary source of toxics = sheetflow?) was changed from n to Y
Q27_3 (Primary source of toxics = channel flow?) was changed from y to N
Q29_1 (Dense understory edge?) was changed from n to Y
Q29_2 (Buffer zone slopes < 5%?) was changed from n to Y
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from n to Y

2 G_c

Q2_1_1 (Area < 5 acres?) was changed from y to N
Q8_1 (Permanent inlet?) was changed from n to Y
Q8_3 (Permanent outlet?) was changed from n to Y
Q9_1 (Outlet < one third average width?) was changed from n to Y
Q22_1_1 (AA contains a Channel?) was changed from n to Y
Q22_1_2 (AA contains a Sinuous channel?) was changed from n to Y
Q23 (Is the AA Channelized?) was changed from n to Y
Q25_2_A (Primary source of sediment = sheetflow?) was changed from n to Y
Q25_2_B (Primary source of sediment = channel flow?) was changed from y to N
Q26_2 (Primary source of nutrients = sheetflow?) was changed from n to Y
Q26_3 (Primary source of nutrients = channel flow?) was changed from y to N
Q27_2 (Primary source of toxics = sheetflow?) was changed from n to Y
Q27_3 (Primary source of toxics = channel flow?) was changed from y to N
Q29_1 (Dense understory edge?) was changed from n to Y
Q29_2 (Buffer zone slopes < 5%?) was changed from n to Y
Q31_6_B (emergent in Zone B = 1% - 30% of Zones B and C?) was changed from n to Y
Q31_6_E (emergent in Zone B = 100% of Zones B and C or not present?) was changed from y to N
Q36_1_2 (Average width of erect veg in Zones A and B > 500 feet?) was changed from n to Y
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from n to Y
Q43_B (1 in < dominant water depth < 4 inches) was changed from y to N
Q43_D (9 in < dominant water depth < 20 inches) was changed from n to Y
Q44_C (5 in < secondary water depth < 8 inches) was changed from n to Y
Q44_D (9 in < secondary water depth < 20 inches) was changed from n to Y
Q44_E (21 in < secondary water depth < 39 inches) was changed from n to Y
Q44_F (40 in < secondary water depth < 59 inches) was changed from n to Y
Q44_G (5 feet < secondary water depth < 6.5 feet) was changed from n to Y
Q44_H (6.5 feet < secondary water depth < 26 feet) was changed from n to Y
Q44_I (secondary water depth > 26 feet) was changed from n to Y
Q66_2_1 (Waterfowl Group 1 Mig/Wint present?) was changed from n to Y
Q66_2_3 (Black Duck Mig/Wint present?) was changed from n to Y

2 H_b

Q2_1_1 (Area < 5 acres?) was changed from y to N
Q2_1_2 (Area > 40 acres?) was changed from n to Y
Q5_2 (Upslope wet depressions > 5% of watershed?) was changed from n to Y
Q8_1 (Permanent inlet?) was changed from n to Y
Q8_3 (Permanent outlet?) was changed from n to Y
Q9_1 (Outlet < one third average width?) was changed from n to Y
Q19_2 (Wave protection?) was changed from n to Y
Q22_1_1 (AA contains a Channel?) was changed from n to Y
Q23 (Is the AA Channelized?) was changed from n to Y
Q25_3 (Wetland stabilizes erosion?) was changed from n to Y
Q31_6_B (emergent in Zone B = 1% - 30% of Zones B and C?) was changed from n to Y
Q31_6_E (emergent in Zone B = 100% of Zones B and C or not present?) was changed from y to N
Q32_I (Spatial Dominant Hydroperiod = regularly flooded tidal?) was changed from n to Y
Q32_K (Spatial Dominant Hydroperiod = irregularly flooded tidal?) was changed from y to N
Q33_I (Permanent Hydroperiod = regularly flooded tidal?) was changed from n to Y
Q33_K (Permanent Hydroperiod = irregularly flooded tidal?) was changed from y to N
Q37 (Open water (d>2ft,w>6ft,l>1000ft)?) was changed from n to Y
Q39 (Special habitat features?) was changed from n to Y
Q41_2 (Peak flow velocity > 30 cm/s?) was changed from n to Y
Q43_B (1 in < dominant water depth < 4 inches) was changed from y to N
Q43_G (5 feet < dominant water depth < 6.5 feet) was changed from n to Y
Q44_C (5 in < secondary water depth < 8 inches) was changed from n to Y
Q44_D (9 in < secondary water depth < 20 inches) was changed from n to Y
Q44_E (21 in < secondary water depth < 39 inches) was changed from n to Y
Q44_F (40 in < secondary water depth < 59 inches) was changed from n to Y
Q44_G (5 feet < secondary water depth < 6.5 feet) was changed from n to Y
Q44_H (6.5 feet < secondary water depth < 26 feet) was changed from n to Y
Q44_I (secondary water depth > 26 feet) was changed from n to Y
Q46_A (Physical Habitat Interspersion = uniform) was changed from y to N

Q46_B (Physical Habitat Interspersion = intermediate) was changed from n to Y
Q66_1_1 (Group 1 Waterfowl Breeding present?) was changed from n to Y
Q66_2_1 (Waterfowl Group 1 Mig/Wint present?) was changed from n to Y
Q66_2_3 (Black Duck Mig/Wint present?) was changed from n to Y
Q66_2_5 (Mergansers Mig/Wint present?) was changed from n to Y
Q66_2_7 (Bufflehead/Goldeneye Mig/Wint present?) was changed from n to Y

2 M

Q26_2 (Primary source of nutrients = sheetflow?) was changed from n to Y
Q26_3 (Primary source of nutrients = channel flow?) was changed from Y to n
Q27_2 (Primary source of toxics = sheetflow?) was changed from n to Y
Q27_3 (Primary source of toxics = channel flow?) was changed from Y to n
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from n to Y

2 Q

Q25_2_A (Primary source of sediment = sheetflow?) was changed from n to Y
Q25_2_B (Primary source of sediment = channel flow?) was changed from y to N
Q27_2 (Primary source of toxics = sheetflow?) was changed from n to Y
Q27_3 (Primary source of toxics = channel flow?) was changed from Y to n
Q29_1 (Dense understory edge?) was changed from n to Y
Q29_2 (Buffer zone slopes < 5%?) was changed from n to Y

2 R

Q29_1 (Dense understory edge?) was changed from n to Y
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from n to Y

2 T

Q27_2 (Primary source of toxics = sheetflow?) was changed from n to Y
Q27_3 (Primary source of toxics = channel flow?) was changed from y to N
Q29_2 (Buffer zone slopes < 5%?) was changed from n to Y
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from n to Y

220

Q25_2_A (Primary source of sediment = sheetflow?) was changed from n to Y
Q25_2_B (Primary source of sediment = channel flow?) was changed from y to N
Q26_2 (Primary source of nutrients = sheetflow?) was changed from n to Y
Q26_3 (Primary source of nutrients = channel flow?) was changed from y to N
Q27_2 (Primary source of toxics = sheetflow?) was changed from n to Y
Q27_3 (Primary source of toxics = channel flow?) was changed from y to N
Q29_1 (Dense understory edge?) was changed from n to Y
Q29_2 (Buffer zone slopes < 5%?) was changed from n to Y
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from n to Y

27_a

Q8_1 (Permanent inlet?) was changed from n to Y
Q25_2_A (Primary source of sediment = sheetflow?) was changed from n to Y
Q25_2_B (Primary source of sediment = channel flow?) was changed from y to N
Q26_2 (Primary source of nutrients = sheetflow?) was changed from n to Y
Q27_2 (Primary source of toxics = sheetflow?) was changed from n to Y
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from n to Y

27_b

Q5_2 (Upslope wet depressions > 5% of watershed?) was changed from n to Y
Q8_1 (Permanent inlet?) was changed from n to Y
Q8_3 (Permanent outlet?) was changed from n to Y
Q9_1 (Outlet < one third average width?) was changed from n to Y
Q25_2_A (Primary source of sediment = sheetflow?) was changed from n to Y
Q25_2_B (Primary source of sediment = channel flow?) was changed from y to N
Q26_2 (Primary source of nutrients = sheetflow?) was changed from n to Y
Q27_2 (Primary source of toxics = sheetflow?) was changed from n to Y
Q32_I (Spatial Dominant Hydroperiod = regularly flooded tidal?) was changed from n to Y
Q32_K (Spatial Dominant Hydroperiod = irregularly flooded tidal?) was changed from y to N
Q33_I (Permanent Hydroperiod = regularly flooded tidal?) was changed from n to Y
Q33_K (Permanent Hydroperiod = irregularly flooded tidal?) was changed from y to N
Q37 (Open water (d>2ft,w>6ft,l>1000ft)?) was changed from n to Y
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from n to Y
Q44_C (5 in < secondary water depth < 8 inches) was changed from n to Y
Q44_D (9 in < secondary water depth < 20 inches) was changed from n to Y
Q44_E (21 in < secondary water depth < 39 inches) was changed from n to Y
Q44_F (40 in < secondary water depth < 59 inches) was changed from n to Y
Q44_G (5 feet < secondary water depth < 6.5 feet) was changed from n to Y
Q44_H (6.5 feet < secondary water depth < 26 feet) was changed from n to Y
Q44_I (secondary water depth > 26 feet) was changed from n to Y
Q46_A (Physical Habitat Interspersion = uniform) was changed from y to N
Q46_B (Physical Habitat Interspersion = intermediate) was changed from n to Y

Q66_1_1 (Group 1 Waterfowl Breeding present?) was changed from n to Y
Q66_2_1 (Waterfowl Group 1 Mig/Wint present?) was changed from n to Y
Q66_2_3 (Black Duck Mig/Wint present?) was changed from n to Y

3 1_a

Q25_2_A (Primary source of sediment = sheetflow?) was changed from n to Y
Q25_2_B (Primary source of sediment = channel flow?) was changed from y to N
Q26_2 (Primary source of nutrients = sheetflow?) was changed from n to Y
Q26_3 (Primary source of nutrients = channel flow?) was changed from Y to n
Q27_2 (Primary source of toxics = sheetflow?) was changed from n to Y
Q27_3 (Primary source of toxics = channel flow?) was changed from Y to n
Q29_1 (Dense understory edge?) was changed from n to Y
Q29_2 (Buffer zone slopes < 5%?) was changed from n to Y
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from n to Y

3 1_b

Q8_3 (Permanent outlet?) was changed from n to Y
Q8_4 (Intermittent outlet?) was changed from y to N
Q19_1_A (Wind shelter?) was changed from n to Y
Q25_2_A (Primary source of sediment = sheetflow?) was changed from n to Y
Q25_2_B (Primary source of sediment = channel flow?) was changed from y to N
Q26_2 (Primary source of nutrients = sheetflow?) was changed from n to Y
Q26_3 (Primary source of nutrients = channel flow?) was changed from Y to n
Q27_2 (Primary source of toxics = sheetflow?) was changed from n to Y
Q27_3 (Primary source of toxics = channel flow?) was changed from Y to n
Q29_1 (Dense understory edge?) was changed from n to Y
Q29_2 (Buffer zone slopes < 5%?) was changed from n to Y
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from n to Y

304

Q29_1 (Dense understory edge?) was changed from n to Y
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from n to Y

32

Q26_2 (Primary source of nutrients = sheetflow?) was changed from n to Y
Q26_3 (Primary source of nutrients = channel flow?) was changed from Y to n
Q27_2 (Primary source of toxics = sheetflow?) was changed from n to Y
Q27_3 (Primary source of toxics = channel flow?) was changed from Y to n

33 A

Q26_2 (Primary source of nutrients = sheetflow?) was changed from n to Y
Q26_3 (Primary source of nutrients = channel flow?) was changed from Y to n
Q27_2 (Primary source of toxics = sheetflow?) was changed from n to Y
Q27_3 (Primary source of toxics = channel flow?) was changed from Y to n
Q29_1 (Dense understory edge?) was changed from n to Y
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from n to Y

33 B

Q26_2 (Primary source of nutrients = sheetflow?) was changed from n to Y
Q26_3 (Primary source of nutrients = channel flow?) was changed from Y to n
Q27_2 (Primary source of toxics = sheetflow?) was changed from n to Y
Q27_3 (Primary source of toxics = channel flow?) was changed from Y to n
Q29_1 (Dense understory edge?) was changed from n to Y
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from n to Y

38 A

Q8_1 (Permanent inlet?) was changed from n to Y
Q8_2 (Intermittent inlet?) was changed from y to N
Q8_3 (Permanent outlet?) was changed from n to Y
Q8_4 (Intermittent outlet?) was changed from y to N
Q18 (Upland<-->Wetland edge irregular?) was changed from n to Y
Q26_2 (Primary source of nutrients = sheetflow?) was changed from n to Y
Q26_3 (Primary source of nutrients = channel flow?) was changed from Y to n
Q27_2 (Primary source of toxics = sheetflow?) was changed from n to Y
Q27_3 (Primary source of toxics = channel flow?) was changed from Y to n
Q29_1 (Dense understory edge?) was changed from n to Y
Q29_2 (Buffer zone slopes < 5%?) was changed from n to Y
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from n to Y

39

Q8_1 (Permanent inlet?) was changed from n to Y
Q8_3 (Permanent outlet?) was changed from n to Y
Q8_4 (Intermittent outlet?) was changed from y to N
Q25_2_A (Primary source of sediment = sheetflow?) was changed from n to Y
Q25_2_B (Primary source of sediment = channel flow?) was changed from y to N
Q26_2 (Primary source of nutrients = sheetflow?) was changed from n to Y

Q26_3 (Primary source of nutrients = channel flow?) was changed from Y to n
Q27_2 (Primary source of toxics = sheetflow?) was changed from n to Y
Q27_3 (Primary source of toxics = channel flow?) was changed from Y to n
Q29_1 (Dense understory edge?) was changed from n to Y
Q29_2 (Buffer zone slopes < 5%?) was changed from n to Y
Q31_2 (Area of Zone B > 10% of AA?) was changed from n to Y
Q31_3 (Area of Zone B > Zone A?) was changed from n to Y
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from n to Y

4 B

Q25_2_A (Primary source of sediment = sheetflow?) was changed from n to Y
Q25_2_B (Primary source of sediment = channel flow?) was changed from y to N
Q26_2 (Primary source of nutrients = sheetflow?) was changed from n to Y
Q26_3 (Primary source of nutrients = channel flow?) was changed from Y to n
Q27_2 (Primary source of toxics = sheetflow?) was changed from n to Y
Q27_3 (Primary source of toxics = channel flow?) was changed from Y to n
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from n to Y

4 C

Q26_2 (Primary source of nutrients = sheetflow?) was changed from n to Y
Q26_3 (Primary source of nutrients = channel flow?) was changed from Y to n
Q27_2 (Primary source of toxics = sheetflow?) was changed from n to Y
Q27_3 (Primary source of toxics = channel flow?) was changed from Y to n
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from n to Y

4 D_a

Q27_2 (Primary source of toxics = sheetflow?) was changed from n to Y
Q27_3 (Primary source of toxics = channel flow?) was changed from Y to n
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from n to Y

4 D_b

Q8_1 (Permanent inlet?) was changed from n to Y
Q8_3 (Permanent outlet?) was changed from n to Y
Q8_4 (Intermittent outlet?) was changed from y to N
Q27_2 (Primary source of toxics = sheetflow?) was changed from n to Y
Q27_3 (Primary source of toxics = channel flow?) was changed from Y to n
Q29_1 (Dense understory edge?) was changed from n to Y
Q29_2 (Buffer zone slopes < 5%?) was changed from n to Y
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from n to Y

4 F

Q26_2 (Primary source of nutrients = sheetflow?) was changed from n to Y
Q26_3 (Primary source of nutrients = channel flow?) was changed from Y to n
Q27_2 (Primary source of toxics = sheetflow?) was changed from n to Y
Q27_3 (Primary source of toxics = channel flow?) was changed from Y to n
Q29_2 (Buffer zone slopes < 5%?) was changed from n to Y
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from n to Y

4 G

Q26_2 (Primary source of nutrients = sheetflow?) was changed from n to Y
Q26_3 (Primary source of nutrients = channel flow?) was changed from Y to n
Q27_2 (Primary source of toxics = sheetflow?) was changed from n to Y
Q27_3 (Primary source of toxics = channel flow?) was changed from Y to n
Q29_2 (Buffer zone slopes < 5%?) was changed from n to Y
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from n to Y

48

Q26_2 (Primary source of nutrients = sheetflow?) was changed from n to Y
Q26_3 (Primary source of nutrients = channel flow?) was changed from Y to n
Q27_2 (Primary source of toxics = sheetflow?) was changed from n to Y
Q27_3 (Primary source of toxics = channel flow?) was changed from y to N
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from n to Y

54_a

Q2_1_2 (Area > 40 acres?) was changed from n to Y
Q8_3 (Permanent outlet?) was changed from n to Y
Q9_1 (Outlet < one third average width?) was changed from n to Y
Q15_1_A (Vegetation<-->Water = solid form) was changed from y to N
Q15_1_B (Vegetation<-->Water = intermediate) was changed from n to Y
Q25_2_A (Primary source of sediment = sheetflow?) was changed from n to Y
Q25_2_B (Primary source of sediment = channel flow?) was changed from y to N
Q26_2 (Primary source of nutrients = sheetflow?) was changed from n to Y
Q27_2 (Primary source of toxics = sheetflow?) was changed from n to Y
Q32_I (Spatial Dominant Hydroperiod = regularly flooded tidal?) was changed from n to Y
Q32_K (Spatial Dominant Hydroperiod = irregularly flooded tidal?) was changed from y to N
Q33_I (Permanent Hydroperiod = regularly flooded tidal?) was changed from n to Y

Q33_K (Permanent Hydroperiod = irregularly flooded tidal?) was changed from y to N
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from n to Y

54_b

Q2_1_2 (Area > 40 acres?) was changed from n to Y
Q8_1 (Permanent inlet?) was changed from n to Y
Q25_2_A (Primary source of sediment = sheetflow?) was changed from n to Y
Q25_2_B (Primary source of sediment = channel flow?) was changed from y to N
Q26_2 (Primary source of nutrients = sheetflow?) was changed from n to Y
Q27_2 (Primary source of toxics = sheetflow?) was changed from n to Y

97_a

Q16_A (Vegetation class = solid) was changed from y to N
Q16_B (Vegetation class = intermediate) was changed from n to Y
Q25_2_A (Primary source of sediment = sheetflow?) was changed from n to Y
Q25_2_B (Primary source of sediment = channel flow?) was changed from y to N
Q26_2 (Primary source of nutrients = sheetflow?) was changed from n to Y
Q26_3 (Primary source of nutrients = channel flow?) was changed from y to N
Q27_2 (Primary source of toxics = sheetflow?) was changed from n to Y
Q27_3 (Primary source of toxics = channel flow?) was changed from y to N
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from n to Y

97_b

Q2_1_1 (Area < 5 acres?) was changed from y to N
Q16_A (Vegetation class = solid) was changed from y to N
Q16_B (Vegetation class = intermediate) was changed from n to Y
Q25_2_A (Primary source of sediment = sheetflow?) was changed from n to Y
Q25_2_B (Primary source of sediment = channel flow?) was changed from y to N
Q26_2 (Primary source of nutrients = sheetflow?) was changed from n to Y
Q26_3 (Primary source of nutrients = channel flow?) was changed from y to N
Q27_2 (Primary source of toxics = sheetflow?) was changed from n to Y
Q27_3 (Primary source of toxics = channel flow?) was changed from y to N
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from n to Y

99

Q25_2_A (Primary source of sediment = sheetflow?) was changed from n to Y
Q25_2_B (Primary source of sediment = channel flow?) was changed from y to N
Q26_2 (Primary source of nutrients = sheetflow?) was changed from n to Y
Q26_3 (Primary source of nutrients = channel flow?) was changed from Y to n
Q27_2 (Primary source of toxics = sheetflow?) was changed from n to Y
Q27_3 (Primary source of toxics = channel flow?) was changed from Y to n
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from n to Y

Attachment N-3b

Remaining Indirect Impacts from Preferred Alternative
after SAMP Management Actions
04/12/94

100
Q26_3 (Primary source of nutrients = channel flow?) was changed from Y to n
Q27_3 (Primary source of toxics = channel flow?) was changed from Y to n
108
I24 (Research resource?) was changed from Y to n
Q26_3 (Primary source of nutrients = channel flow?) was changed from Y to n
Q27_3 (Primary source of toxics = channel flow?) was changed from Y to n
112
Q26_3 (Primary source of nutrients = channel flow?) was changed from Y to n
Q27_3 (Primary source of toxics = channel flow?) was changed from Y to n
Q66_1_1 (Group 1 Waterfowl Breeding present?) was changed from Y to n
113
Q26_3 (Primary source of nutrients = channel flow?) was changed from Y to n
Q27_3 (Primary source of toxics = channel flow?) was changed from Y to n
Q66_1_1 (Group 1 Waterfowl Breeding present?) was changed from Y to n
151
Q29_1 (Dense understory edge?) was changed from Y to n
Q29_2 (Buffer zone slopes < 5%?) was changed from Y to n
18
Q26_3 (Primary source of nutrients = channel flow?) was changed from Y to n
Q27_3 (Primary source of toxics = channel flow?) was changed from Y to n
Q66_1_1 (Group 1 Waterfowl Breeding present?) was changed from Y to n
19
Q2_1_1 (Area < 5 acres?) was changed from N to y
Q9_1 (Outlet < one third average width?) was changed from Y to n
Q27_3 (Primary source of toxics = channel flow?) was changed from Y to n
Q66_1_1 (Group 1 Waterfowl Breeding present?) was changed from Y to n
2 3
Q15_1_A (Vegetation<-->Water = solid form) was changed from N to y
Q15_1_B (Vegetation<-->Water = intermediate) was changed from Y to n
Q15_2 (Channel flow spreading?) was changed from Y to n
Q26_3 (Primary source of nutrients = channel flow?) was changed from Y to n
Q27_3 (Primary source of toxics = channel flow?) was changed from Y to n
2 4A
Q2_1_1 (Area < 5 acres?) was changed from N to y
Q5_1_2 (AA > 20% of watershed?) was changed from Y to n
Q9_1 (Outlet < one third average width?) was changed from Y to n
Q15_2 (Channel flow spreading?) was changed from Y to n
Q31_5 (Area of Zone A >= 10% of Zone B and C?) was changed from Y to n
Q49_2 (Fish cover?) was changed from Y to n
Q50 (Plants: waterfowl value?) was changed from Y to n
Q66_1_1 (Group 1 Waterfowl Breeding present?) was changed from Y to n
2 6_a
Q29_1 (Dense understory edge?) was changed from Y to n
Q29_2 (Buffer zone slopes < 5%?) was changed from Y to n
Q46_B (Physical Habitat Interspersion = intermediate) was changed from N to y
Q46_C (Physical Habitat Interspersion = mosaic) was changed from Y to n
Q66_1_1 (Group 1 Waterfowl Breeding present?) was changed from Y to n
2 6_b
Q29_1 (Dense understory edge?) was changed from Y to n
Q29_2 (Buffer zone slopes < 5%?) was changed from Y to n
Q46_B (Physical Habitat Interspersion = intermediate) was changed from N to y
Q46_C (Physical Habitat Interspersion = mosaic) was changed from Y to n
Q66_1_1 (Group 1 Waterfowl Breeding present?) was changed from Y to n
2 6_c
Q29_1 (Dense understory edge?) was changed from Y to n
Q29_2 (Buffer zone slopes < 5%?) was changed from Y to n
Q46_B (Physical Habitat Interspersion = intermediate) was changed from N to y
Q46_C (Physical Habitat Interspersion = mosaic) was changed from Y to n
Q66_1_1 (Group 1 Waterfowl Breeding present?) was changed from Y to n
2 9_a
Q29_1 (Dense understory edge?) was changed from Y to n

Q29_2 (Buffer zone slopes < 5%?) was changed from Y to n
Q66_1_1 (Group 1 Waterfowl Breeding present?) was changed from Y to n
2 9_b
Q29_1 (Dense understory edge?) was changed from Y to n
Q29_2 (Buffer zone slopes < 5%?) was changed from Y to n
Q66_1_1 (Group 1 Waterfowl Breeding present?) was changed from Y to n
2 E_a
Q2_1_3 (Area > 200 acres?) was changed from Y to n
Q5_1_2 (AA > 20% of watershed?) was changed from Y to n
Q26_3 (Primary source of nutrients = channel flow?) was changed from Y to n
Q27_3 (Primary source of toxics = channel flow?) was changed from Y to n
Q31_5 (Area of Zone A >= 10% of Zone B and C?) was changed from Y to n
2 E_b
Q2_1_2 (Area > 40 acres?) was changed from Y to n
Q2_1_3 (Area > 200 acres?) was changed from Y to n
Q5_1_2 (AA > 20% of watershed?) was changed from Y to n
Q9_1 (Outlet < one third average width?) was changed from Y to n
Q22_1_1 (AA contains a Channel?) was changed from Y to n
Q22_1_2 (AA contains a Sinuous channel?) was changed from Y to n
Q23 (Is the AA Channelized?) was changed from Y to n
Q26_3 (Primary source of nutrients = channel flow?) was changed from Y to n
Q27_3 (Primary source of toxics = channel flow?) was changed from Y to n
Q37 (Open water (d>2ft,w>6ft,l>1000ft)?) was changed from Y to n
Q43_B (1 in < dominant water depth < 4 inches) was changed from N to y
Q43_D (9 in < dominant water depth < 20 inches) was changed from Y to n
Q44_C (5 in < secondary water depth < 8 inches) was changed from Y to n
Q44_D (9 in < secondary water depth < 20 inches) was changed from Y to n
Q44_E (21 in < secondary water depth < 39 inches) was changed from Y to n
Q44_F (40 in < secondary water depth < 59 inches) was changed from Y to n
Q44_G (5 feet < secondary water depth < 6.5 feet) was changed from Y to n
Q44_H (6.5 feet < secondary water depth < 26 feet) was changed from Y to n
Q44_I (secondary water depth > 26 feet) was changed from Y to n
2 E_c
Q2_1_1 (Area < 5 acres?) was changed from N to y
Q2_1_2 (Area > 40 acres?) was changed from Y to n
Q2_1_3 (Area > 200 acres?) was changed from Y to n
Q5_1_2 (AA > 20% of watershed?) was changed from Y to n
Q9_1 (Outlet < one third average width?) was changed from Y to n
Q22_1_1 (AA contains a Channel?) was changed from Y to n
Q22_1_2 (AA contains a Sinuous channel?) was changed from Y to n
Q23 (Is the AA Channelized?) was changed from Y to n
Q26_3 (Primary source of nutrients = channel flow?) was changed from Y to n
Q27_3 (Primary source of toxics = channel flow?) was changed from Y to n
Q37 (Open water (d>2ft,w>6ft,l>1000ft)?) was changed from Y to n
Q43_B (1 in < dominant water depth < 4 inches) was changed from N to y
Q43_D (9 in < dominant water depth < 20 inches) was changed from Y to n
Q44_C (5 in < secondary water depth < 8 inches) was changed from Y to n
Q44_D (9 in < secondary water depth < 20 inches) was changed from Y to n
Q44_E (21 in < secondary water depth < 39 inches) was changed from Y to n
Q44_F (40 in < secondary water depth < 59 inches) was changed from Y to n
Q44_G (5 feet < secondary water depth < 6.5 feet) was changed from Y to n
Q44_H (6.5 feet < secondary water depth < 26 feet) was changed from Y to n
Q44_I (secondary water depth > 26 feet) was changed from Y to n
2 E_d
Q2_1_3 (Area > 200 acres?) was changed from Y to n
Q5_1_2 (AA > 20% of watershed?) was changed from Y to n
Q26_3 (Primary source of nutrients = channel flow?) was changed from Y to n
Q27_3 (Primary source of toxics = channel flow?) was changed from Y to n
Q29_1 (Dense understory edge?) was changed from Y to n
Q29_2 (Buffer zone slopes < 5%?) was changed from Y to n
Q31_5 (Area of Zone A >= 10% of Zone B and C?) was changed from Y to n
2 G_a
Q2_1_2 (Area > 40 acres?) was changed from Y to n
Q5_1_2 (AA > 20% of watershed?) was changed from Y to n
2 G_b
Q2_1_1 (Area < 5 acres?) was changed from N to y
Q2_1_2 (Area > 40 acres?) was changed from Y to n
Q5_1_2 (AA > 20% of watershed?) was changed from Y to n

Q22_1_1 (AA contains a Channel?) was changed from Y to n
Q22_1_2 (AA contains a Sinuous channel?) was changed from Y to n
Q23 (Is the AA Channelized?) was changed from Y to n
Q34_1 (Local dams?) was changed from Y to n
Q43_B (1 in < dominant water depth < 4 inches) was changed from N to y
Q43_D (9 in < dominant water depth < 20 inches) was changed from Y to n
Q44_C (5 in < secondary water depth < 8 inches) was changed from Y to n
Q44_D (9 in < secondary water depth < 20 inches) was changed from Y to n
Q44_E (21 in < secondary water depth < 39 inches) was changed from Y to n
Q44_F (40 in < secondary water depth < 59 inches) was changed from Y to n
Q44_G (5 feet < secondary water depth < 6.5 feet) was changed from Y to n
Q44_H (6.5 feet < secondary water depth < 26 feet) was changed from Y to n
Q44_I (secondary water depth > 26 feet) was changed from Y to n
Q66_2_1 (Waterfowl Group 1 Mig/Wint present?) was changed from Y to n
Q66_2_3 (Black Duck Mig/Wint present?) was changed from Y to n

2 G_c
Q2_1_2 (Area > 40 acres?) was changed from Y to n
Q5_1_2 (AA > 20% of watershed?) was changed from Y to n

2 M
I24 (Research resource?) was changed from Y to n
Q15_2 (Channel flow spreading?) was changed from Y to n
Q26_3 (Primary source of nutrients = channel flow?) was changed from Y to n
Q27_3 (Primary source of toxics = channel flow?) was changed from Y to n

2 Q
I24 (Research resource?) was changed from Y to n
Q5_1_2 (AA > 20% of watershed?) was changed from Y to n
Q27_3 (Primary source of toxics = channel flow?) was changed from Y to n

220
Q22_1_1 (AA contains a Channel?) was changed from Y to n
Q32_A (Spatial Dominant Hydroperiod = perm flooded nontidal?) was changed from Y to n
Q32_D (Spatial Dominant Hydroperiod = seasonally flooded nontidal?) was changed from N to y
Q66_1_1 (Group 1 Waterfowl Breeding present?) was changed from Y to n

27_a
Q29_1 (Dense understory edge?) was changed from Y to n

27_b
Q29_1 (Dense understory edge?) was changed from Y to n

3 1_a
Q5_1_2 (AA > 20% of watershed?) was changed from Y to n
Q26_3 (Primary source of nutrients = channel flow?) was changed from Y to n
Q27_3 (Primary source of toxics = channel flow?) was changed from Y to n

3 1_b
Q2_1_1 (Area < 5 acres?) was changed from N to y
Q2_1_2 (Area > 40 acres?) was changed from Y to n
Q5_1_2 (AA > 20% of watershed?) was changed from Y to n
Q14_1 (AA on 25 square foot island?) was changed from Y to n
Q22_1_1 (AA contains a Channel?) was changed from Y to n
Q26_3 (Primary source of nutrients = channel flow?) was changed from Y to n
Q27_3 (Primary source of toxics = channel flow?) was changed from Y to n
Q31_3 (Area of Zone B > Zone A?) was changed from Y to n
Q33_A (Permanent Hydroperiod = perm flooded nontidal?) was changed from Y to n
Q33_D (Permanent Hydroperiod = seasonally flooded nontidal?) was changed from N to y
Q34_1 (Local dams?) was changed from Y to n
Q37 (Open water (d>2ft,w>6ft,l>1000ft)?) was changed from Y to n
Q44_C (5 in < secondary water depth < 8 inches) was changed from Y to n
Q44_D (9 in < secondary water depth < 20 inches) was changed from Y to n
Q44_E (21 in < secondary water depth < 39 inches) was changed from Y to n
Q49_1_1 (20%-80% Pools?) was changed from Y to n
Q49_2 (Fish cover?) was changed from Y to n
Q50 (Plants: waterfowl value?) was changed from Y to n
Q65_3 (Warm Freshwater Fish present?) was changed from Y to n
Q66_1_1 (Group 1 Waterfowl Breeding present?) was changed from Y to n
Q66_2_1 (Waterfowl Group 1 Mig/Wint present?) was changed from Y to n
Q66_2_3 (Black Duck Mig/Wint present?) was changed from Y to n

304
Q15_1_A (Vegetation<-->Water = solid form) was changed from N to y
Q15_1_B (Vegetation<-->Water = intermediate) was changed from Y to n
Q15_2 (Channel flow spreading?) was changed from Y to n

32

Q26_3 (Primary source of nutrients = channel flow?) was changed from Y to n
Q27_3 (Primary source of toxics = channel flow?) was changed from Y to n
33 A
Q26_3 (Primary source of nutrients = channel flow?) was changed from Y to n
Q27_3 (Primary source of toxics = channel flow?) was changed from Y to n
33 B
Q26_3 (Primary source of nutrients = channel flow?) was changed from Y to n
Q27_3 (Primary source of toxics = channel flow?) was changed from Y to n
Q66_1_1 (Group 1 Waterfowl Breeding present?) was changed from Y to n
38 A
Q2_1_1 (Area < 5 acres?) was changed from N to y
Q15_1_A (Vegetation<-->Water = solid form) was changed from N to y
Q15_1_B (Vegetation<-->Water = intermediate) was changed from Y to n
Q15_2 (Channel flow spreading?) was changed from Y to n
Q22_1_1 (AA contains a Channel?) was changed from Y to n
Q22_1_2 (AA contains a Sinuous channel?) was changed from Y to n
Q26_3 (Primary source of nutrients = channel flow?) was changed from Y to n
Q27_3 (Primary source of toxics = channel flow?) was changed from Y to n
Q37 (Open water (d>2ft,w>6ft,l>1000ft)?) was changed from Y to n
Q50 (Plants: waterfowl value?) was changed from Y to n
Q66_1_1 (Group 1 Waterfowl Breeding present?) was changed from Y to n
Q66_2_1 (Waterfowl Group 1 Mig/Wint present?) was changed from Y to n
Q66_2_3 (Black Duck Mig/Wint present?) was changed from Y to n
Q66_2_10 (Geese Mig/Wint present?) was changed from Y to n
39
Q2_1_1 (Area < 5 acres?) was changed from N to y
Q13_CA (Secondary veg: Aquatic bed and algal) was changed from Y to n
Q15_1_A (Vegetation<-->Water = solid form) was changed from N to y
Q15_1_B (Vegetation<-->Water = intermediate) was changed from Y to n
Q15_2 (Channel flow spreading?) was changed from Y to n
Q16_A (Vegetation class = solid) was changed from N to y
Q16_B (Vegetation class = intermediate) was changed from Y to n
Q22_1_1 (AA contains a Channel?) was changed from Y to n
Q26_3 (Primary source of nutrients = channel flow?) was changed from Y to n
Q27_3 (Primary source of toxics = channel flow?) was changed from Y to n
Q32_D (Spatial Dominant Hydroperiod = seasonally flooded nontidal?) was changed from N to y
Q32_I (Spatial Dominant Hydroperiod = regularly flooded tidal?) was changed from Y to n
Q33_D (Permanent Hydroperiod = seasonally flooded nontidal?) was changed from N to y
Q33_J (Permanent Hydroperiod = irregularly exposed tidal?) was changed from Y to n
Q44_B (1 in < secondary water depth < 4 inches) was changed from Y to n
Q44_C (5 in < secondary water depth < 8 inches) was changed from Y to n
Q44_D (9 in < secondary water depth < 20 inches) was changed from Y to n
Q44_E (21 in < secondary water depth < 39 inches) was changed from Y to n
Q46_A (Physical Habitat Interspersion = uniform) was changed from N to y
Q46_C (Physical Habitat Interspersion = mosaic) was changed from Y to n
Q50 (Plants: waterfowl value?) was changed from Y to n
Q66_1_1 (Group 1 Waterfowl Breeding present?) was changed from Y to n
Q66_2_1 (Waterfowl Group 1 Mig/Wint present?) was changed from Y to n
Q66_2_3 (Black Duck Mig/Wint present?) was changed from Y to n
Q66_2_10 (Geese Mig/Wint present?) was changed from Y to n
4 B
I24 (Research resource?) was changed from Y to n
Q26_3 (Primary source of nutrients = channel flow?) was changed from Y to n
Q27_3 (Primary source of toxics = channel flow?) was changed from Y to n
4 C
Q26_3 (Primary source of nutrients = channel flow?) was changed from Y to n
Q27_3 (Primary source of toxics = channel flow?) was changed from Y to n
4 D_a
Q2_1_3 (Area > 200 acres?) was changed from Y to n
Q27_3 (Primary source of toxics = channel flow?) was changed from Y to n
4 D_b
I24 (Research resource?) was changed from Y to n
Q2_1_1 (Area < 5 acres?) was changed from N to y
Q2_1_2 (Area > 40 acres?) was changed from Y to n
Q2_1_3 (Area > 200 acres?) was changed from Y to n
Q5_2 (Upslope wet depressions > 5% of watershed?) was changed from Y to n
Q11 (Fringe or island wetland?) was changed from Y to n
Q14_1 (AA on 25 square foot island?) was changed from Y to n

Q15_1_A (Vegetation<-->Water = solid form) was changed from N to y
Q15_1_B (Vegetation<-->Water = intermediate) was changed from Y to n
Q22_1_1 (AA contains a Channel?) was changed from Y to n
Q27_3 (Primary source of toxics = channel flow?) was changed from Y to n
Q31_5 (Area of Zone A >= 10% of Zone B and C?) was changed from Y to n
Q37 (Open water (d>2ft,w>6ft,l>1000ft)?) was changed from Y to n
Q44_C (5 in < secondary water depth < 8 inches) was changed from Y to n
Q44_D (9 in < secondary water depth < 20 inches) was changed from Y to n
Q44_E (21 in < secondary water depth < 39 inches) was changed from Y to n
Q44_F (40 in < secondary water depth < 59 inches) was changed from Y to n
Q44_G (5 feet < secondary water depth < 6.5 feet) was changed from Y to n
Q44_H (6.5 feet < secondary water depth < 26 feet) was changed from Y to n
Q66_1_1 (Group 1 Waterfowl Breeding present?) was changed from Y to n
Q66_2_1 (Waterfowl Group 1 Mig/Wint present?) was changed from Y to n
Q66_2_3 (Black Duck Mig/Wint present?) was changed from Y to n
Q66_2_5 (Mergansers Mig/Wint present?) was changed from Y to n
Q66_2_7 (Bufflehead/Goldeneye Mig/Wint present?) was changed from Y to n
Q66_2_10 (Geese Mig/Wint present?) was changed from Y to n

4 F

Q26_3 (Primary source of nutrients = channel flow?) was changed from Y to n
Q27_3 (Primary source of toxics = channel flow?) was changed from Y to n
Q66_1_1 (Group 1 Waterfowl Breeding present?) was changed from Y to n

4 G

Q26_3 (Primary source of nutrients = channel flow?) was changed from Y to n
Q27_3 (Primary source of toxics = channel flow?) was changed from Y to n

48

Q26_3 (Primary source of nutrients = channel flow?) was changed from Y to n
Q44_F (40 in < secondary water depth < 59 inches) was changed from Y to n
Q66_1_1 (Group 1 Waterfowl Breeding present?) was changed from Y to n

99

Q26_3 (Primary source of nutrients = channel flow?) was changed from Y to n
Q27_3 (Primary source of toxics = channel flow?) was changed from Y to n
Q66_1_1 (Group 1 Waterfowl Breeding present?) was changed from Y to n
Q66_2_1 (Waterfowl Group 1 Mig/Wint present?) was changed from Y to n
Q66_2_3 (Black Duck Mig/Wint present?) was changed from Y to n

Attachment N-4

Wetland Indicators Mitigated with "On-site" mitigation
04/12/94

151
Q29_1 (Dense understory edge?) was changed from n to Y
Q29_2 (Buffer zone slopes < 5%?) was changed from n to Y
19
Q9_1 (Outlet < one third average width?) was changed from n to Y
2 3
Q15_1_A (Vegetation<-->Water = solid form) was changed from y to N
Q15_1_B (Vegetation<-->Water = intermediate) was changed from n to Y
Q15_2 (Channel flow spreading?) was changed from n to Y
2 4A
Q9_1 (Outlet < one third average width?) was changed from n to Y
Q15_2 (Channel flow spreading?) was changed from n to Y
Q31_5 (Area of Zone A >= 10% of Zone B and C?) was changed from n to Y
Q49_2 (Fish cover?) was changed from n to Y
Q50 (Plants: waterfowl value?) was changed from n to Y
2 6_a
Q29_1 (Dense understory edge?) was changed from n to Y
Q29_2 (Buffer zone slopes < 5%?) was changed from n to Y
2 6_b
Q29_1 (Dense understory edge?) was changed from n to Y
Q29_2 (Buffer zone slopes < 5%?) was changed from n to Y
2 6_c
Q29_1 (Dense understory edge?) was changed from n to Y
Q29_2 (Buffer zone slopes < 5%?) was changed from n to Y
2 9_a
Q29_1 (Dense understory edge?) was changed from n to Y
Q29_2 (Buffer zone slopes < 5%?) was changed from n to Y
2 9_b
Q29_1 (Dense understory edge?) was changed from n to Y
Q29_2 (Buffer zone slopes < 5%?) was changed from n to Y
2 E_a
Q31_5 (Area of Zone A >= 10% of Zone B and C?) was changed from n to Y
2 E_b
Q9_1 (Outlet < one third average width?) was changed from n to Y
Q22_1_1 (AA contains a Channel?) was changed from n to Y
Q22_1_2 (AA contains a Sinuous channel?) was changed from n to Y
Q23 (Is the AA Channelized?) was changed from n to Y
Q37 (Open water (d>2ft,w>6ft,l>1000ft)?) was changed from n to Y
Q44_C (5 in < secondary water depth < 8 inches) was changed from n to Y
Q44_D (9 in < secondary water depth < 20 inches) was changed from n to Y
2 E_c
Q9_1 (Outlet < one third average width?) was changed from n to Y
Q22_1_1 (AA contains a Channel?) was changed from n to Y
Q22_1_2 (AA contains a Sinuous channel?) was changed from n to Y
Q23 (Is the AA Channelized?) was changed from n to Y
Q37 (Open water (d>2ft,w>6ft,l>1000ft)?) was changed from n to Y
Q44_C (5 in < secondary water depth < 8 inches) was changed from n to Y
Q44_D (9 in < secondary water depth < 20 inches) was changed from n to Y
2 E_d
Q29_1 (Dense understory edge?) was changed from n to Y
Q29_2 (Buffer zone slopes < 5%?) was changed from n to Y
Q31_5 (Area of Zone A >= 10% of Zone B and C?) was changed from n to Y
2 G_b
Q22_1_1 (AA contains a Channel?) was changed from n to Y
Q22_1_2 (AA contains a Sinuous channel?) was changed from n to Y
Q23 (Is the AA Channelized?) was changed from n to Y
Q44_C (5 in < secondary water depth < 8 inches) was changed from n to Y
Q44_D (9 in < secondary water depth < 20 inches) was changed from n to Y
2 M
Q15_2 (Channel flow spreading?) was changed from n to Y
220
Q22_1_1 (AA contains a Channel?) was changed from n to Y
27_a

Q29_1 (Dense understory edge?) was changed from n to Y
27_b
Q29_1 (Dense understory edge?) was changed from n to Y
3 1_b
Q22_1_1 (AA contains a Channel?) was changed from n to Y
Q31_3 (Area of Zone B > Zone A?) was changed from n to Y
Q37 (Open water (d>2ft,w>6ft,l>1000ft)?) was changed from n to Y
Q44_C (5 in < secondary water depth < 8 inches) was changed from n to Y
Q44_D (9 in < secondary water depth < 20 inches) was changed from n to Y
Q44_E (21 in < secondary water depth < 39 inches) was changed from n to Y
Q49_1_1 (20%-80% Pools?) was changed from n to Y
Q49_2 (Fish cover?) was changed from n to Y
Q50 (Plants: waterfowl value?) was changed from n to Y
Q65_3 (Warm Freshwater Fish present?) was changed from n to Y
304
Q15_1_A (Vegetation<-->Water = solid form) was changed from y to N
Q15_1_B (Vegetation<-->Water = intermediate) was changed from n to Y
Q15_2 (Channel flow spreading?) was changed from n to Y
38 A
Q15_1_A (Vegetation<-->Water = solid form) was changed from y to N
Q15_1_B (Vegetation<-->Water = intermediate) was changed from n to Y
Q15_2 (Channel flow spreading?) was changed from n to Y
Q22_1_1 (AA contains a Channel?) was changed from n to Y
Q22_1_2 (AA contains a Sinuous channel?) was changed from n to Y
Q50 (Plants: waterfowl value?) was changed from n to Y
39
Q13_CA (Secondary veg: Aquatic bed and algal) was changed from n to Y
Q15_1_A (Vegetation<-->Water = solid form) was changed from y to N
Q15_1_B (Vegetation<-->Water = intermediate) was changed from n to Y
Q15_2 (Channel flow spreading?) was changed from n to Y
Q16_A (Vegetation class = solid) was changed from y to N
Q16_B (Vegetation class = intermediate) was changed from n to Y
Q22_1_1 (AA contains a Channel?) was changed from n to Y
Q44_B (1 in < secondary water depth < 4 inches) was changed from n to Y
Q44_C (5 in < secondary water depth < 8 inches) was changed from n to Y
Q44_D (9 in < secondary water depth < 20 inches) was changed from n to Y
Q44_E (21 in < secondary water depth < 39 inches) was changed from n to Y
Q46_A (Physical Habitat Interspersion = uniform) was changed from y to N
Q46_C (Physical Habitat Interspersion = mosaic) was changed from n to Y
Q50 (Plants: waterfowl value?) was changed from n to Y
4 D_b
Q15_1_A (Vegetation<-->Water = solid form) was changed from y to N
Q15_1_B (Vegetation<-->Water = intermediate) was changed from n to Y
Q22_1_1 (AA contains a Channel?) was changed from n to Y
Q31_5 (Area of Zone A >= 10% of Zone B and C?) was changed from n to Y
Q37 (Open water (d>2ft,w>6ft,l>1000ft)?) was changed from n to Y
Q44_C (5 in < secondary water depth < 8 inches) was changed from n to Y
Q44_D (9 in < secondary water depth < 20 inches) was changed from n to Y
4 G
Q41_1 (Peak flow velocity < 10 cm/s?) was changed from Y to y

Appendix O

APPENDIX O

WETLAND MITIGATION/ENHANCEMENT METHODS

HACKENSACK MEADOWLANDS DISTRICT SAMP/EIS

Appendix Prepared by:

CAMP DRESSER & McKEE

FEBRUARY 1995

APPENDIX O
WETLAND MITIGATION/ENHANCEMENT METHODS

Methodology

The Preferred Alternative is anticipated to result in fill of approximately 842 acres of wetlands as a result of buildout of the selected Planning/Satellite Areas and Transportation Improvements. As discussed in Section 5.1 of the EIS, wetland impacts are reflected in a loss of indicator value of approximately 73,000 acre-points for the water quality improvement attribute (14 percent of existing indicator value), approximately 64,000 acre-points for the wildlife habitat attribute (11 percent of existing indicator values); and approximately 42,000 acre-points for the social significance attribute (14 percent of existing indicator values). In order to assure no net loss of wetland values in the District, the following procedures were used to develop a mitigation strategy for the SAMP/EIS.

1. Identify the AVID Assessment Areas (AAs) best suited for habitat/wetland improvements. Construct a map of "mitigatable" AAs (using previously proposed mitigation ideas from HMDC and other sources, where available; experience in the Meadowlands; and professional judgment).

2. Develop mitigation and/or improvement strategies and techniques that could be applied to the District's wetlands. Combining AAs by removing berms to increase the wetland size, and its habitat diversity, is an example of an improvement strategy.

3. Identify the WET questions that are related to each mitigation strategy and technique, and which WET answers would be revised in AAs where the strategy is implemented.

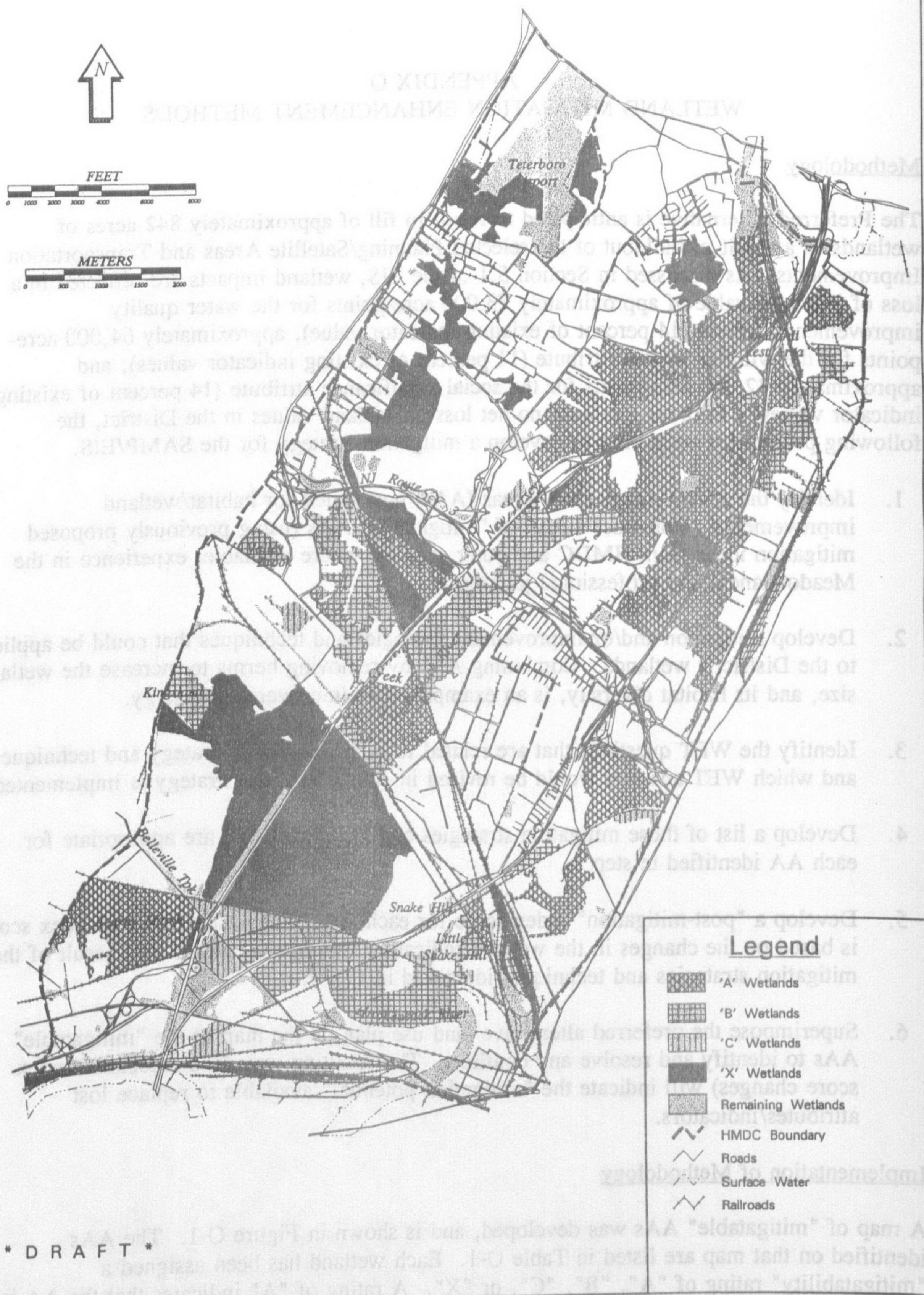
4. Develop a list of those mitigation strategies and techniques that are appropriate for each AA identified in step 1.

5. Develop a "post-mitigation" index score for each AA. The post-mitigation index score is based on the changes in the wetland indicators identified in step 3 as a result of the mitigation strategies and techniques identified in step 4.

6. Superimpose the preferred alternative land use plan on the map of the "mitigatable" AAs to identify and resolve any conflicts. The resulting map (and associated index score changes) will indicate the "mitigation potential" available to replace lost attributes/indicators.

Implementation of Methodology

A map of "mitigatable" AAs was developed, and is shown in Figure O-1. The AAs identified on that map are listed in Table O-1. Each wetland has been assigned a "mitigatability" rating of "A", "B", "C", or "X". A rating of "A" indicates that the AA is



* D R A F T *

February 08, 1995

Figure O–1

Mitigatable Assessment Areas

CDM
environmental engineers, scientists, planners & management consultants

Hackensack Meadowlands SAMP/EIS

TABLE O-1
ASSESSMENT AREAS WITH MITIGATION POTENTIAL

AA Number	HMDC Desig.	AA Number	HMDC Desig.	AA Number	HMDC Desig.
2-1	B	3-1	A	64	X
2-2	B	3-2	A	69	X
2-3	B	3-3	C	70	X
2-4	C	3-4	C	71	X
2-4A	B	3-5	B	72	X
2-6	A	3-6	B	80-A	C
2-7	B	3-7	B	81	X
2-8	X	3-8	B	82	C
2-9	B	4-B	X	87-B1	C
2-10	B	4-C	X	87-B2	C
2-11	B	4-D	X	90	C
2-C	A	4-E	X	91	C
2-D	A	4-E2	X	97	B
2-E	A	4-F	X	98	C
2-F	A	4-G	X	99	A
2-G	A	6	X	100	B
2-H	A	7	X	107	B
2-I	B	13-A	A	108	A
2-J	C	13-B	A	112	C
2-K	A	13-C	A	113	C
2-L	A	19	C	150-A	C
2-M	B	27	A	153	C
2-N	C	28	A	200	X
2-P	A	31	C	202	X
2-Q	A	32	C	210	X
2-R	A	33-A	B	211	X
2-T	A	33-B	B	213	X
2-U	B	34	B	222	C
2-V	B	38-A	C	223	C
2-W	C	48	C	225	C
2-X	A	54	B	301	X
2-YA	A	61	X	303	X
2-YB	X	62	X	304	X
2-Z	B	63	X	312	B

mitlist.wk1

either considered very appropriate for mitigation, or has been proposed for use as a mitigation site. A rating of "B" or "C" indicates that the wetland is less appropriate for mitigation. Wetlands assigned a rating of "X", while technically mitigatable, are unlikely to be used for mitigation, either because of existing high quality, existing contamination issues, or very small size. The remaining, unrated wetlands in the District are either already used for mitigation (e.g., the Hartz Mitigation sites), were not assessed during the AVID (and thus the existing condition cannot be determined), or are very small, isolated wetlands.

The mitigation of, and improvements to disturbed wetlands include alterations that are designed to:

- increase habitat diversity,
- increase plant diversity,
- restore a "more natural" hydrology, and
- improve recreational and/or research uses.

Four basic mitigation strategies are proposed for improving the functioning of the District's wetlands.

STRATEGIES

S1 In areas that are close to tidal waters, but poorly connected, the mitigation should involve improving tidal flow/circulation and <u>increasing the diversity of the salt marsh habitats</u>. This entails re-establishing of improving tidal flow by adding intermittent outlets connecting the wetland to the tidal influence of the Hackensack River. Freshwater runoff can be re-routed, and freshwater inlets can be modified in areas close to tidal waters to reduce freshwater flow on the marsh surface. (May conflict with tidal flood control.)

S2 In areas that are distant from tidal waters the mitigation should seek to recreate freshwater wetlands from tidal wetlands. This creates high habitat diversity, to increase the <u>overall diversity of wetland habitats</u> in the Meadowlands. This entails re-routing freshwater runoff and modifying outlets in areas remote from tidal waters in order to create a freshwater marsh.

S3 The wildlife habitat value of small hydrologically disconnected wetlands can be increased by combining smaller wetlands into larger units with one hydrologic regime. This entails the removal of berms and barriers between adjacent wetlands to increase the size of contiguous wetland habitat and improve tidal flow.

S4 In upland areas of appropriate existing hydrology and land use, new wetlands can be created. However, this strategy has limited use, because a majority of the vacant upland in the District has been used for the Preferred Alternative, in order to avoid direct wetland impacts, and the remaining vacant upland is important for terrestrial wildlife.

Once the appropriate mitigation strategy(ies) are selected for each assessment area proposed for mitigation, there are many different techniques (methods) that can be applied to the achieve wetlands improvement. The following is a list of mitigation/improvement techniques that are appropriate and applicable to the District's wetlands.

TECHNIQUES

- T2 Create meandering channels to increase edge habitat.
- T3 Grade meandering channels in both freshwater and tidal wetlands to increase habitat by providing varying hydrologies.
- T4 Regrade upland edge of wetlands to decrease slope and increase the size of edge habitats.
- T5 Create pools to increase water/vegetation interspersion.
- T6 Excavate deeper pools (that are linked to the stream system) to provide additional habitat for fish.
- T7 Grade pool perimeters in both freshwater and tidal marshes to provide habitat for an increased plant diversity.
- T8 In areas where tidal flow has been increased, remove stands of Phragmites and replant with a diversity of tidal plants.
- T9 Create special habitat features such as nesting boxes, dead trees with cavities, etc.
- T10 Plant vegetation with specific wildfowl value.
- T11 Construct riffles in channels to improve aeration and provide fish habitat.
- T12 Create upland islands with irregular edges (> 2 acres) in larger wetlands.
- T13 Provide recreation access point(s).
- T14 Create weirs in channels to reduce velocity in specified areas.
- T15 Create a permanent outlet.
- T16 Create a vegetation mosaic by plowing and replanting areas which now have only one species.
- T17 Increase area of emergent species in Zone B to 31-60%.
- T18 Put diffusers/flow spreaders on stormwater pipes discharging into wetlands.
- T19 Landscape an irregular upland/wetland edge.
- T20 Create a dense vegetation understory along the wetland/upland edge.

The mitigation approaches listed above have been organized into four mitigation "strategies" and 19 "techniques". The strategies identified above are large-scale changes that will affect many wetland indicators. The techniques, also identified above, are specific changes to individual (or a small number of) wetland indicators. The changes to the wetland indicators tracked by the wetland indexing system that are expected to occur after implementing the mitigation strategies and techniques are listed in Table O-2.

TABLE O-2
EFFECTS OF MITIGATION STRATEGIES AND TECHNIQUES
ON WETLAND INDICATORS

WET Question	Summary	Maximum Possible Score Gain WQ	WH	SS	Re–esta–blish tidal flow S1	create freshwater marsh S2	Combine with other AAs S3	meand–ering channels T2	grade chan–nels T3	grade upland edge T4	create pools T5	deepen pools T6	grade pools T7	remove Phrags T8	Special habi–tats T9	Veg of wildfowl value T10	riffles T11	islands T12	recre–ation access T13	reduce velo–city T14	perma–nent outlet T15	vegeta–tion mosaic T16	increase emer–gents T17	diff–users T18	irregular edge T19	dense under–story T20
I23	Education opportunity?	0.0	0.0	1.3															1							
I24	Research resource?	0.0	0.0	1.3															1							
I27	Recreation Access	0.0	0.0	3.9															1							
Q2.1.2	>40 acres?	3.1	4.0	2.6			1																			
Q2.1.3	> 200 acres?	9.2	12.0	7.9			1																			
Q8.3	Permanent outlet?	0.0	8.9	3.8	1																1					
Q8.4	Intermittent outlet?	1.5	0.9	0.8		1																				
Q9.1	Outlet < one third average width?	1.5	0.0	0.0		1																				
Q9.2	Sheet flooding?	13.8	0.0	3.5																				1		
Q12.Cc	Aquatic bed and: rooted vascular	0.8	3.4	2.0		1																				
Q12.Da	Emergent and: persistent	3.8	1.5	2.0	1																					
Q13.Ca	Secondary, Aquatic bed and: algal	1.5	0.9	0.8	1	1																				
Q13.Cb	Secondary, Aquatic bed and: floating vascular	1.5	2.2	1.3		1																				
Q13.Cc	Secondary, Aquatic bed and: rooted vascular	1.5	4.0	2.0		1			1																	
Q13.Da	Secondary, Emergent and: persistent	4.6	2.2	2.0	1	1			1																	
Q13.Db	Secondary, Emergent and: non–persistent	0.8	4.6	2.0		1																				
Q14.1	25 sq.ft. island?	0.0	2.2	0.9														1								
Q14.2	2 acre island?	0.0	4.0	1.6														1								
Q15.1.C	Vegetation<-->Water – checkerboard	1.5	10.8	5.0							1															
Q15.2	Channel flow spreading?	13.8	3.4	4.9	1																					
Q16.C	Vegetation class – mosaic	0.0	2.8	0.0										1								1				
Q17	Plant form richness	0.0	0.9	0.0																		1				
Q18	Upland<-->Wetland edge irregular?	0.8	1.5	0.8																					1	
Q22.1.1	AA contains a Channel?	0.0	2.8	1.3				1																		
Q22.1.2	Sinuous channel?	1.5	0.3	0.0				1																		
Q29.1	Dense understory edge?	1.5	2.5	1.4																						1
Q29.2	Buffer zone slopes < 5%?	0.0	0.3	0.0						1																
Q31.2	B > 10% ?	1.5	1.2	1.1		1		1					1													
Q31.6.c	eB = 30% – 60% of BC	13.8	4.6	5.1																			1			
Q32.A	Spatially Dominant Hydroperiod – pln	1.5	6.5	3.5		1																				
Q32.I	Spatially Dominant Hydroperiod – rft	0.0	13.5	5.6	1																					
Q33.B	Permanent Hydroperiod – len	0.0	0.6	0.0		1																				
Q33.J	Permanent Hydroperiod – let	0.0	9.8	4.0	1																					
Q34.1	Local dams?	2.3	0.9	1.9		1																				
Q39	Special habitat features?	0.0	2.8	0.0											1											
Q41.1	Peak flow velocity < 10 cm/s?	4.6	0.0	1.9																1						
Q44.A	Secondary Water Depth < 1 inch	0.0	1.5	0.8					1				1													
Q44.B	1 < secondary water depth < 4 inches	0.0	1.5	0.0					1				1													
Q44.C	5 < secondary water depth < 8 inches	0.0	1.8	0.0					1				1							1						
Q44.D	9 < secondary water depth < 20 inches	0.0	1.8	0.0					1				1							1						
Q44.E	21 < secondary water depth < 39 inches	0.0	2.2	0.0					1				1							1						
Q44.F	40 < secondary water depth < 59 inches	0.0	2.2	0.0									1							1						
Q44.G	5 < secondary water depth < 6.5 feet	0.0	2.2	0.0									1													
Q44.H	6.5 < secondary water depth < 26 feet	0.0	2.2	0.0									1													
Q46.C	Physical Habitat Interspersion – mosaic	0.8	3.1	1.8				1										1								
Q49.1.1	Pools?	0.0	0.3	0.0								1														
Q49.1.2	Riffles?	0.0	0.3	0.0													1									
Q49.2	Fish cover?	0.0	5.5	2.3									1													
Q50	Plants: waterfowl value?	0.0	3.1	0.0												1										
Q61	DO limited?	0.0	x 1.25	x 1.11													1									

		WQ	WH	SS
S1	Reestablish tidal flow	23.8	40.2	23.1
S2	Create freshwater marsh	19.2	27.3	17.3
S3	Combine with adjacent AAs	12.3	16.0	10.5
T2	Create meandering channels	3.8	7.4	4.1
T3	Grade channels	6.2	15.1	4.8
T4	Grade upland edge	0.0	0.3	0.0
T5	Create pools	1.5	10.8	5.0
T6	Deepen pools	0.0	0.3	0.0
T7	Grade pools	1.5	22.1	4.1
T8	Remove Phrags	0.0	2.8	0.0
T9	Create Special Habitats	0.0	2.8	0.0
T10	Plant veg. of wildfowl value	0.0	3.1	0.0
T11	Create riffles	0.0	0.3	0.0
T12	Create islands	0.8	9.2	4.3
T13	Add recreational access	0.0	0.0	6.5
T14	Reduce maximum velocity	4.6	8.0	1.9
T15	Create permanent outlet	0.0	8.9	3.8
T16	Plant a vegetation mosaic	0.0	3.7	0.0
T17	Increase emergents	13.8	4.6	5.1
T18	Install flow diffusers	13.8	0.0	3.5
T19	Create irregular edge	0.8	1.5	0.8
T20	Create dense understory	1.5	2.5	1.4
	ALL 22	87.7	143.5	81.0

Note: "maximum possible score gain" columns calculated by using the IVA method to assess the maximum possible gain in attribute score by creating that wetland functional indicator. The actual score gain for individual wetlands may be less due to (1) the existing condition of the wetland and (2) the presense of score–reducing indicators.

mitstrat.wk1

Table O-3 presents a matrix which lists the "mitigatable" AAs (see Table O-1 and Figure O-1) and identifies which of the strategies and techniques (presented in Table O-2) are appropriate for each AA. This table has been developed with consultation from wetland scientists at HMDC.

Although not shown in Table O-3, strategy S4 (wetland creation) has only been used at two sites. The first proposed wetland creation site is approximately 25 acres in size, located in North Arlington. This area is adjacent to AVID assessment area number 312 (see Section 3.1 of the EIS for the locations of the AVID assessment areas). This site is adjacent to the Erie landfill, which is proposed for landfill mitigation and closure (see Section 5.17). The second proposed wetland creation site is approximately 19.5 acres in size, located in East Rutherford. This site is west of the Hackensack River and east of the NJ Turnpike western spur, predominantly between and under the two bridges that convey Route 3 over the Hackensack River. The site is adjacent to AVID assessment areas 2-1 and 2-Z. Both of these sites are locations that historically were covered by wetlands. In order to value the created wetlands in terms of their mitigation offset, the IVA scores for adjacent wetlands (after enhancement, see below) were multiplied by the acreage of created wetland. This is based on the assumption that, because these areas used to be wetlands, the newly recreated wetlands will be at least as valuable as adjacent wetlands.

Using the matrix of appropriate mitigation (Table O-3), and the changes to the wetland indicators for each of the mitigation strategies and techniques (Table O-2), a new set of wetland indicators was developed for each of the "mitigatable" AAs, that represent the wetland indicators after mitigation. These indicators combine the "existing conditions" found in the existing WET database with the mitigation changes to the existing conditions (see Attachment O-1 for a list of changes to the indicators in each wetland). For each of the "mitigatable" AAs, new scores were calculated for the three wetland attributes, using the IVA method. The difference between the "baseline" score and the "post-mitigation" score for each AA represents that AAs mitigation potential. Multiplying the difference between the "baseline" and "post-mitigation" scores by the area of the AA over which the enhancement will be expressed results in the gain in indicator values (which is used to offset loss of indicator values from impacts) for that wetland. The "area over which the enhancement will be expressed" was taken as the acreage of the wetland above the six foot depth contour (relative to mean low water), to include all intermittently and permanently flooded wetlands near shore/shallow aquatic environments.

Table O-4 presents the gain in indicator scores and values for all of the wetlands identified in Table O-3. Please note that the AA numbers in Table O-4 are slightly different from those listed in Table O-3. The small letter additions to assessment area numbers (e.g., "2 6_a", "2 6_b") indicate non-contiguous subareas of an AA remaining after direct impacts from the Preferred Alternative. The capital letter additions to assessment area numbers (e.g., "2 1_A", "312_A") indicate wetland creation areas adjacent to existing AAs, as is discussed above. As can be seen in Table O-4, if all "mitigatable" wetlands were indeed enhanced, this would more than offset the impact from the Preferred Alternative.

TABLE O-3
WETLAND ENHANCEMENT STRATEGIES AND TECHNIQUES
APPLICABLE TO "MITIGATABLE" WETLANDS

AANO	Re-esta-blish tidal flow S01	create fresh-water marsh S02	Combine with AAs # S03	meand-ering chan-nels T02	grade chan-nels T03	grade upland edge T04	create pools T05	deepen pools T06	grade pools T07	remove Phrags T08	Spec-ial habi-tats T09	Veg of wild-fowl value T10	rif-fles T11	is-lands T12	recre-ation access T13	reduce velo-city T14	perma-nent outlet T15	vegeta-tion mosaic T16	incr-ease emer-gents T17	diff-users T18	irreg-ular edge T19	dense under-story T20
100		1	97,150A,153		1		1	1	1	1	1		1	1				1		1		1
107		1		1	1	1	1	1	1	1	1	1	1	1	1			1	1	1	1	
108		1		1	1	1	1	1	1	1	1	1	1	1	1			1		1		
112						1		1		1	1	1						1				1
113						1		1		1	1	1						1				1
13 A	1		13B,13C	1	1	1	1	1	1	1	1	1	1	1	1			1		1	1	
13 B	1		13A,13C	1	1	1	1	1	1	1	1	1	1	1	1			1		1	1	
13 C	1		13A,13B	1	1	1	1	1	1	1	1	1	1	1	1			1		1	1	
150 A	1		97,100,153		1					1	1							1				1
153			97,100,150A		1					1	1							1				1
19					1	1	1			1	1	1						1		1		1
2 1	1			1	1	1	1	1	1	1	1	1	1	1				1		1	1	1
2 10				1	1	1	1	1	1	1	1	1	1	1				1		1	1	1
2 11				1	1	1	1	1	1	1	1	1	1	1				1		1	1	1
2 2				1	1	1	1	1	1	1	1	1	1		1			1		1	1	1
2 3				1	1	1	1	1	1	1	1	1	1		1			1		1	1	1
2 4				1	1	1	1	1	1	1	1	1	1	1	1			1		1	1	1
2 4A	1			1	1		1	1	1		1	1	1		1		1	1		1	1	1
2 6	1			1	1	1	1	1	1	1	1	1	1	1				1		1	1	1
2 7				1	1	1	1	1	1	1	1	1	1	1				1		1	1	1
2 8						1	1	1	1	1	1	1	1	1				1		1	1	1
2 9				1	1	1	1	1	1	1	1	1	1	1	1			1		1	1	1
2 C	1		2 D,2 H	1	1	1		1	1	1	1		1	1	1			1		1		1
2 D	1		2 C,2 H	1	1	1	1	1	1	1	1		1	1	1			1		1	1	1
2 E	1			1	1	1	1	1	1	1	1	1	1	1	1			1	1	1	1	1
2 F		1				1	1	1	1	1	1	1		1	1		1		1	1	1	1
2 G				1	1		1	1	1	1	1	1	1	1	1			1		1	1	1
2 H			2 C,2 D	1	1	1	1	1	1	1	1		1	1	1			1		1		1
2 1		1		1	1	1	1	1	1	1	1	1	1	1				1			1	1
2 J	1		2 K	1	1	1	1	1	1	1	1	1	1	1				1			1	1
2 K			2 J	1	1	1	1	1	1	1	1	1		1				1			1	1
2 L	1		2 M	1	1		1	1	1	1	1	1	1	1				1		1	1	1
2 M	1		2 L	1	1		1	1	1	1	1	1	1	1	1			1		1	1	1
2 N		1		1	1		1	1	1	1	1	1	1	1	1			1		1	1	1
2 P				1	1		1	1	1	1	1	1	1	1				1		1	1	1
2 Q			301	1	1		1	1	1	1	1	1	1	1	1			1		1	1	1
2 R				1	1	1		1	1	1	1	1	1	1	1			1		1	1	1
2 T	1			1	1	1	1	1	1	1	1	1	1	1	1		1	1		1	1	1
2 U	1		2 V	1	1	1	1			1	1				1			1	1	1	1	1
2 V	1		2 U		1	1	1			1	1				1			1	1	1	1	1
2 W					1		1	1	1	1	1	1						1				1
2 X	1		303,304,2 YA,2 YB	1	1	1	1	1	1	1	1	1	1	1	1		1	1	1	1	1	1
2 YA	1		303,304,2 X,2 YB	1		1	1	1	1	1		1	1		1		1	1		1	1	1
2 YB	1		3O3,304,2 X,2 YA							1		1	1		1			1		1	1	1
2 Z				1	1	1	1	1	1	1	1	1	1	1			1	1				1
200	1			1	1	1				1	1	1	1	1	1		1	1			1	1
202	1																				1	
210		1																				
211		1																1	1	1	1	1
213		1																1	1	1	1	1
222																						
223																						
225																						

TABLE O-3
WETLAND ENHANCEMENT STRATEGIES AND TECHNIQUES
APPLICABLE TO "MITIGATABLE" WETLANDS

AANO	Re-establish tidal flow S01	create fresh-water marsh S02	Combine with AAs # S03	meand-ering chan-nels T02	grade chan-nels T03	grade upland edge T04	create pools T05	deepen pools T06	grade pools T07	remove Phrags T08	Spec-ial habi-tats T09	Veg of wild-fowl value T10	rif-fles T11	is-lands T12	recre-ation access T13	reduce velo-city T14	perma-nent outlet T15	vegeta-tion mosaic T16	incr-ease emer-gents T17	diff-users T18	irreg-ular edge T19	dense under-story T20
23	1		24	1	1	1	1	1	1	1	1	1			1				1	1		1
24	1		23	1	1	1	1	1	1	1	1	1			1				1	1		1
27	1		28,31	1	1	1	1	1	1	1	1	1	1	1	1		1	1			1	1
28	1		27,31	1	1	1	1	1	1	1	1	1	1	1	1			1			1	1
3 1		1		1	1	1	1	1	1		1	1	1	1	1			1		1	1	
3 2						1		1	1		1	1		1	1		1	1		1	1	1
3 3	1		3 5,3 7	1	1	1	1	1	1	1	1	1	1	1	1		1	1		1	1	1
3 4	1			1	1	1	1	1	1	1	1	1	1	1	1		1	1		1	1	1
3 5			3 3,3 7	1	1	1	1	1	1	1	1	1	1	1	1		1	1		1	1	1
3 6			3 8	1	1	1	1	1	1	1	1	1	1	1	1		1	1		1	1	1
3 7			3 3,3 5	1	1	1	1	1	1	1	1	1	1	1	1		1	1		1	1	1
3 8			3 6	1	1	1	1	1	1	1	1	1	1	1	1		1	1		1	1	1
301			2 Q								1											
303	1		304,2 X,2 YA,2 YB		1	1		1	1	1	1	1	1	1	1			1			1	1
304	1		303,2 X,2 YA,2 YB		1	1				1	1	1		1				1	1		1	1
31	1		27,28			1		1	1	1	1	1		1	1		1	1	1	1	1	1
312	1		61,62,63,64	1	1	1	1	1	1	1	1	1	1	1	1		1	1	1	1	1	1
32	1		33 A,33 B,34	1	1	1	1	1	1	1	1	1	1	1	1			1	1	1	1	1
33 A	1		32,33 B,34	1	1	1	1	1	1	1	1	1	1	1	1			1		1	1	1
33 B	1		32,33 A,34	1	1	1	1	1	1	1	1	1	1	1	1			1		1	1	1
34	1		32,33 A,33 B	1	1	1	1	1	1	1	1	1	1	1	1			1		1	1	1
35	1							1	1	1	1	1			1		1	1		1	1	1
38 A	1					1		1	1	1	1	1			1		1	1		1	1	1
4 B				1	1	1	1	1	1	1	1	1	1	1	1			1		1	1	1
4 C				1	1	1	1	1	1	1	1	1	1	1	1			1		1	1	1
4 D	1				1	1	1	1	1	1	1	1	1	1				1		1	1	1
4 E					1	1	1	1	1	1	1	1	1		1			1		1		
4 E2	1				1	1	1	1	1	1	1	1	1					1		1		
4 F			4 G	1	1	1	1	1	1	1	1	1	1	1	1			1		1	1	1
4 G			4 F	1	1	1	1	1	1	1	1	1	1	1	1			1		1	1	1
48						1	1	1	1	1	1	1						1		1		1
54				1	1	1	1	1	1	1	1	1	1	1	1		1	1		1	1	1
6											1		1	1	1			1		1		
61			62,63,64,312			1					1			1								1
62			61,63,64,312			1					1			1								1
63			61,62,64,312			1					1			1								1
64			61,62,63,312			1					1			1								1
69						1					1			1								1
7						1			1		1	1		1	1		1		1	1	1	1
70								1	1	1	1	1						1		1	1	1
71	1																			1		1
72	1										1									1		1
80 A																						
81											1									1		1
82																						
87 B1																						
87 B2																						
90																						
91																						
97		1	100,150 A,153	1	1	1	1	1	1	1	1	1	1	1				1		1	1	1
98		1		1	1	1	1	1	1	1	1	1	1	1			1	1		1		1
99		1		1	1	1	1	1	1	1	1	1	1	1				1		1	1	1

TABLE O-4
WETLAND ENHANCEMENT GAINS FOR ALL "MITIGATABLE" WETLANDS

AANO	Remain Acres	Remain Acres w/o Deep Water	Post-Onsite Mitigation Scores WQ	WH	SS	Post-Offsite Mitigation Scores WQ	WH	SS	Gain in Score WQ	WH	SS	Gain in Value WQ	WH	SS	HMDC Des.
21_A	19.5	19.5	0	0	0	83	123	97	83	123	97	1,622	2,403	1,895	A
26_a	221.4	165.8	52	66	48	83	104	97	31	38	49	5,140	6,301	8,125	A
26_b	0.5	0.5	52	66	48	83	104	97	31	38	49	15	18	24	A
2C	63.3	41.1	30	56	28	70	96	95	40	40	67	1,642	1,642	2,751	A
2D	48.1	37.2	38	54	12	80	100	78	42	46	66	1,563	1,712	2,457	A
2E_a	155.1	155.1	68	61	24	107	103	79	39	42	55	6,050	6,516	8,532	A
2E_b	9.3	9.3	65	49	24	104	98	79	39	49	55	364	458	514	A
2E_c	1.0	1.0	65	45	24	104	90	79	39	45	55	38	44	54	A
2E_d	22.1	22.1	68	61	24	107	103	79	39	42	55	862	928	1,216	A
2F	12.8	12.8	53	41	4	81	102	63	28	61	59	358	780	754	A
2G_a	12.3	12.3	64	52	20	84	78	30	20	26	10	246	319	123	A
2G_c	3.1	3.1	64	52	20	86	78	30	22	26	10	67	80	31	A
2H_a	92.1	60.3	33	55	12	53	79	29	20	24	17	1,206	1,447	1,025	A
2H_b	3.5	3.5	33	55	12	53	79	29	20	24	17	69	83	59	A
2K	404.9	337.6	43	62	12	49	82	12	6	20	0	2,026	6,752	0	A
2L	39.7	39.7	78	74	17	100	113	66	22	39	49	874	1,550	1,947	A
2P	239.3	194.0	47	61	12	67	93	61	20	32	49	3,880	6,209	9,507	A
2Q	120.2	120.2	67	60	63	83	91	118	16	31	55	1,924	3,727	6,612	A
2R	138.6	138.6	92	78	50	108	106	55	16	28	5	2,217	3,880	693	A
2T	84.1	84.1	52	36	17	88	98	71	36	62	54	3,027	5,214	4,541	A
2X	101.4	101.4	46	17	12	67	107	78	21	90	66	2,130	9,128	6,694	A
2YA	7.2	7.2	52	12	0	70	80	5	18	68	5	130	492	36	A
31_a	120.3	120.3	83	65	33	107	99	88	24	34	55	2,888	4,092	6,619	A
31_b	2.4	2.4	76	45	33	104	82	88	28	37	55	68	90	133	A
32	346.9	346.9	89	84	100	103	91	103	14	7	3	4,856	2,428	1,041	A
13A	15.5	15.5	81	66	0	101	100	55	20	34	55	309	526	851	A
13B	23.2	23.2	79	71	0	99	105	55	20	34	55	463	788	1,274	A
13C	33.8	33.8	80	71	0	99	105	55	19	34	55	642	1,150	1,860	A
27_a	13.7	13.7	89	62	0	97	104	55	8	42	55	110	577	755	A
27_b	7.8	7.8	89	62	0	97	104	55	8	42	55	62	328	430	A
28	29.4	29.4	87	55	0	97	98	55	10	43	55	294	1,264	1,617	A
99	13.9	13.9	61	48	34	89	89	84	28	41	50	389	570	696	A
108	52.2	52.2	84	59	33	108	101	88	24	42	55	1,252	2,192	2,870	A
312_A	25.1	25.1	0	0	0	90	82	86	90	82	86	2,263	2,061	2,162	A
21	226.5	116.8	62	90	48	83	123	97	21	33	49	2,453	3,854	5,723	B
22	85.0	85.0	65	85	12	82	102	78	17	17	66	1,444	1,444	5,607	B
23	129.9	129.9	70	100	76	86	117	78	16	17	2	2,079	2,208	260	B
24A	1.3	1.3	52	70	12	74	87	78	22	17	66	29	23	88	B
27	34.6	24.6	48	61	30	64	89	30	16	28	0	393	689	0	B
29_a	10.1	10.1	52	48	17	69	75	22	17	27	5	171	272	50	B
29_b	0.7	0.7	52	48	17	69	75	22	17	27	5	12	19	4	B
210	58.9	29.5	48	64	33	65	96	33	17	32	0	502	946	0	B
211	271.6	142.8	61	78	32	77	108	82	16	30	50	2,284	4,283	7,138	B
2I	4.1	4.1	24	52	13	40	74	13	16	22	0	65	90	0	B
2M	56.9	56.9	81	77	17	98	112	71	17	35	54	968	1,993	3,075	B
2U	145.2	65.1	31	59	48	65	81	53	34	22	5	2,212	1,432	325	B
2V	17.6	17.6	69	62	0	90	84	55	21	22	55	369	387	967	B
2Z	18.9	7.9	26	58	23	32	89	23	6	31	0	47	244	0	B
35	76.9	76.9	86	80	90	88	100	95	2	20	5	154	1,539	385	B
36	74.0	74.0	92	80	90	95	101	95	3	21	5	222	1,555	370	B
37	27.9	27.9	81	73	28	87	97	95	6	24	67	167	668	1,866	B
38	23.4	23.4	92	76	78	97	98	95	5	22	17	117	515	398	B
33A	13.4	13.4	73	68	0	94	103	55	21	35	55	281	469	737	B
33B	12.0	12.0	69	68	0	87	102	55	18	34	55	215	406	657	B
34	26.3	26.3	69	67	0	91	104	55	22	37	55	578	971	1,444	B
54_a	32.7	32.7	100	70	50	117	102	55	17	32	5	556	1,047	164	B
54_b	12.3	12.3	100	70	50	117	102	55	17	32	5	209	394	62	B
97_a	7.1	7.1	79	42	50	105	86	99	26	44	49	185	313	349	B
97_b	3.8	3.8	79	42	50	105	86	99	26	44	49	99	167	186	B
100	18.7	18.7	73	57	17	98	89	66	25	32	49	467	598	915	B
107	18.6	18.6	67	40	33	95	83	88	28	43	55	520	799	1,022	B
312	71.0	71.0	67	44	16	90	82	86	23	38	70	1,632	2,696	4,967	B
24	31.9	31.9	63	65	23	80	100	78	17	35	55	542	1,117	1,755	C
2G_b	3.4	3.4	62	35	20	84	65	30	22	30	10	75	102	34	C
2J	8.5	8.5	58	34	18	90	108	67	32	74	49	273	631	418	C
2N	29.2	29.2	45	48	24	70	74	30	25	26	6	731	760	175	C
2W	8.9	8.9	71	56	0	72	82	0	1	26	0	9	232	0	C

TABLE O-4
WETLAND ENHANCEMENT GAINS FOR ALL "MITIGATABLE" WETLANDS

		Remain	Post-Onsite Mitigation Scores			Post-Offsite Mitigation Scores			Gain in Score			Gain in Value			HMDC
AANO	Remain Acres	Acres w/o Deep Water	WQ	WH	SS	WQ	WH	SS	WQ	WH	SS	WQ	WH	SS	Des.
3 3	58.2	58.2	100	85	92	104	118	95	4	33	3	233	1,920	175	C
3 4	41.0	41.0	75	55	8	94	107	63	19	52	55	779	2,131	2,254	C
19	3.4	3.4	63	53	0	80	69	0	17	16	0	58	55	0	C
31	5.1	5.1	49	37	0	59	79	5	10	42	5	51	212	25	C
32	9.4	9.4	58	71	0	76	106	55	18	35	55	169	329	517	C
38 A	1.4	1.4	78	51	17	93	63	22	15	12	5	21	17	7	C
48	8.1	8.1	83	50	0	98	77	0	15	27	0	121	217	0	C
80 A	10.1	10.1	84	50	0	84	50	0	0	0	0	0	0	0	C
82	6.1	6.1	72	53	0	72	53	0	0	0	0	0	0	0	C
87 B1	1.5	1.5	65	39	17	65	39	17	0	0	0	0	0	0	C
87 B2	17.1	17.1	81	47	50	81	47	50	0	0	0	0	0	0	C
90	4.6	4.6	65	53	0	65	53	0	0	0	0	0	0	0	C
91	1.4	1.4	58	33	0	58	33	0	0	0	0	0	0	0	C
98	3.5	3.5	54	10	33	68	65	33	14	55	0	49	193	0	C
112	12.2	12.2	69	55	33	69	59	33	0	4	0	0	49	0	C
113	16.6	16.6	67	58	17	67	63	17	0	5	0	0	83	0	C
150 A	2.4	2.4	60	42	50	62	65	50	2	23	0	5	55	0	C
153	0.7	0.7	62	45	50	63	55	50	1	10	0	1	7	0	C
222	17.9	17.9	71	69	0	71	69	0	0	0	0	0	0	0	C
223	36.4	36.4	82	53	17	82	53	17	0	0	0	0	0	0	C
225	1.3	1.3	61	37	0	61	37	0	0	0	0	0	0	0	C
2 8	868.8	748.1	80	92	92	94	113	92	14	21	0	10,474	15,711	0	X
2 YB	11.4	11.4	60	75	0	87	98	55	27	23	55	308	262	628	X
4 B	35.4	35.4	87	71	0	103	105	55	16	34	55	567	1,204	1,948	X
4 C	55.3	55.2	90	74	52	106	108	55	16	34	3	884	1,878	166	X
4 D_a	181.9	181.9	66	80	19	98	115	69	32	35	50	5,821	6,366	9,095	X
4 D_b	4.6	4.6	62	51	17	84	87	66	22	36	49	102	167	228	X
4 E	2.0	2.0	45	61	0	62	92	55	17	31	55	33	61	108	X
4 E2	10.8	10.8	38	62	17	71	105	66	33	43	49	356	464	528	X
4 F	7.4	7.4	53	59	0	75	101	55	22	42	55	162	309	405	X
4 G	14.7	14.7	68	50	17	93	95	71	25	45	54	367	661	793	X
6	59.4	59.4	49	53	41	63	61	46	14	8	5	831	475	297	X
7	38.6	38.6	31	65	0	37	92	5	6	27	5	231	1,042	193	X
61	122.2	122.2	54	56	17	65	71	17	11	15	0	1,344	1,833	0	X
62	30.2	30.2	34	65	17	48	88	17	14	23	0	423	696	0	X
63	33.4	33.4	50	56	18	61	72	18	11	16	0	367	534	0	X
64	1.6	1.6	62	51	17	76	73	17	14	22	0	22	34	0	X
69	312.5	312.5	57	76	30	58	82	30	1	6	0	313	1,875	0	X
70	79.5	79.5	58	64	29	72	67	29	14	3	0	1,113	238	0	X
71	9.5	9.5	65	53	17	95	64	17	30	11	0	285	105	0	X
72	8.1	8.1	58	54	17	88	66	17	30	12	0	242	97	0	X
81	8.2	8.2	68	32	0	69	36	0	1	4	0	8	33	0	X
200	8.1	8.1	56	13	0	79	68	5	23	55	5	187	447	41	X
202	5.0	5.0	56	13	0	72	42	0	16	29	0	80	146	0	X
210	54.2	54.2	69	66	24	76	75	24	7	9	0	379	488	0	X
211	161.7	161.7	69	69	24	92	79	24	23	10	0	3,718	1,617	0	X
213	16.0	16.0	44	32	17	68	49	17	24	17	0	384	272	0	X
301	58.1	58.1	80	69	26	80	71	26	0	2	0	0	116	0	X
303	67.7	67.7	65	86	61	77	116	78	12	30	17	813	2,032	1,151	X
304	68.6	68.6	55	87	12	69	114	61	14	27	49	960	1,851	3,359	X
Total	6,637.9	5,914.9										101,371	154,887	138,951	

wetimpp3.wk1

Thus, only some of the "universe" of mitigatable assessment areas have been selected as part of the SAMP/EIS mitigation plan. Table O-5 presents these areas, and the gain in indicator scores and values associated with these areas. These are the areas that are included in the mitigation plan discussed in Section 5.1 of the EIS, and are shown on Figure 5-3.

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TABLE O-5
WETLAND ENHANCEMENT GAINS FOR SELECTED WETLANDS

AANO	Remain Acres	Remain Acres w/o Deep Water	Post-Onsite Mitigation Scores WQ	WH	SS	Post-Offsite Mitigation Scores WQ	WH	SS	Gain in Score WQ	WH	SS	Gain in Value WQ	WH	SS	HMDC Des.
2 1	226.5	116.8	62	90	48	83	123	97	21	33	49	2,453	3,854	5,723	B
2 1_A	19.5	19.5	0	0	0	83	123	97	83	123	97	1,622	2,403	1,895	A
2 2	85.0	85.0	65	85	12	82	102	78	17	17	66	1,444	1,444	5,607	B
2 3	129.9	129.9	70	100	76	86	117	78	16	17	2	2,079	2,208	260	B
2 4A	1.3	1.3	52	70	12	74	87	78	22	17	66	29	23	88	B
2 6_a	221.4	165.8	52	66	48	83	104	97	31	38	49	5,140	6,301	8,125	A
2 6_b	0.5	0.5	52	66	48	83	104	97	31	38	49	15	18	24	A
2 7	34.6	24.6	48	61	30	64	89	30	16	28	0	393	689	0	B
2 9_a	10.1	10.1	52	48	17	69	75	22	17	27	5	171	272	50	B
2 9_b	0.7	0.7	52	48	17	69	75	22	17	27	5	12	19	4	B
2 10	58.9	29.5	48	64	33	65	96	33	17	32	0	502	946	0	B
2 11	271.6	142.8	61	78	32	77	108	82	16	30	50	2,284	4,283	7,138	B
2 C	63.3	41.1	30	56	28	70	96	95	40	40	67	1,642	1,642	2,751	A
2 D	48.1	37.2	38	54	12	80	100	78	42	46	66	1,563	1,712	2,457	A
2 E_a	155.1	155.1	68	61	24	107	103	79	39	42	55	6,050	6,516	8,532	A
2 E_b	9.3	9.3	65	49	24	104	98	79	39	49	55	364	458	514	A
2 E_c	1.0	1.0	65	45	24	104	90	79	39	45	55	38	44	54	A
2 E_d	22.1	22.1	68	61	24	107	103	79	39	42	55	862	928	1,216	A
2 F	12.8	12.8	53	41	4	81	102	63	28	61	59	358	780	754	A
2 G_a	12.3	12.3	64	52	20	84	78	30	20	26	10	246	319	123	A
2 G_c	3.1	3.1	64	52	20	86	78	30	22	26	10	67	80	31	A
2 H_a	92.1	60.3	33	55	12	53	79	29	20	24	17	1,206	1,447	1,025	A
2 H_b	3.5	3.5	33	55	12	53	79	29	20	24	17	69	83	59	A
2 I	4.1	4.1	24	52	13	40	74	13	16	22	0	65	90	0	B
2 K	404.9	337.6	43	62	12	49	82	12	6	20	0	2,026	6,752	0	A
2 L	39.7	39.7	78	74	17	100	113	66	22	39	49	874	1,550	1,947	A
2 M	56.9	56.9	81	77	17	98	112	71	17	35	54	968	1,993	3,075	B
2 P	239.3	194.0	47	61	12	67	93	61	20	32	49	3,880	6,209	9,507	A
2 Q	120.2	120.2	67	60	63	83	91	118	16	31	55	1,924	3,727	6,612	A
2 R	138.6	138.6	92	78	50	108	106	55	16	28	5	2,217	3,880	693	A
2 T	84.1	84.1	52	36	17	88	98	71	36	62	54	3,027	5,214	4,541	A
2 U	145.2	65.1	31	59	48	65	81	53	34	22	5	2,212	1,432	325	B
2 V	17.6	17.6	69	62	0	90	84	55	21	22	55	369	387	967	B
2 X	101.4	101.4	46	17	12	67	107	78	21	90	66	2,130	9,128	6,694	A
2 YA	7.2	7.2	52	12	0	70	80	5	18	68	5	130	492	36	A
2 Z	18.9	7.9	26	58	23	32	89	23	6	31	0	47	244	0	B
3 1_a	120.3	120.3	83	65	33	107	99	88	24	34	55	2,888	4,092	6,619	A
3 1_b	2.4	2.4	76	45	33	104	82	88	28	37	55	68	90	133	A
3 2	346.9	346.9	89	84	100	103	91	103	14	7	3	4,856	2,428	1,041	A
3 4	41.0	41.0	75	55	8	94	107	63	19	52	55	779	2,131	2,254	C
3 5	76.9	76.9	86	80	90	88	100	95	2	20	5	154	1,539	385	B
3 6	74.0	74.0	92	80	90	95	101	95	3	21	5	222	1,555	370	B
3 7	27.9	27.9	81	73	28	87	97	95	6	24	67	167	668	1,866	B
3 8	23.4	23.4	92	76	78	97	98	95	5	22	17	117	515	398	B
13 A	15.5	15.5	81	66	0	101	100	55	20	34	55	309	526	851	A
13 B	23.2	23.2	79	71	0	99	105	55	20	34	55	463	788	1,274	A
13 C	33.8	33.8	80	71	0	99	105	55	19	34	55	642	1,150	1,860	A
27_a	13.7	13.7	89	62	0	97	104	55	8	42	55	110	577	755	A
27_b	7.8	7.8	89	62	0	97	104	55	8	42	55	62	328	430	A
28	29.4	29.4	87	55	0	97	98	55	10	43	55	294	1,264	1,617	A
33 A	13.4	13.4	73	68	0	94	103	55	21	35	55	281	469	737	B
33 B	12.0	12.0	69	68	0	87	102	55	18	34	55	215	406	657	B
34	26.3	26.3	69	67	0	91	104	55	22	37	55	578	971	1,444	B
54_a	32.7	32.7	100	70	50	117	102	55	17	32	5	556	1,047	164	B
54_b	12.3	12.3	100	70	50	117	102	55	17	32	5	209	394	62	B
97_a	7.1	7.1	79	42	50	105	86	99	26	44	49	185	313	349	B
97_b	3.8	3.8	79	42	50	105	86	99	26	44	49	99	167	186	B
99	13.9	13.9	61	48	34	89	89	84	28	41	50	389	570	696	A
100	18.7	18.7	73	57	17	98	89	66	25	32	49	467	598	915	B
107	18.6	18.6	67	40	33	95	83	88	28	43	55	520	799	1,022	B
108	52.2	52.2	84	59	33	108	101	88	24	42	55	1,252	2,192	2,870	A
312	71.0	71.0	67	44	16	90	82	86	23	38	70	1,632	2,696	4,967	B
312_A	25.1	25.1	0	0	0	90	82	86	90	82	86	2,263	2,061	2,162	A
Total	4,004.1	3,401.9										68,261	107,898	116,907	

Attachment O-1

Wetland Indicators Changed through Enhancement/Mitigation Plan
04/26/94

100
- Q8_4 (Intermittent outlet?) was changed from N to y
- Q9_2 (Sheet flooding?) was changed from N to y
- Q12_CC (Dominant veg: Aquatic bed and rooted vascular) was changed from N to y
- Q12_DA (Dominant veg: Emergent and persistent) was changed from Y to n
- Q13_CA (Secondary veg: Aquatic bed and algal) was changed from N to y
- Q13_CB (Secondary veg: Aquatic bed and floating vascular) was changed from N to y
- Q13_CC (Secondary veg: Aquatic bed and rooted vascular) was changed from N to y
- Q13_DB (Secondary veg: Emergent and non-persistent) was changed from N to y
- Q14_1 (AA on 25 square foot island?) was changed from N to y
- Q14_2 (AA on 2 acre island?) was changed from N to y
- Q15_1_A (Vegetation<-->Water = solid form) was changed from Y to n
- Q15_1_C (Vegetation<-->Water = checkerboard) was changed from N to y
- Q16_B (Vegetation class = intermediate) was changed from Y to n
- Q16_C (Vegetation class = mosaic) was changed from N to y
- Q17 (Plant form richness) was changed from N to y
- Q32_A (Spatial Dominant Hydroperiod = perm flooded nontidal?) was changed from N to y
- Q32_K (Spatial Dominant Hydroperiod = irregularly flooded tidal?) was changed from Y to n
- Q33_B (Permanent Hydroperiod = intermit exposed nontidal?) was changed from N to y
- Q33_I (Permanent Hydroperiod = regularly flooded tidal?) was changed from Y to n
- Q39 (Special habitat features?) was changed from N to y
- Q46_A (Physical Habitat Interspersion = uniform) was changed from Y to n
- Q46_C (Physical Habitat Interspersion = mosaic) was changed from N to y
- Q61 (DO limiting to fish?) was changed from Y to n

107
- I23 (Education opportunity?) was changed from N to y
- I24 (Research resource?) was changed from N to y
- Q8_4 (Intermittent outlet?) was changed from N to y
- Q9_2 (Sheet flooding?) was changed from N to y
- Q12_CC (Dominant veg: Aquatic bed and rooted vascular) was changed from N to y
- Q12_DA (Dominant veg: Emergent and persistent) was changed from Y to n
- Q13_CA (Secondary veg: Aquatic bed and algal) was changed from N to y
- Q13_CB (Secondary veg: Aquatic bed and floating vascular) was changed from N to y
- Q13_CC (Secondary veg: Aquatic bed and rooted vascular) was changed from N to y
- Q13_DB (Secondary veg: Emergent and non-persistent) was changed from N to y
- Q14_1 (AA on 25 square foot island?) was changed from N to y
- Q14_2 (AA on 2 acre island?) was changed from N to y
- Q15_1_A (Vegetation<-->Water = solid form) was changed from Y to n
- Q15_1_C (Vegetation<-->Water = checkerboard) was changed from N to y
- Q16_A (Vegetation class = solid) was changed from Y to n
- Q16_C (Vegetation class = mosaic) was changed from N to y
- Q17 (Plant form richness) was changed from N to y
- Q18 (Upland<-->Wetland edge irregular?) was changed from N to y
- Q22_1_2 (AA contains a Sinuous channel?) was changed from N to y
- Q31_6_B (emergent in Zone B = 1% - 30% of Zones B and C?) was changed from Y to n
- Q31_6_C (emergent in Zone B = 31% - 60% of Zones B and C?) was changed from N to y
- Q32_A (Spatial Dominant Hydroperiod = perm flooded nontidal?) was changed from N to y
- Q32_E (Spatial Dominant Hydroperiod = saturated nontidal?) was changed from Y to n
- Q33_A (Permanent Hydroperiod = perm flooded nontidal?) was changed from Y to n
- Q33_B (Permanent Hydroperiod = intermit exposed nontidal?) was changed from N to y
- Q39 (Special habitat features?) was changed from N to y
- Q46_A (Physical Habitat Interspersion = uniform) was changed from Y to n
- Q46_C (Physical Habitat Interspersion = mosaic) was changed from N to y
- Q49_1_2 (Riffles?) was changed from N to y
- Q50 (Plants: waterfowl value?) was changed from N to y
- Q61 (DO limiting to fish?) was changed from Y to n

108
- I23 (Education opportunity?) was changed from N to y
- I24 (Research resource?) was changed from n to y
- Q8_4 (Intermittent outlet?) was changed from N to y
- Q9_2 (Sheet flooding?) was changed from N to y
- Q12_CC (Dominant veg: Aquatic bed and rooted vascular) was changed from N to y
- Q12_DA (Dominant veg: Emergent and persistent) was changed from Y to n

Q13_CA (Secondary veg: Aquatic bed and algal) was changed from N to y
Q13_CB (Secondary veg: Aquatic bed and floating vascular) was changed from N to y
Q13_CC (Secondary veg: Aquatic bed and rooted vascular) was changed from N to y
Q13_DB (Secondary veg: Emergent and non-persistent) was changed from N to y
Q14_1 (AA on 25 square foot island?) was changed from N to y
Q14_2 (AA on 2 acre island?) was changed from N to y
Q15_1_A (Vegetation<-->Water = solid form) was changed from Y to n
Q15_1_C (Vegetation<-->Water = checkerboard) was changed from N to y
Q16_A (Vegetation class = solid) was changed from Y to n
Q16_C (Vegetation class = mosaic) was changed from N to y
Q17 (Plant form richness) was changed from N to y
Q22_1_2 (AA contains a Sinuous channel?) was changed from N to y
Q29_2 (Buffer zone slopes < 5%?) was changed from N to y
Q32_A (Spatial Dominant Hydroperiod = perm flooded nontidal?) was changed from N to y
Q32_D (Spatial Dominant Hydroperiod = seasonally flooded nontidal?) was changed from Y to n
Q33_A (Permanent Hydroperiod = perm flooded nontidal?) was changed from Y to n
Q33_B (Permanent Hydroperiod = intermit exposed nontidal?) was changed from N to y
Q39 (Special habitat features?) was changed from N to y
Q46_A (Physical Habitat Interspersion = uniform) was changed from Y to n
Q46_C (Physical Habitat Interspersion = mosaic) was changed from N to y
Q49_1_2 (Riffles?) was changed from N to y
Q50 (Plants: waterfowl value?) was changed from N to y
Q61 (DO limiting to fish?) was changed from Y to n

112

Q16_B (Vegetation class = intermediate) was changed from Y to n
Q16_C (Vegetation class = mosaic) was changed from N to y
Q17 (Plant form richness) was changed from N to y
Q29_2 (Buffer zone slopes < 5%?) was changed from N to y
Q39 (Special habitat features?) was changed from N to y

113

Q16_A (Vegetation class = solid) was changed from Y to n
Q16_C (Vegetation class = mosaic) was changed from N to y
Q17 (Plant form richness) was changed from N to y
Q29_2 (Buffer zone slopes < 5%?) was changed from N to y
Q39 (Special habitat features?) was changed from N to y

13 A

I1 (Threatened/Endangered Species?) was changed from to N
I2 (Designated/Controlled Area?) was changed from to N
I3 (State Listed Cultural Resource?) was changed from to N
I4 (Unusual or rare local type?) was changed from to N
I5 (Only wetland in locality?) was changed from to N
I6 (Substantial previous $ expenditure?) was changed from to N
I7 (Unnaturally high salinities?) was changed from to N
I10 (Dredging - spawning - ss) was changed from to Y
I11 (WWTP Priority Areas?) was changed from to Y
I12 (Drinking water supplies?) was changed from to N
I13 (Nutrient sensitive waters?) was changed from to Y
I14 (Bathing areas?) was changed from to N
I15 (Sole source aquifer, groundwater discharge ?) was changed from to Y
I16 (Actively used wells?) was changed from to N
I17 (Wildlife critically flow limited?) was changed from to N
I18 (Features in erosion prone areas?) was changed from to N
I19 (USFWS/IRP fishery?) was changed from to N
I20 (USFWS/IRP wildlife?) was changed from to Y
I21 (USFWS Waterfowl Use Region?) was changed from to Y
I22 (Limited dependent species?) was changed from to N
I23 (Education opportunity?) was changed from to y
I24 (Research resource?) was changed from to y
I25 (Pristine?) was changed from to N
I26 (Recreation in deficient area?) was changed from to N
I27 (Recreation access point?) was changed from to N
I28 (Urban area?) was changed from to Y
I29 (Only or closest to named feature?) was changed from to N
I30 (Region losing this type?) was changed from to Y
I31 (Acreage > than % annual loss rate?) was changed from to Y
Q1_1 (Evaporation > precipitation?) was changed from to N
Q1_2 (Rainfall-erosivity > 300?) was changed from to N
Q1_3 (Freeze-over > one month?) was changed from to N

Q2_1_1 (Area < 5 acres?) was changed from to N
Q2_1_2 (Area > 40 acres?) was changed from to y
Q2_1_3 (Area > 200 acres?) was changed from to N
Q3_1 (Another Wet Depression within 1 mile?) was changed from to Y
Q3_2 (Cluster wetland?) was changed from to N
Q3_3 (Oasis wetland?) was changed from to N
Q4_1 (< 5 miles to major water?) was changed from to Y
Q5_1_1 (AA < 5% of watershed?) was changed from to Y
Q5_1_2 (AA > 20% of watershed?) was changed from to N
Q5_2 (Upslope wet depressions > 5% of watershed?) was changed from to N
Q6_1 (Downslope drop > upslope rise?) was changed from to Y
Q7 (v < 10 cm/s?) was changed from to I
Q8_1 (Permanent inlet?) was changed from to Y
Q8_2 (Intermittent inlet?) was changed from to N
Q8_3 (Permanent outlet?) was changed from to Y
Q8_4 (Intermittent outlet?) was changed from to N
Q9_1 (Outlet < one third average width?) was changed from to N
Q9_2 (Sheet flooding?) was changed from to y
Q10_A (Lacustrine?) was changed from to N
Q10_B (Palustrine?) was changed from to N
Q10_C (Riverine nontidal?) was changed from to N
Q10_D (Riverine tidal?) was changed from to N
Q10_E (Estuarine?) was changed from to Y
Q10_F (Marine?) was changed from to N
Q11 (Fringe or island wetland?) was changed from to N
Q12_A (Dominant veg: forested) was changed from to N
Q12_AA (Dominant veg: forested and dead) was changed from to N
Q12_AB (Dominant veg: forested and needle-leaved evergreen) was changed from to N
Q12_AC (Dominant veg: forested and broad-leaved evergreen) was changed from to N
Q12_AD (Dominant veg: forested and needle-leaved deciduous) was changed from to N
Q12_AE (Dominant veg: forested and broad-leaved deciduous) was changed from to N
Q12_B (Dominant veg: Scrub-shrub) was changed from to N
Q12_BA (Dominant veg: Scrub-shrub and dead) was changed from to N
Q12_BB (Dominant veg: Scrub-shrub and needle-leaved evergreen) was changed from to N
Q12_BC (Dominant veg: Scrub-shrub and broad-leaved evergreen) was changed from to N
Q12_BD (Dominant veg: Scrub-shrub and needle-leaved deciduous) was changed from to N
Q12_BE (Dominant veg: Scrub-shrub and broad-leaved deciduous) was changed from to N
Q12_C (Dominant veg: Aquatic bed) was changed from to N
Q12_CA (Dominant veg: Aquatic bed and algal) was changed from to N
Q12_CB (Dominant veg: Aquatic bed and floating vascular) was changed from to N
Q12_CC (Dominant veg: Aquatic bed and rooted vascular) was changed from to N
Q12_CD (Dominant veg: Aquatic bed and aquatic moss) was changed from to N
Q12_D (Dominant veg: Emergent) was changed from to Y
Q12_DA (Dominant veg: Emergent and persistent) was changed from to Y
Q12_DB (Dominant veg: Emergent and non-persistent) was changed from to N
Q12_E (Dominant veg. Moss lichen) was changed from to N
Q13_A (Secondary veg: forested) was changed from to N
Q13_AA (Secondary veg: forested and dead) was changed from to N
Q13_AB (Secondary veg: forested and needle-leaved evergreen) was changed from to N
Q13_AC (Secondary veg: forested and broad-leaved evergreen) was changed from to N
Q13_AD (Secondary veg: forested and needle-leaved deciduous) was changed from to N
Q13_AE (Secondary veg: forested and broad-leaved deciduous) was changed from to N
Q13_B (Secondary veg: Scrub-shrub) was changed from to N
Q13_BA (Secondary veg: Scrub-shrub and dead) was changed from to N
Q13_BB (Secondary veg: Scrub-shrub and needle-leaved evergreen) was changed from to N
Q13_BC (Secondary veg: Scrub-shrub and broad-leaved evergreen) was changed from to N
Q13_BD (Secondary veg: Scrub-shrub and needle-leaved deciduous) was changed from to N
Q13_BE (Secondary veg: Scrub-shrub and broad-leaved deciduous) was changed from to N
Q13_C (Secondary veg: Aquatic bed) was changed from to N
Q13_CA (Secondary veg: Aquatic bed and algal) was changed from to y
Q13_CB (Secondary veg: Aquatic bed and floating vascular) was changed from to N
Q13_CC (Secondary veg: Aquatic bed and rooted vascular) was changed from to y
Q13_CD (Secondary veg: Aquatic bed and aquatic moss) was changed from to N
Q13_D (Secondary veg: Emergent) was changed from to Y
Q13_DA (Secondary veg: Emergent and persistent) was changed from to Y
Q13_DB (Secondary veg: Emergent and non-persistent) was changed from to N
Q13_E (Secondary veg: Moss lichen) was changed from to N
Q14_1 (AA on 25 square foot island?) was changed from to y

Q14_2 (AA on 2 acre island?) was changed from to y
Q15_1_A (Vegetation<-->Water = solid form) was changed from to N
Q15_1_B (Vegetation<-->Water = intermediate) was changed from to n
Q15_1_C (Vegetation<-->Water = checkerboard) was changed from to y
Q15_2 (Channel flow spreading?) was changed from to Y
Q16_A (Vegetation class = solid) was changed from to n
Q16_B (Vegetation class = intermediate) was changed from to N
Q16_C (Vegetation class = mosaic) was changed from to y
Q17 (Plant form richness) was changed from to y
Q18 (Upland<-->Wetland edge irregular?) was changed from to y
Q19_1_A (Wind shelter?) was changed from to N
Q19_1_B (Wind shelter + fetch?) was changed from to N
Q19_2 (Wave protection?) was changed from to N
Q19_3 (Upland habitat wind shelter?) was changed from to N
13 B
I1 (Threatened/Endangered Species?) was changed from to N
I2 (Designated/Controlled Area?) was changed from to N
I3 (State Listed Cultural Resource?) was changed from to N
I4 (Unusual or rare local type?) was changed from to N
I5 (Only wetland in locality?) was changed from to N
I6 (Substantial previous $ expenditure?) was changed from to N
I7 (Unnaturally high salinities?) was changed from to N
I10 (Dredging - spawning - ss) was changed from to Y
I11 (WWTP Priority Areas?) was changed from to Y
I12 (Drinking water supplies?) was changed from to N
I13 (Nutrient sensitive waters?) was changed from to Y
I14 (Bathing areas?) was changed from to N
I15 (Sole source aquifer, groundwater discharge ?) was changed from to Y
I16 (Actively used wells?) was changed from to N
I17 (Wildlife critically flow limited?) was changed from to N
I18 (Features in erosion prone areas?) was changed from to N
I19 (USFWS/IRP fishery?) was changed from to N
I20 (USFWS/IRP wildlife?) was changed from to Y
I21 (USFWS Waterfowl Use Region?) was changed from to Y
I22 (Limited dependent species?) was changed from to N
I23 (Education opportunity?) was changed from to y
I24 (Research resource?) was changed from to y
I25 (Pristine?) was changed from to N
I26 (Recreation in deficient area?) was changed from to N
I27 (Recreation access point?) was changed from to N
I28 (Urban area?) was changed from to Y
I29 (Only or closest to named feature?) was changed from to N
I30 (Region losing this type?) was changed from to Y
I31 (Acreage > than % annual loss rate?) was changed from to Y
Q1_1 (Evaporation > precipitation?) was changed from to N
Q1_2 (Rainfall-erosivity > 300?) was changed from to N
Q1_3 (Freeze-over > one month?) was changed from to N
Q2_1_1 (Area < 5 acres?) was changed from to N
Q2_1_2 (Area > 40 acres?) was changed from to y
Q2_1_3 (Area > 200 acres?) was changed from to N
Q3_1 (Another Wet Depression within 1 mile?) was changed from to Y
Q3_2 (Cluster wetland?) was changed from to N
Q3_3 (Oasis wetland?) was changed from to N
Q4_1 (< 5 miles to major water?) was changed from to Y
Q5_1_1 (AA < 5% of watershed?) was changed from to Y
Q5_1_2 (AA > 20% of watershed?) was changed from to N
Q5_2 (Upslope wet depressions > 5% of watershed?) was changed from to N
Q6_1 (Downslope drop > upslope rise?) was changed from to Y
Q7 (v < 10 cm/s?) was changed from to I
Q8_1 (Permanent inlet?) was changed from to Y
Q8_2 (Intermittent inlet?) was changed from to N
Q8_3 (Permanent outlet?) was changed from to Y
Q8_4 (Intermittent outlet?) was changed from to N
Q9_1 (Outlet < one third average width?) was changed from to N
Q9_2 (Sheet flooding?) was changed from to y
Q10_A (Lacustrine?) was changed from to N
Q10_B (Palustrine?) was changed from to N
Q10_C (Riverine nontidal?) was changed from to N

Q10_D (Riverine tidal?) was changed from to N
Q10_E (Estuarine?) was changed from to Y
Q10_F (Marine?) was changed from to N
Q11 (Fringe or island wetland?) was changed from to N
Q12_A (Dominant veg: forested) was changed from to N
Q12_AA (Dominant veg: forested and dead) was changed from to N
Q12_AB (Dominant veg: forested and needle-leaved evergreen) was changed from to N
Q12_AC (Dominant veg: forested and broad-leaved evergreen) was changed from to N
Q12_AD (Dominant veg: forested and needle-leaved deciduous) was changed from to N
Q12_AE (Dominant veg: forested and broad-leaved deciduous) was changed from to N
Q12_B (Dominant veg: Scrub-shrub) was changed from to N
Q12_BA (Dominant veg: Scrub-shrub and dead) was changed from to N
Q12_BB (Dominant veg: Scrub-shrub and needle-leaved evergreen) was changed from to N
Q12_BC (Dominant veg: Scrub-shrub and broad-leaved evergreen) was changed from to N
Q12_BD (Dominant veg: Scrub-shrub and needle-leaved deciduous) was changed from to N
Q12_BE (Dominant veg: Scrub-shrub and broad-leaved deciduous) was changed from to N
Q12_C (Dominant veg: Aquatic bed) was changed from to N
Q12_CA (Dominant veg: Aquatic bed and algal) was changed from to N
Q12_CB (Dominant veg: Aquatic bed and floating vascular) was changed from to N
Q12_CC (Dominant veg: Aquatic bed and rooted vascular) was changed from to N
Q12_CD (Dominant veg: Aquatic bed and aquatic moss) was changed from to N
Q12_D (Dominant veg: Emergent) was changed from to Y
Q12_DA (Dominant veg: Emergent and persistent) was changed from to Y
Q12_DB (Dominant veg: Emergent and non-persistent) was changed from to N
Q12_E (Dominant veg: Moss lichen) was changed from to N
Q13_A (Secondary veg: forested) was changed from to N
Q13_AA (Secondary veg: forested and dead) was changed from to N
Q13_AB (Secondary veg: forested and needle-leaved evergreen) was changed from to N
Q13_AC (Secondary veg: forested and broad-leaved evergreen) was changed from to N
Q13_AD (Secondary veg: forested and needle-leaved deciduous) was changed from to N
Q13_AE (Secondary veg: forested and broad-leaved deciduous) was changed from to N
Q13_B (Secondary veg: Scrub-shrub) was changed from to N
Q13_BA (Secondary veg: Scrub-shrub and dead) was changed from to N
Q13_BB (Secondary veg: Scrub-shrub and needle-leaved evergreen) was changed from to N
Q13_BC (Secondary veg: Scrub-shrub and broad-leaved evergreen) was changed from to N
Q13_BD (Secondary veg: Scrub-shrub and needle-leaved deciduous) was changed from to N
Q13_BE (Secondary veg: Scrub-shrub and broad-leaved deciduous) was changed from to N
Q13_C (Secondary veg: Aquatic bed) was changed from to Y
Q13_CA (Secondary veg: Aquatic bed and algal) was changed from to Y
Q13_CB (Secondary veg: Aquatic bed and floating vascular) was changed from to N
Q13_CC (Secondary veg: Aquatic bed and rooted vascular) was changed from to y
Q13_CD (Secondary veg: Aquatic bed and aquatic moss) was changed from to N
Q13_D (Secondary veg: Emergent) was changed from to Y
Q13_DA (Secondary veg: Emergent and persistent) was changed from to Y
Q13_DB (Secondary veg: Emergent and non-persistent) was changed from to N
Q13_E (Secondary veg: Moss lichen) was changed from to N
Q14_1 (AA on 25 square foot island?) was changed from to y
Q14_2 (AA on 2 acre island?) was changed from to y
Q15_1_A (Vegetation<-->Water = solid form) was changed from to n
Q15_1_B (Vegetation<-->Water = intermediate) was changed from to N
Q15_1_C (Vegetation<-->Water = checkerboard) was changed from to y
Q15_2 (Channel flow spreading?) was changed from to Y
Q16_A (Vegetation class = solid) was changed from to N
Q16_B (Vegetation class = intermediate) was changed from to n
Q16_C (Vegetation class = mosaic) was changed from to y
Q17 (Plant form richness) was changed from to y
Q18 (Upland<-->Wetland edge irregular?) was changed from to y
Q19_1_A (Wind shelter?) was changed from to N
Q19_1_B (Wind shelter + fetch?) was changed from to N
Q19_2 (Wave protection?) was changed from to N
Q19_3 (Upland habitat wind shelter?) was changed from to N

13 C

I1 (Threatened/Endangered Species?) was changed from to N
I2 (Designated/Controlled Area?) was changed from to N
I3 (State Listed Cultural Resource?) was changed from to N
I4 (Unusual or rare local type?) was changed from to N
I5 (Only wetland in locality?) was changed from to N
I6 (Substantial previous $ expenditure?) was changed from to N

I7 (Unnaturally high salinities?) was changed from to N
I10 (Dredging - spawning - ss) was changed from to Y
I11 (WWTP Priority Areas?) was changed from to Y
I12 (Drinking water supplies?) was changed from to N
I13 (Nutrient sensitive waters?) was changed from to Y
I14 (Bathing areas?) was changed from to N
I15 (Sole source aquifer, groundwater discharge ?) was changed from to Y
I16 (Actively used wells?) was changed from to N
I17 (Wildlife critically flow limited?) was changed from to N
I18 (Features in erosion prone areas?) was changed from to N
I19 (USFWS/IRP fishery?) was changed from to N
I20 (USFWS/IRP wildlife?) was changed from to Y
I21 (USFWS Waterfowl Use Region?) was changed from to Y
I22 (Limited dependent species?) was changed from to N
I23 (Education opportunity?) was changed from to y
I24 (Research resource?) was changed from to y
I25 (Pristine?) was changed from to N
I26 (Recreation in deficient area?) was changed from to N
I27 (Recreation access point?) was changed from to N
I28 (Urban area?) was changed from to Y
I29 (Only or closest to named feature?) was changed from to N
I30 (Region losing this type?) was changed from to Y
I31 (Acreage > than % annual loss rate?) was changed from to Y
Q1_1 (Evaporation > precipitation?) was changed from to N
Q1_2 (Rainfall-erosivity > 300?) was changed from to N
Q1_3 (Freeze-over > one month?) was changed from to N
Q2_1_1 (Area < 5 acres?) was changed from to N
Q2_1_2 (Area > 40 acres?) was changed from to y
Q2_1_3 (Area > 200 acres?) was changed from to N
Q3_1 (Another Wet Depression within 1 mile?) was changed from to Y
Q3_2 (Cluster wetland?) was changed from to N
Q3_3 (Oasis wetland?) was changed from to N
Q4_1 (< 5 miles to major water?) was changed from to Y
Q5_1_1 (AA < 5% of watershed?) was changed from to Y
Q5_1_2 (AA > 20% of watershed?) was changed from to N
Q5_2 (Upslope wet depressions > 5% of watershed?) was changed from to N
Q6_1 (Downslope drop > upslope rise?) was changed from to Y
Q7 (v < 10 cm/s?) was changed from to I
Q8_1 (Permanent inlet?) was changed from to Y
Q8_2 (Intermittent inlet?) was changed from to N
Q8_3 (Permanent outlet?) was changed from to Y
Q8_4 (Intermittent outlet?) was changed from to N
Q9_1 (Outlet < one third average width?) was changed from to N
Q9_2 (Sheet flooding?) was changed from to y
Q10_A (Lacustrine?) was changed from to N
Q10_B (Palustrine?) was changed from to N
Q10_C (Riverine nontidal?) was changed from to N
Q10_D (Riverine tidal?) was changed from to N
Q10_E (Estuarine?) was changed from to Y
Q10_F (Marine?) was changed from to N
Q11 (Fringe or island wetland?) was changed from to N
Q12_A (Dominant veg: forested) was changed from to N
Q12_AA (Dominant veg: forested and dead) was changed from to N
Q12_AB (Dominant veg: forested and needle-leaved evergreen) was changed from to N
Q12_AC (Dominant veg: forested and broad-leaved evergreen) was changed from to N
Q12_AD (Dominant veg: forested and needle-leaved deciduous) was changed from to N
Q12_AE (Dominant veg: forested and broad-leaved deciduous) was changed from to N
Q12_B (Dominant veg: Scrub-shrub) was changed from to N
Q12_BA (Dominant veg: Scrub-shrub and dead) was changed from to N
Q12_BB (Dominant veg: Scrub-shrub and needle-leaved evergreen) was changed from to N
Q12_BC (Dominant veg: Scrub-shrub and broad-leaved evergreen) was changed from to N
Q12_BD (Dominant veg: Scrub-shrub and needle-leaved deciduous) was changed from to N
Q12_BE (Dominant veg: Scrub-shrub and broad-leaved deciduous) was changed from to N
Q12_C (Dominant veg: Aquatic bed) was changed from to N
Q12_CA (Dominant veg: Aquatic bed and algal) was changed from to N
Q12_CB (Dominant veg: Aquatic bed and floating vascular) was changed from to N
Q12_CC (Dominant veg: Aquatic bed and rooted vascular) was changed from to N
Q12_CD (Dominant veg: Aquatic bed and aquatic moss) was changed from to N

Q12_D (Dominant veg: Emergent) was changed from to Y
Q12_DA (Dominant veg: Emergent and persistent) was changed from to Y
Q12_DB (Dominant veg: Emergent and non-persistent) was changed from to N
Q12_E (Dominant veg: Moss lichen) was changed from to N
Q13_A (Secondary veg: forested) was changed from to N
Q13_AA (Secondary veg: forested and dead) was changed from to N
Q13_AB (Secondary veg: forested and needle-leaved evergreen) was changed from to N
Q13_AC (Secondary veg: forested and broad-leaved evergreen) was changed from to N
Q13_AD (Secondary veg: forested and needle-leaved deciduous) was changed from to N
Q13_AE (Secondary veg: forested and broad-leaved deciduous) was changed from to N
Q13_B (Secondary veg: Scrub-shrub) was changed from to N
Q13_BA (Secondary veg: Scrub-shrub and dead) was changed from to N
Q13_BB (Secondary veg: Scrub-shrub and needle-leaved evergreen) was changed from to N
Q13_BC (Secondary veg: Scrub-shrub and broad-leaved evergreen) was changed from to N
Q13_BD (Secondary veg: Scrub-shrub and needle-leaved deciduous) was changed from to N
Q13_BE (Secondary veg: Scrub-shrub and broad-leaved deciduous) was changed from to N
Q13_C (Secondary veg: Aquatic bed) was changed from to Y
Q13_CA (Secondary veg: Aquatic bed and algal) was changed from to Y
Q13_CB (Secondary veg: Aquatic bed and floating vascular) was changed from to N
Q13_CC (Secondary veg: Aquatic bed and rooted vascular) was changed from to y
Q13_CD (Secondary veg: Aquatic bed and aquatic moss) was changed from to N
Q13_D (Secondary veg: Emergent) was changed from to Y
Q13_DA (Secondary veg: Emergent and persistent) was changed from to Y
Q13_DB (Secondary veg: Emergent and non-persistent) was changed from to N
Q13_E (Secondary veg: Moss lichen) was changed from to N
Q14_1 (AA on 25 square foot island?) was changed from to y
Q14_2 (AA on 2 acre island?) was changed from to y
Q15_1_A (Vegetation<-->Water = solid form) was changed from to N
Q15_1_B (Vegetation<-->Water = intermediate) was changed from to n
Q15_1_C (Vegetation<-->Water = checkerboard) was changed from to y
Q15_2 (Channel flow spreading?) was changed from to Y
Q16_A (Vegetation class = solid) was changed from to N
Q16_B (Vegetation class = intermediate) was changed from to n
Q16_C (Vegetation class = mosaic) was changed from to y
Q17 (Plant form richness) was changed from to y
Q18 (Upland<-->Wetland edge irregular?) was changed from to y
Q19_1_A (Wind shelter?) was changed from to N
Q19_1_B (Wind shelter + fetch?) was changed from to N
Q19_2 (Wave protection?) was changed from to N
Q19_3 (Upland habitat wind shelter?) was changed from to N
150 A
I1 (Threatened/Endangered Species?) was changed from to N
I2 (Designated/Controlled Area?) was changed from to N
I3 (State Listed Cultural Resource?) was changed from to N
I4 (Unusual or rare local type?) was changed from to N
I5 (Only wetland in locality?) was changed from to N
I6 (Substantial previous $ expenditure?) was changed from to N
I7 (Unnaturally high salinities?) was changed from to N
I8 (Features sensitive to flooding?) was changed from to Y
I9 (Downslope sensitive features in floodplain?) was changed from to Y
I10 (Dredging - spawning - ss) was changed from to Y
I11 (WWTP Priority Areas?) was changed from to Y
I12 (Drinking water supplies?) was changed from to N
I13 (Nutrient sensitive waters?) was changed from to Y
I14 (Bathing areas?) was changed from to N
I15 (Sole source aquifer, groundwater discharge ?) was changed from to Y
I16 (Actively used wells?) was changed from to N
I17 (Wildlife critically flow limited?) was changed from to N
I18 (Features in erosion prone areas?) was changed from to Y
I19 (USFWS/IRP fishery?) was changed from to N
I20 (USFWS/IRP wildlife?) was changed from to Y
I21 (USFWS Waterfowl Use Region?) was changed from to Y
I22 (Limited dependent species?) was changed from to N
I23 (Education opportunity?) was changed from to N
I24 (Research resource?) was changed from to N
I25 (Pristine?) was changed from to N
I26 (Recreation in deficient area?) was changed from to N
I27 (Recreation access point?) was changed from to N

I28 (Urban area?) was changed from to Y
I29 (Only or closest to named feature?) was changed from to N
I30 (Region losing this type?) was changed from to Y
I31 (Acreage > than % annual loss rate?) was changed from to N
Q1_1 (Evaporation > precipitation?) was changed from to N
Q1_2 (Rainfall-erosivity > 300?) was changed from to N
Q1_3 (Freeze-over > one month?) was changed from to N
Q2_1_1 (Area < 5 acres?) was changed from to N
Q2_1_2 (Area > 40 acres?) was changed from to N
Q2_1_3 (Area > 200 acres?) was changed from to N
Q3_1 (Another Wet Depression within 1 mile?) was changed from to Y
Q3_2 (Cluster wetland?) was changed from to Y
Q3_3 (Oasis wetland?) was changed from to N
Q4_2A (< 1 square mile watershed?) was changed from to Y
Q4_2B (1 -100 square mile watershed?) was changed from to N
Q4_2C (100-2500 square mile watershed?) was changed from to N
Q4_2D (> 2500 square mile watershed?) was changed from to N
Q5_1_1 (AA < 5% of watershed?) was changed from to Y
Q5_1_2 (AA > 20% of watershed?) was changed from to N
Q5_2 (Upslope wet depressions > 5% of watershed?) was changed from to Y
Q6_1 (Downslope drop > upslope rise?) was changed from to Y
Q7 (v < 10 cm/s?) was changed from to I
Q8_1 (Permanent inlet?) was changed from to Y
Q8_2 (Intermittent inlet?) was changed from to Y
Q8_3 (Permanent outlet?) was changed from to Y
Q8_4 (Intermittent outlet?) was changed from to Y
Q9_1 (Outlet < one third average width?) was changed from to Y
Q9_2 (Sheet flooding?) was changed from to N
Q10_A (Lacustrine?) was changed from to N
Q10_B (Palustrine?) was changed from to Y
Q10_C (Riverine nontidal?) was changed from to N
Q10_D (Riverine tidal?) was changed from to Y
Q10_E (Estuarine?) was changed from to N
Q10_F (Marine?) was changed from to N
Q11 (Fringe or island wetland?) was changed from to N
Q12_A (Dominant veg: forested) was changed from to N
Q12_AA (Dominant veg: forested and dead) was changed from to N
Q12_AB (Dominant veg: forested and needle-leaved evergreen) was changed from to N
Q12_AC (Dominant veg: forested and broad-leaved evergreen) was changed from to N
Q12_AD (Dominant veg: forested and needle-leaved deciduous) was changed from to N
Q12_AE (Dominant veg: forested and broad-leaved deciduous) was changed from to N
Q12_B (Dominant veg: Scrub-shrub) was changed from to N
Q12_BA (Dominant veg: Scrub-shrub and dead) was changed from to N
Q12_BB (Dominant veg: Scrub-shrub and needle-leaved evergreen) was changed from to N
Q12_BC (Dominant veg: Scrub-shrub and broad-leaved evergreen) was changed from to N
Q12_BD (Dominant veg: Scrub-shrub and needle-leaved deciduous) was changed from to N
Q12_BE (Dominant veg: Scrub-shrub and broad-leaved deciduous) was changed from to N
Q12_C (Dominant veg: Aquatic bed) was changed from to N
Q12_CA (Dominant veg: Aquatic bed and algal) was changed from to N
Q12_CB (Dominant veg: Aquatic bed and floating vascular) was changed from to N
Q12_CC (Dominant veg: Aquatic bed and rooted vascular) was changed from to N
Q12_CD (Dominant veg: Aquatic bed and aquatic moss) was changed from to N
Q12_D (Dominant veg: Emergent) was changed from to Y
Q12_DA (Dominant veg: Emergent and persistent) was changed from to Y
Q12_DB (Dominant veg: Emergent and non-persistent) was changed from to N
Q12_E (Dominant veg: Moss lichen) was changed from to N
Q13_A (Secondary veg: forested) was changed from to N
Q13_AA (Secondary veg: forested and dead) was changed from to N
Q13_AB (Secondary veg: forested and needle-leaved evergreen) was changed from to N
Q13_AC (Secondary veg: forested and broad-leaved evergreen) was changed from to N
Q13_AD (Secondary veg: forested and needle-leaved deciduous) was changed from to N
Q13_AE (Secondary veg: forested and broad-leaved deciduous) was changed from to N
Q13_B (Secondary veg: Scrub-shrub) was changed from to N
Q13_BA (Secondary veg: Scrub-shrub and dead) was changed from to N
Q13_BB (Secondary veg: Scrub-shrub and needle-leaved evergreen) was changed from to N
Q13_BC (Secondary veg: Scrub-shrub and broad-leaved evergreen) was changed from to N
Q13_BD (Secondary veg: Scrub-shrub and needle-leaved deciduous) was changed from to N
Q13_BE (Secondary veg: Scrub-shrub and broad-leaved deciduous) was changed from to N

Q13_C (Secondary veg: Aquatic bed) was changed from to N
Q13_CA (Secondary veg: Aquatic bed and algal) was changed from to y
Q13_CB (Secondary veg: Aquatic bed and floating vascular) was changed from to N
Q13_CC (Secondary veg: Aquatic bed and rooted vascular) was changed from to y
Q13_CD (Secondary veg: Aquatic bed and aquatic moss) was changed from to N
Q13_D (Secondary veg: Emergent) was changed from to Y
Q13_DA (Secondary veg: Emergent and persistent) was changed from to Y
Q13_DB (Secondary veg: Emergent and non-persistent) was changed from to N
Q13_E (Secondary veg: Moss lichen) was changed from to N
Q14_1 (AA on 25 square foot island?) was changed from to N
Q14_2 (AA on 2 acre island?) was changed from to N
Q15_1_A (Vegetation<-->Water = solid form) was changed from to N
Q15_1_B (Vegetation<-->Water = intermediate) was changed from to Y
Q15_1_C (Vegetation<-->Water = checkerboard) was changed from to N
Q16_A (Vegetation class = solid) was changed from to N
Q16_B (Vegetation class = intermediate) was changed from to n
Q16_C (Vegetation class = mosaic) was changed from to y
Q17 (Plant form richness) was changed from to y
Q18 (Upland<-->Wetland edge irregular?) was changed from to N
Q19_1_A (Wind shelter?) was changed from to N
Q19_1_B (Wind shelter + fetch?) was changed from to N
Q19_2 (Wave protection?) was changed from to N

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I1 (Threatened/Endangered Species?) was changed from to N
I2 (Designated/Controlled Area?) was changed from to N
I3 (State Listed Cultural Resource?) was changed from to N
I4 (Unusual or rare local type?) was changed from to N
I5 (Only wetland in locality?) was changed from to N
I6 (Substantial previous $ expenditure?) was changed from to N
I7 (Unnaturally high salinities?) was changed from to N
I8 (Features sensitive to flooding?) was changed from to Y
I9 (Downslope sensitive features in floodplain?) was changed from to Y
I10 (Dredging - spawning - ss) was changed from to Y
I11 (WWTP Priority Areas?) was changed from to Y
I12 (Drinking water supplies?) was changed from to N
I13 (Nutrient sensitive waters?) was changed from to Y
I14 (Bathing areas?) was changed from to N
I15 (Sole source aquifer, groundwater discharge ?) was changed from to Y
I16 (Actively used wells?) was changed from to N
I17 (Wildlife critically flow limited?) was changed from to N
I18 (Features in erosion prone areas?) was changed from to Y
I19 (USFWS/IRP fishery?) was changed from to N
I20 (USFWS/IRP wildlife?) was changed from to Y
I21 (USFWS Waterfowl Use Region?) was changed from to Y
I22 (Limited dependent species?) was changed from to N
I23 (Education opportunity?) was changed from to N
I24 (Research resource?) was changed from to N
I25 (Pristine?) was changed from to N
I26 (Recreation in deficient area?) was changed from to N
I27 (Recreation access point?) was changed from to N
I28 (Urban area?) was changed from to Y
I29 (Only or closest to named feature?) was changed from to N
I30 (Region losing this type?) was changed from to Y
I31 (Acreage > than % annual loss rate?) was changed from to N
Q1_1 (Evaporation > precipitation?) was changed from to N
Q1_2 (Rainfall-erosivity > 300?) was changed from to N
Q1_3 (Freeze-over > one month?) was changed from to N
Q2_1_1 (Area < 5 acres?) was changed from to N
Q2_1_2 (Area > 40 acres?) was changed from to N
Q2_1_3 (Area > 200 acres?) was changed from to N
Q3_1 (Another Wet Depression within 1 mile?) was changed from to Y
Q3_2 (Cluster wetland?) was changed from to Y
Q3_3 (Oasis wetland?) was changed from to N
Q4_1 (< 5 miles to major water?) was changed from to Y
Q4_2A (< 1 square mile watershed?) was changed from to Y
Q4_2B (1 -100 square mile watershed?) was changed from to N
Q4_2C (100-2500 square mile watershed?) was changed from to N
Q4_2D (> 2500 square mile watershed?) was changed from to N

Q5_1_1 (AA < 5% of watershed?) was changed from to Y
Q5_1_2 (AA > 20% of watershed?) was changed from to N
Q5_2 (Upslope wet depressions > 5% of watershed?) was changed from to Y
Q6_1 (Downslope drop > upslope rise?) was changed from to Y
Q7 (v < 10 cm/s?) was changed from to I
Q8_1 (Permanent inlet?) was changed from to Y
Q8_2 (Intermittent inlet?) was changed from to Y
Q8_3 (Permanent outlet?) was changed from to Y
Q8_4 (Intermittent outlet?) was changed from to Y
Q9_1 (Outlet < one third average width?) was changed from to Y
Q9_2 (Sheet flooding?) was changed from to N
Q10_A (Lacustrine?) was changed from to N
Q10_B (Palustrine?) was changed from to Y
Q10_C (Riverine nontidal?) was changed from to N
Q10_D (Riverine tidal?) was changed from to Y
Q10_E (Estuarine?) was changed from to N
Q10_F (Marine?) was changed from to N
Q11 (Fringe or island wetland?) was changed from to N
Q12_A (Dominant veg: forested) was changed from to N
Q12_AA (Dominant veg: forested and dead) was changed from to N
Q12_AB (Dominant veg: forested and needle-leaved evergreen) was changed from to N
Q12_AC (Dominant veg: forested and broad-leaved evergreen) was changed from to N
Q12_AD (Dominant veg: forested and needle-leaved deciduous) was changed from to N
Q12_AE (Dominant veg: forested and broad-leaved deciduous) was changed from to N
Q12_B (Dominant veg: Scrub-shrub) was changed from to N
Q12_BA (Dominant veg: Scrub-shrub and dead) was changed from to N
Q12_BB (Dominant veg: Scrub-shrub and needle-leaved evergreen) was changed from to N
Q12_BC (Dominant veg: Scrub-shrub and broad-leaved evergreen) was changed from to N
Q12_BD (Dominant veg: Scrub-shrub and needle-leaved deciduous) was changed from to N
Q12_BE (Dominant veg: Scrub-shrub and broad-leaved deciduous) was changed from to N
Q12_C (Dominant veg: Aquatic bed) was changed from to N
Q12_CA (Dominant veg: Aquatic bed and algal) was changed from to N
Q12_CB (Dominant veg: Aquatic bed and floating vascular) was changed from to N
Q12_CC (Dominant veg: Aquatic bed and rooted vascular) was changed from to N
Q12_CD (Dominant veg: Aquatic bed and aquatic moss) was changed from to N
Q12_D (Dominant veg: Emergent) was changed from to Y
Q12_DA (Dominant veg: Emergent and persistent) was changed from to Y
Q12_DB (Dominant veg: Emergent and non-persistent) was changed from to N
Q12_E (Dominant veg: Moss lichen) was changed from to N
Q13_A (Secondary veg: forested) was changed from to N
Q13_AA (Secondary veg: forested and dead) was changed from to N
Q13_AB (Secondary veg: forested and needle-leaved evergreen) was changed from to N
Q13_AC (Secondary veg: forested and broad-leaved evergreen) was changed from to N
Q13_AD (Secondary veg: forested and needle-leaved deciduous) was changed from to N
Q13_AE (Secondary veg: forested and broad-leaved deciduous) was changed from to N
Q13_B (Secondary veg: Scrub-shrub) was changed from to N
Q13_BA (Secondary veg: Scrub-shrub and dead) was changed from to N
Q13_BB (Secondary veg: Scrub-shrub and needle-leaved evergreen) was changed from to N
Q13_BC (Secondary veg: Scrub-shrub and broad-leaved evergreen) was changed from to N
Q13_BD (Secondary veg: Scrub-shrub and needle-leaved deciduous) was changed from to N
Q13_BE (Secondary veg: Scrub-shrub and broad-leaved deciduous) was changed from to N
Q13_C (Secondary veg: Aquatic bed) was changed from to Y
Q13_CA (Secondary veg: Aquatic bed and algal) was changed from to N
Q13_CB (Secondary veg: Aquatic bed and floating vascular) was changed from to Y
Q13_CC (Secondary veg: Aquatic bed and rooted vascular) was changed from to y
Q13_CD (Secondary veg: Aquatic bed and aquatic moss) was changed from to N
Q13_D (Secondary veg: Emergent) was changed from to Y
Q13_DA (Secondary veg: Emergent and persistent) was changed from to Y
Q13_DB (Secondary veg: Emergent and non-persistent) was changed from to N
Q13_E (Secondary veg: Moss lichen) was changed from to N
Q14_1 (AA on 25 square foot island?) was changed from to N
Q14_2 (AA on 2 acre island?) was changed from to N
Q15_1_A (Vegetation<-->Water = solid form) was changed from to N
Q15_1_B (Vegetation<-->Water = intermediate) was changed from to Y
Q15_1_C (Vegetation<-->Water = checkerboard) was changed from to N
Q16_A (Vegetation class = solid) was changed from to N
Q16_B (Vegetation class = intermediate) was changed from to n
Q16_C (Vegetation class = mosaic) was changed from to y

Q17 (Plant form richness) was changed from to y
Q18 (Upland<-->Wetland edge irregular?) was changed from to N
Q19_1_A (Wind shelter?) was changed from to N
Q19_1_B (Wind shelter + fetch?) was changed from to N
Q19_2 (Wave protection?) was changed from to N
19
Q9_2 (Sheet flooding?) was changed from N to y
Q13_CC (Secondary veg: Aquatic bed and rooted vascular) was changed from N to y
Q13_DA (Secondary veg: Emergent and persistent) was changed from N to y
Q15_1_A (Vegetation<-->Water = solid form) was changed from Y to n
Q15_1_C (Vegetation<-->Water = checkerboard) was changed from N to y
Q16_A (Vegetation class = solid) was changed from Y to n
Q16_C (Vegetation class = mosaic) was changed from N to y
Q17 (Plant form richness) was changed from N to y
Q39 (Special habitat features?) was changed from N to y
Q50 (Plants: waterfowl value?) was changed from N to y
2 1
I1 (Threatened/Endangered Species?) was changed from to Y
I2 (Designated/Controlled Area?) was changed from to N
I3 (State Listed Cultural Resource?) was changed from to N
I4 (Unusual or rare local type?) was changed from to N
I5 (Only wetland in locality?) was changed from to N
I6 (Substantial previous $ expenditure?) was changed from to N
I7 (Unnaturally high salinities?) was changed from to N
I10 (Dredging - spawning - ss) was changed from to Y
I11 (WWTP Priority Areas?) was changed from to Y
I12 (Drinking water supplies?) was changed from to N
I13 (Nutrient sensitive waters?) was changed from to Y
I14 (Bathing areas?) was changed from to N
I15 (Sole source aquifer, groundwater discharge ?) was changed from to Y
I16 (Actively used wells?) was changed from to N
I17 (Wildlife critically flow limited?) was changed from to N
I18 (Features in erosion prone areas?) was changed from to Y
I19 (USFWS/IRP fishery?) was changed from to Y
I20 (USFWS/IRP wildlife?) was changed from to Y
I21 (USFWS Waterfowl Use Region?) was changed from to Y
I22 (Limited dependent species?) was changed from to N
I23 (Education opportunity?) was changed from to N
I24 (Research resource?) was changed from to N
I25 (Pristine?) was changed from to N
I26 (Recreation in deficient area?) was changed from to N
I27 (Recreation access point?) was changed from to Y
I28 (Urban area?) was changed from to Y
I29 (Only or closest to named feature?) was changed from to Y
I30 (Region losing this type?) was changed from to Y
I31 (Acreage > than % annual loss rate?) was changed from to N
Q1_1 (Evaporation > precipitation?) was changed from to N
Q1_2 (Rainfall-erosivity > 300?) was changed from to N
Q1_3 (Freeze-over > one month?) was changed from to N
Q2_1_1 (Area < 5 acres?) was changed from to N
Q2_1_2 (Area > 40 acres?) was changed from to Y
Q2_1_3 (Area > 200 acres?) was changed from to Y
Q3_1 (Another Wet Depression within 1 mile?) was changed from to Y
Q3_2 (Cluster wetland?) was changed from to Y
Q3_3 (Oasis wetland?) was changed from to N
Q4_1 (< 5 miles to major water?) was changed from to Y
Q4_2A (< 1 square mile watershed?) was changed from to N
Q4_2B (1 -100 square mile watershed?) was changed from to N
Q4_2C (100-2500 square mile watershed?) was changed from to Y
Q4_2D (> 2500 square mile watershed?) was changed from to N
Q5_1_1 (AA < 5% of watershed?) was changed from to Y
Q5_1_2 (AA > 20% of watershed?) was changed from to N
Q5_2 (Upslope wet depressions > 5% of watershed?) was changed from to Y
Q6_1 (Downslope drop > upslope rise?) was changed from to Y
Q7 (v < 10 cm/s?) was changed from to I
Q8_1 (Permanent inlet?) was changed from to Y
Q8_2 (Intermittent inlet?) was changed from to N
Q8_3 (Permanent outlet?) was changed from to Y

Q8_4 (Intermittent outlet?) was changed from to N
Q9_1 (Outlet < one third average width?) was changed from to N
Q9_2 (Sheet flooding?) was changed from to y
Q10_A (Lacustrine?) was changed from to N
Q10_B (Palustrine?) was changed from to N
Q10_C (Riverine nontidal?) was changed from to N
Q10_D (Riverine tidal?) was changed from to N
Q10_E (Estuarine?) was changed from to Y
Q10_F (Marine?) was changed from to N
Q11 (Fringe or island wetland?) was changed from to Y
Q12_A (Dominant veg: forested) was changed from to N
Q12_AA (Dominant veg: forested and dead) was changed from to N
Q12_AB (Dominant veg: forested and needle-leaved evergreen) was changed from to N
Q12_AC (Dominant veg: forested and broad-leaved evergreen) was changed from to N
Q12_AD (Dominant veg: forested and needle-leaved deciduous) was changed from to N
Q12_AE (Dominant veg: forested and broad-leaved deciduous) was changed from to N
Q12_B (Dominant veg: Scrub-shrub) was changed from to N
Q12_BA (Dominant veg: Scrub-shrub and dead) was changed from to N
Q12_BB (Dominant veg: Scrub-shrub and needle-leaved evergreen) was changed from to N
Q12_BC (Dominant veg: Scrub-shrub and broad-leaved evergreen) was changed from to N
Q12_BD (Dominant veg: Scrub-shrub and needle-leaved deciduous) was changed from to N
Q12_BE (Dominant veg: Scrub-shrub and broad-leaved deciduous) was changed from to N
Q12_C (Dominant veg: Aquatic bed) was changed from to N
Q12_CA (Dominant veg: Aquatic bed and algal) was changed from to N
Q12_CB (Dominant veg: Aquatic bed and floating vascular) was changed from to N
Q12_CC (Dominant veg: Aquatic bed and rooted vascular) was changed from to N
Q12_CD (Dominant veg: Aquatic bed and aquatic moss) was changed from to N
Q12_D (Dominant veg: Emergent) was changed from to Y
Q12_DA (Dominant veg: Emergent and persistent) was changed from to Y
Q12_DB (Dominant veg: Emergent and non-persistent) was changed from to N
Q12_E (Dominant veg: Moss lichen) was changed from to N
Q13_A (Secondary veg: forested) was changed from to N
Q13_AA (Secondary veg: forested and dead) was changed from to N
Q13_AB (Secondary veg: forested and needle-leaved evergreen) was changed from to N
Q13_AC (Secondary veg: forested and broad-leaved evergreen) was changed from to N
Q13_AD (Secondary veg: forested and needle-leaved deciduous) was changed from to N
Q13_AE (Secondary veg: forested and broad-leaved deciduous) was changed from to N
Q13_B (Secondary veg: Scrub-shrub) was changed from to N
Q13_BA (Secondary veg: Scrub-shrub and dead) was changed from to N
Q13_BB (Secondary veg: Scrub-shrub and needle-leaved evergreen) was changed from to N
Q13_BC (Secondary veg: Scrub-shrub and broad-leaved evergreen) was changed from to N
Q13_BD (Secondary veg: Scrub-shrub and needle-leaved deciduous) was changed from to N
Q13_BE (Secondary veg: Scrub-shrub and broad-leaved deciduous) was changed from to N
Q13_C (Secondary veg: Aquatic bed) was changed from to N
Q13_CA (Secondary veg: Aquatic bed and algal) was changed from to y
Q13_CB (Secondary veg: Aquatic bed and floating vascular) was changed from to N
Q13_CC (Secondary veg: Aquatic bed and rooted vascular) was changed from to y
Q13_CD (Secondary veg: Aquatic bed and aquatic moss) was changed from to N
Q13_D (Secondary veg: Emergent) was changed from to Y
Q13_DA (Secondary veg: Emergent and persistent) was changed from to Y
Q13_DB (Secondary veg: Emergent and non-persistent) was changed from to N
Q13_E (Secondary veg: Moss lichen) was changed from to N
Q14_1 (AA on 25 square foot island?) was changed from to y
Q14_2 (AA on 2 acre island?) was changed from to y
Q15_1_A (Vegetation<-->Water = solid form) was changed from to N
Q15_1_B (Vegetation<-->Water = intermediate) was changed from to n
Q15_1_C (Vegetation<-->Water = checkerboard) was changed from to y
Q15_2 (Channel flow spreading?) was changed from to Y
Q16_A (Vegetation class = solid) was changed from to n
Q16_B (Vegetation class = intermediate) was changed from to N
Q16_C (Vegetation class = mosaic) was changed from to y
Q17 (Plant form richness) was changed from to y
Q18 (Upland<-->Wetland edge irregular?) was changed from to Y
Q19_1_A (Wind shelter?) was changed from to N
Q19_1_B (Wind shelter + fetch?) was changed from to Y
Q19_2 (Wave protection?) was changed from to N

2 10

Q9_2 (Sheet flooding?) was changed from N to y

Q13_CC (Secondary veg: Aquatic bed and rooted vascular) was changed from N to y
Q14_2 (AA on 2 acre island?) was changed from N to y
Q15_1_A (Vegetation<-->Water = solid form) was changed from Y to n
Q15_1_C (Vegetation<-->Water = checkerboard) was changed from N to y
Q16_A (Vegetation class = solid) was changed from Y to n
Q16_C (Vegetation class = mosaic) was changed from N to y
Q17 (Plant form richness) was changed from N to y
Q18 (Upland<-->Wetland edge irregular?) was changed from N to y
Q39 (Special habitat features?) was changed from N to y
Q46_B (Physical Habitat Interspersion = intermediate) was changed from Y to n
Q46_C (Physical Habitat Interspersion = mosaic) was changed from N to y
Q50 (Plants: waterfowl value?) was changed from N to y
Q61 (DO limiting to fish?) was changed from Y to n

2 11

Q9_2 (Sheet flooding?) was changed from N to y
Q13_CC (Secondary veg: Aquatic bed and rooted vascular) was changed from N to y
Q14_2 (AA on 2 acre island?) was changed from N to y
Q15_1_B (Vegetation<-->Water = intermediate) was changed from Y to n
Q15_1_C (Vegetation<-->Water = checkerboard) was changed from N to y
Q16_A (Vegetation class = solid) was changed from Y to n
Q16_C (Vegetation class = mosaic) was changed from N to y
Q17 (Plant form richness) was changed from N to y
Q18 (Upland<-->Wetland edge irregular?) was changed from N to y
Q39 (Special habitat features?) was changed from N to y
Q46_B (Physical Habitat Interspersion = intermediate) was changed from Y to n
Q46_C (Physical Habitat Interspersion = mosaic) was changed from N to y
Q61 (DO limiting to fish?) was changed from Y to n

2 2

I23 (Education opportunity?) was changed from N to y
I24 (Research resource?) was changed from N to y
Q9_2 (Sheet flooding?) was changed from N to y
Q13_CC (Secondary veg: Aquatic bed and rooted vascular) was changed from N to y
Q15_1_B (Vegetation<-->Water = intermediate) was changed from Y to n
Q15_1_C (Vegetation<-->Water = checkerboard) was changed from N to y
Q16_A (Vegetation class = solid) was changed from Y to n
Q16_C (Vegetation class = mosaic) was changed from N to y
Q17 (Plant form richness) was changed from N to y
Q18 (Upland<-->Wetland edge irregular?) was changed from N to y
Q29_2 (Buffer zone slopes < 5%?) was changed from N to y
Q39 (Special habitat features?) was changed from N to y
Q46_B (Physical Habitat Interspersion = intermediate) was changed from Y to n
Q46_C (Physical Habitat Interspersion = mosaic) was changed from N to y
Q99 (Proximity to public transportation) was changed from N to y

2 3

I23 (Education opportunity?) was changed from N to y
Q9_2 (Sheet flooding?) was changed from N to y
Q13_CC (Secondary veg: Aquatic bed and rooted vascular) was changed from N to y
Q15_1_B (Vegetation<-->Water = intermediate) was changed from Y to n
Q15_1_C (Vegetation<-->Water = checkerboard) was changed from N to y
Q16_A (Vegetation class = solid) was changed from Y to n
Q16_C (Vegetation class = mosaic) was changed from N to y
Q17 (Plant form richness) was changed from N to y
Q29_2 (Buffer zone slopes < 5%?) was changed from N to y
Q39 (Special habitat features?) was changed from N to y
Q46_B (Physical Habitat Interspersion = intermediate) was changed from Y to n
Q46_C (Physical Habitat Interspersion = mosaic) was changed from N to y

2 4

I1 (Threatened/Endangered Species?) was changed from to Y
I2 (Designated/Controlled Area?) was changed from to N
I3 (State Listed Cultural Resource?) was changed from to N
I4 (Unusual or rare local type?) was changed from to N
I5 (Only wetland in locality?) was changed from to N
I6 (Substantial previous $ expenditure?) was changed from to N
I7 (Unnaturally high salinities?) was changed from to N
I10 (Dredging - spawning - ss) was changed from to Y
I11 (WWTP Priority Areas?) was changed from to Y
I12 (Drinking water supplies?) was changed from to N
I13 (Nutrient sensitive waters?) was changed from to Y

I14 (Bathing areas?) was changed from to N
I15 (Sole source aquifer, groundwater discharge ?) was changed from to Y
I16 (Actively used wells?) was changed from to N
I17 (Wildlife critically flow limited?) was changed from to N
I18 (Features in erosion prone areas?) was changed from to N
I19 (USFWS/IRP fishery?) was changed from to Y
I20 (USFWS/IRP wildlife?) was changed from to Y
I21 (USFWS Waterfowl Use Region?) was changed from to Y
I22 (Limited dependent species?) was changed from to N
I23 (Education opportunity?) was changed from to y
I24 (Research resource?) was changed from to y
I25 (Pristine?) was changed from to N
I26 (Recreation in deficient area?) was changed from to N
I27 (Recreation access point?) was changed from to N
I28 (Urban area?) was changed from to Y
I29 (Only or closest to named feature?) was changed from to N
I30 (Region losing this type?) was changed from to Y
I31 (Acreage > than % annual loss rate?) was changed from to Y
Q1_1 (Evaporation > precipitation?) was changed from to N
Q1_2 (Rainfall-erosivity > 300?) was changed from to N
Q1_3 (Freeze-over > one month?) was changed from to N
Q2_1_1 (Area < 5 acres?) was changed from to N
Q2_1_2 (Area > 40 acres?) was changed from to N
Q2_1_3 (Area > 200 acres?) was changed from to N
Q3_1 (Another Wet Depression within 1 mile?) was changed from to Y
Q3_2 (Cluster wetland?) was changed from to Y
Q3_3 (Oasis wetland?) was changed from to N
Q4_1 (< 5 miles to major water?) was changed from to Y
Q5_1_1 (AA < 5% of watershed?) was changed from to N
Q5_1_2 (AA > 20% of watershed?) was changed from to Y
Q5_2 (Upslope wet depressions > 5% of watershed?) was changed from to N
Q6_1 (Downslope drop > upslope rise?) was changed from to Y
Q7 (v < 10 cm/s?) was changed from to I
Q8_1 (Permanent inlet?) was changed from to Y
Q8_2 (Intermittent inlet?) was changed from to N
Q8_3 (Permanent outlet?) was changed from to Y
Q8_4 (Intermittent outlet?) was changed from to N
Q9_1 (Outlet < one third average width?) was changed from to Y
Q9_2 (Sheet flooding?) was changed from to y
Q10_A (Lacustrine?) was changed from to N
Q10_B (Palustrine?) was changed from to N
Q10_C (Riverine nontidal?) was changed from to N
Q10_D (Riverine tidal?) was changed from to N
Q10_E (Estuarine?) was changed from to Y
Q10_F (Marine?) was changed from to N
Q11 (Fringe or island wetland?) was changed from to N
Q12_A (Dominant veg: forested) was changed from to N
Q12_AA (Dominant veg: forested and dead) was changed from to N
Q12_AB (Dominant veg: forested and needle-leaved evergreen) was changed from to N
Q12_AC (Dominant veg: forested and broad-leaved evergreen) was changed from to N
Q12_AD (Dominant veg: forested and needle-leaved deciduous) was changed from to N
Q12_AE (Dominant veg: forested and broad-leaved deciduous) was changed from to N
Q12_B (Dominant veg: Scrub-shrub) was changed from to N
Q12_BA (Dominant veg: Scrub-shrub and dead) was changed from to N
Q12_BB (Dominant veg: Scrub-shrub and needle-leaved evergreen) was changed from to N
Q12_BC (Dominant veg: Scrub-shrub and broad-leaved evergreen) was changed from to N
Q12_BD (Dominant veg: Scrub-shrub and needle-leaved deciduous) was changed from to N
Q12_BE (Dominant veg: Scrub-shrub and broad-leaved deciduous) was changed from to N
Q12_C (Dominant veg: Aquatic bed) was changed from to N
Q12_CA (Dominant veg: Aquatic bed and algal) was changed from to N
Q12_CB (Dominant veg: Aquatic bed and floating vascular) was changed from to N
Q12_CC (Dominant veg: Aquatic bed and rooted vascular) was changed from to N
Q12_CD (Dominant veg: Aquatic bed and aquatic moss) was changed from to N
Q12_D (Dominant veg: Emergent) was changed from to Y
Q12_DA (Dominant veg: Emergent and persistent) was changed from to Y
Q12_DB (Dominant veg: Emergent and non-persistent) was changed from to N
Q12_E (Dominant veg: Moss lichen) was changed from to N
Q13_A (Secondary veg: forested) was changed from to N

Q13_AA (Secondary veg: forested and dead) was changed from to N
Q13_AB (Secondary veg: forested and needle-leaved evergreen) was changed from to N
Q13_AC (Secondary veg: forested and broad-leaved evergreen) was changed from to N
Q13_AD (Secondary veg: forested and needle-leaved deciduous) was changed from to N
Q13_AE (Secondary veg: forested and broad-leaved deciduous) was changed from to N
Q13_B (Secondary veg: Scrub-shrub) was changed from to N
Q13_BA (Secondary veg: Scrub-shrub and dead) was changed from to N
Q13_BB (Secondary veg: Scrub-shrub and needle-leaved evergreen) was changed from to N
Q13_BC (Secondary veg: Scrub-shrub and broad-leaved evergreen) was changed from to N
Q13_BD (Secondary veg: Scrub-shrub and needle-leaved deciduous) was changed from to N
Q13_BE (Secondary veg: Scrub-shrub and broad-leaved deciduous) was changed from to N
Q13_C (Secondary veg: Aquatic bed) was changed from to N
Q13_CA (Secondary veg: Aquatic bed and algal) was changed from to N
Q13_CB (Secondary veg: Aquatic bed and floating vascular) was changed from to N
Q13_CC (Secondary veg: Aquatic bed and rooted vascular) was changed from to y
Q13_CD (Secondary veg: Aquatic bed and aquatic moss) was changed from to N
Q13_D (Secondary veg: Emergent) was changed from to Y
Q13_DA (Secondary veg: Emergent and persistent) was changed from to Y
Q13_DB (Secondary veg: Emergent and non-persistent) was changed from to N
Q13_E (Secondary veg: Moss lichen) was changed from to N
Q14_1 (AA on 25 square foot island?) was changed from to y
Q14_2 (AA on 2 acre island?) was changed from to y
Q15_1_A (Vegetation<-->Water = solid form) was changed from to N
Q15_1_B (Vegetation<-->Water = intermediate) was changed from to n
Q15_1_C (Vegetation<-->Water = checkerboard) was changed from to y
Q15_2 (Channel flow spreading?) was changed from to N
Q16_A (Vegetation class = solid) was changed from to n
Q16_B (Vegetation class = intermediate) was changed from to N
Q16_C (Vegetation class = mosaic) was changed from to y
Q17 (Plant form richness) was changed from to y
Q18 (Upland<-->Wetland edge irregular?) was changed from to y
Q19_1_A (Wind shelter?) was changed from to N
Q19_1_B (Wind shelter + fetch?) was changed from to N
Q19_2 (Wave protection?) was changed from to N

2 4A

I23 (Education opportunity?) was changed from N to y
I24 (Research resource?) was changed from N to y
Q9_2 (Sheet flooding?) was changed from N to y
Q13_CA (Secondary veg: Aquatic bed and algal) was changed from N to y
Q13_CC (Secondary veg: Aquatic bed and rooted vascular) was changed from N to y
Q15_1_A (Vegetation<-->Water = solid form) was changed from Y to n
Q15_1_C (Vegetation<-->Water = checkerboard) was changed from N to y
Q16_A (Vegetation class = solid) was changed from Y to n
Q16_C (Vegetation class = mosaic) was changed from N to y
Q17 (Plant form richness) was changed from N to y
Q18 (Upland<-->Wetland edge irregular?) was changed from N to y
Q22_1_2 (AA contains a Sinuous channel?) was changed from N to y
Q39 (Special habitat features?) was changed from N to y
Q46_B (Physical Habitat Interspersion = intermediate) was changed from Y to n
Q46_C (Physical Habitat Interspersion = mosaic) was changed from N to y
Q99 (Proximity to public transportation) was changed from N to y

2 6_a

Q9_2 (Sheet flooding?) was changed from N to y
Q13_CA (Secondary veg: Aquatic bed and algal) was changed from N to y
Q13_CC (Secondary veg: Aquatic bed and rooted vascular) was changed from N to y
Q15_1_B (Vegetation<-->Water = intermediate) was changed from Y to n
Q15_1_C (Vegetation<-->Water = checkerboard) was changed from N to y
Q15_2 (Channel flow spreading?) was changed from N to y
Q16_A (Vegetation class = solid) was changed from Y to n
Q16_C (Vegetation class = mosaic) was changed from N to y
Q17 (Plant form richness) was changed from N to y
Q18 (Upland<-->Wetland edge irregular?) was changed from N to y
Q33_I (Permanent Hydroperiod = regularly flooded tidal?) was changed from Y to n
Q33_J (Permanent Hydroperiod = irregularly exposed tidal?) was changed from N to y
Q39 (Special habitat features?) was changed from N to y
Q46_B (Physical Habitat Interspersion = intermediate) was changed from y to n
Q46_C (Physical Habitat Interspersion = mosaic) was changed from n to y
Q50 (Plants: waterfowl value?) was changed from N to y

Q61 (DO limiting to fish?) was changed from Y to n

2 6_b

Q9_2 (Sheet flooding?) was changed from N to y
Q13_CA (Secondary veg: Aquatic bed and algal) was changed from N to y
Q13_CC (Secondary veg: Aquatic bed and rooted vascular) was changed from N to y
Q15_1_B (Vegetation<-->Water = intermediate) was changed from Y to n
Q15_1_C (Vegetation<-->Water = checkerboard) was changed from N to y
Q15_2 (Channel flow spreading?) was changed from N to y
Q16_A (Vegetation class = solid) was changed from Y to n
Q16_C (Vegetation class = mosaic) was changed from N to y
Q17 (Plant form richness) was changed from N to y
Q18 (Upland<-->Wetland edge irregular?) was changed from N to y
Q33_I (Permanent Hydroperiod = regularly flooded tidal?) was changed from Y to n
Q33_J (Permanent Hydroperiod = irregularly exposed tidal?) was changed from N to y
Q39 (Special habitat features?) was changed from N to y
Q46_B (Physical Habitat Interspersion = intermediate) was changed from y to n
Q46_C (Physical Habitat Interspersion = mosaic) was changed from n to y
Q50 (Plants: waterfowl value?) was changed from N to y
Q61 (DO limiting to fish?) was changed from Y to n

2 6_c

Q9_2 (Sheet flooding?) was changed from N to y
Q13_CA (Secondary veg: Aquatic bed and algal) was changed from N to y
Q13_CC (Secondary veg: Aquatic bed and rooted vascular) was changed from N to y
Q15_1_B (Vegetation<-->Water = intermediate) was changed from Y to n
Q15_1_C (Vegetation<-->Water = checkerboard) was changed from N to y
Q15_2 (Channel flow spreading?) was changed from N to y
Q16_A (Vegetation class = solid) was changed from Y to n
Q16_C (Vegetation class = mosaic) was changed from N to y
Q17 (Plant form richness) was changed from N to y
Q18 (Upland<-->Wetland edge irregular?) was changed from N to y
Q33_I (Permanent Hydroperiod = regularly flooded tidal?) was changed from Y to n
Q33_J (Permanent Hydroperiod = irregularly exposed tidal?) was changed from N to y
Q39 (Special habitat features?) was changed from N to y
Q46_B (Physical Habitat Interspersion = intermediate) was changed from y to n
Q46_C (Physical Habitat Interspersion = mosaic) was changed from n to y
Q50 (Plants: waterfowl value?) was changed from N to y
Q61 (DO limiting to fish?) was changed from Y to n

2 7

I1 (Threatened/Endangered Species?) was changed from to Y
I2 (Designated/Controlled Area?) was changed from to N
I3 (State Listed Cultural Resource?) was changed from to N
I4 (Unusual or rare local type?) was changed from to N
I5 (Only wetland in locality?) was changed from to N
I6 (Substantial previous $ expenditure?) was changed from to N
I7 (Unnaturally high salinities?) was changed from to N
I10 (Dredging - spawning - ss) was changed from to Y
I11 (WWTP Priority Areas?) was changed from to Y
I12 (Drinking water supplies?) was changed from to N
I13 (Nutrient sensitive waters?) was changed from to Y
I14 (Bathing areas?) was changed from to N
I15 (Sole source aquifer, groundwater discharge ?) was changed from to Y
I16 (Actively used wells?) was changed from to N
I17 (Wildlife critically flow limited?) was changed from to N
I18 (Features in erosion prone areas?) was changed from to Y
I19 (USFWS/IRP fishery?) was changed from to Y
I20 (USFWS/IRP wildlife?) was changed from to Y
I21 (USFWS Waterfowl Use Region?) was changed from to Y
I22 (Limited dependent species?) was changed from to N
I23 (Education opportunity?) was changed from to N
I24 (Research resource?) was changed from to Y
I25 (Pristine?) was changed from to N
I26 (Recreation in deficient area?) was changed from to N
I27 (Recreation access point?) was changed from to N
I28 (Urban area?) was changed from to Y
I29 (Only or closest to named feature?) was changed from to Y
I30 (Region losing this type?) was changed from to Y
I31 (Acreage > than % annual loss rate?) was changed from to N
Q1_1 (Evaporation > precipitation?) was changed from to N

Q1_2 (Rainfall-erosivity > 300?) was changed from to N
Q1_3 (Freeze-over > one month?) was changed from to N
Q2_1_1 (Area < 5 acres?) was changed from to N
Q2_1_2 (Area > 40 acres?) was changed from to Y
Q2_1_3 (Area > 200 acres?) was changed from to N
Q3_1 (Another Wet Depression within 1 mile?) was changed from to Y
Q3_2 (Cluster wetland?) was changed from to Y
Q3_3 (Oasis wetland?) was changed from to N
Q4_1 (< 5 miles to major water?) was changed from to Y
Q4_2A (< 1 square mile watershed?) was changed from to N
Q4_2B (1 -100 square mile watershed?) was changed from to N
Q4_2C (100-2500 square mile watershed?) was changed from to Y
Q4_2D (> 2500 square mile watershed?) was changed from to N
Q5_1_1 (AA < 5% of watershed?) was changed from to Y
Q5_1_2 (AA > 20% of watershed?) was changed from to N
Q5_2 (Upslope wet depressions > 5% of watershed?) was changed from to Y
Q6_1 (Downslope drop > upslope rise?) was changed from to Y
Q7 (v < 10 cm/s?) was changed from to I
Q8_1 (Permanent inlet?) was changed from to Y
Q8_2 (Intermittent inlet?) was changed from to Y
Q8_3 (Permanent outlet?) was changed from to Y
Q8_4 (Intermittent outlet?) was changed from to N
Q9_1 (Outlet < one third average width?) was changed from to Y
Q9_2 (Sheet flooding?) was changed from to y
Q10_A (Lacustrine?) was changed from to N
Q10_B (Palustrine?) was changed from to N
Q10_C (Riverine nontidal?) was changed from to N
Q10_D (Riverine tidal?) was changed from to N
Q10_E (Estuarine?) was changed from to Y
Q10_F (Marine?) was changed from to N
Q11 (Fringe or island wetland?) was changed from to N
Q12_A (Dominant veg: forested) was changed from to N
Q12_AA (Dominant veg: forested and dead) was changed from to N
Q12_AB (Dominant veg: forested and needle-leaved evergreen) was changed from to N
Q12_AC (Dominant veg: forested and broad-leaved evergreen) was changed from to N
Q12_AD (Dominant veg: forested and needle-leaved deciduous) was changed from to N
Q12_AE (Dominant veg: forested and broad-leaved deciduous) was changed from to N
Q12_B (Dominant veg: Scrub-shrub) was changed from to N
Q12_BA (Dominant veg: Scrub-shrub and dead) was changed from to N
Q12_BB (Dominant veg: Scrub-shrub and needle-leaved evergreen) was changed from to N
Q12_BC (Dominant veg: Scrub-shrub and broad-leaved evergreen) was changed from to N
Q12_BD (Dominant veg: Scrub-shrub and needle-leaved deciduous) was changed from to N
Q12_BE (Dominant veg: Scrub-shrub and broad-leaved deciduous) was changed from to N
Q12_C (Dominant veg: Aquatic bed) was changed from to N
Q12_CA (Dominant veg: Aquatic bed and algal) was changed from to N
Q12_CB (Dominant veg: Aquatic bed and floating vascular) was changed from to N
Q12_CC (Dominant veg: Aquatic bed and rooted vascular) was changed from to N
Q12_CD (Dominant veg: Aquatic bed and aquatic moss) was changed from to N
Q12_D (Dominant veg: Emergent) was changed from to Y
Q12_DA (Dominant veg: Emergent and persistent) was changed from to Y
Q12_DB (Dominant veg: Emergent and non-persistent) was changed from to N
Q12_E (Dominant veg: Moss lichen) was changed from to N
Q13_A (Secondary veg: forested) was changed from to N
Q13_AA (Secondary veg: forested and dead) was changed from to N
Q13_AB (Secondary veg: forested and needle-leaved evergreen) was changed from to N
Q13_AC (Secondary veg: forested and broad-leaved evergreen) was changed from to N
Q13_AD (Secondary veg: forested and needle-leaved deciduous) was changed from to N
Q13_AE (Secondary veg: forested and broad-leaved deciduous) was changed from to N
Q13_B (Secondary veg: Scrub-shrub) was changed from to N
Q13_BA (Secondary veg: Scrub-shrub and dead) was changed from to N
Q13_BB (Secondary veg: Scrub-shrub and needle-leaved evergreen) was changed from to N
Q13_BC (Secondary veg: Scrub-shrub and broad-leaved evergreen) was changed from to N
Q13_BD (Secondary veg: Scrub-shrub and needle-leaved deciduous) was changed from to N
Q13_BE (Secondary veg: Scrub-shrub and broad-leaved deciduous) was changed from to N
Q13_C (Secondary veg: Aquatic bed) was changed from to N
Q13_CA (Secondary veg: Aquatic bed and algal) was changed from to N
Q13_CB (Secondary veg: Aquatic bed and floating vascular) was changed from to N
Q13_CC (Secondary veg: Aquatic bed and rooted vascular) was changed from to y

Q13_CD (Secondary veg: Aquatic bed and aquatic moss) was changed from to N
Q13_D (Secondary veg: Emergent) was changed from to Y
Q13_DA (Secondary veg: Emergent and persistent) was changed from to Y
Q13_DB (Secondary veg: Emergent and non-persistent) was changed from to N
Q13_E (Secondary veg: Moss lichen) was changed from to N
Q14_1 (AA on 25 square foot island?) was changed from to y
Q14_2 (AA on 2 acre island?) was changed from to y
Q15_1_A (Vegetation<-->Water = solid form) was changed from to N
Q15_1_B (Vegetation<-->Water = intermediate) was changed from to n
Q15_1_C (Vegetation<-->Water = checkerboard) was changed from to y
Q15_2 (Channel flow spreading?) was changed from to N
Q16_A (Vegetation class = solid) was changed from to n
Q16_B (Vegetation class = intermediate) was changed from to N
Q16_C (Vegetation class = mosaic) was changed from to y
Q17 (Plant form richness) was changed from to y
Q18 (Upland<-->Wetland edge irregular?) was changed from to y
Q19_1_A (Wind shelter?) was changed from to N
Q19_1_B (Wind shelter + fetch?) was changed from to Y
Q19_2 (Wave protection?) was changed from to N
2 8
I1 (Threatened/Endangered Species?) was changed from to Y
I2 (Designated/Controlled Area?) was changed from to Y
I3 (State Listed Cultural Resource?) was changed from to N
I4 (Unusual or rare local type?) was changed from to N
I5 (Only wetland in locality?) was changed from to N
I6 (Substantial previous $ expenditure?) was changed from to N
I7 (Unnaturally high salinities?) was changed from to N
I10 (Dredging - spawning - ss) was changed from to Y
I11 (WWTP Priority Areas?) was changed from to Y
I12 (Drinking water supplies?) was changed from to N
I13 (Nutrient sensitive waters?) was changed from to Y
I14 (Bathing areas?) was changed from to N
I15 (Sole source aquifer. groundwater discharge ?) was changed from to Y
I16 (Actively used wells?) was changed from to N
I17 (Wildlife critically flow limited?) was changed from to N
I18 (Features in erosion prone areas?) was changed from to Y
I19 (USFWS/IRP fishery?) was changed from to Y
I20 (USFWS/IRP wildlife?) was changed from to Y
I21 (USFWS Waterfowl Use Region?) was changed from to Y
I22 (Limited dependent species?) was changed from to Y
I23 (Education opportunity?) was changed from to N
I24 (Research resource?) was changed from to Y
I25 (Pristine?) was changed from to N
I26 (Recreation in deficient area?) was changed from to N
I27 (Recreation access point?) was changed from to N
I28 (Urban area?) was changed from to Y
I29 (Only or closest to named feature?) was changed from to Y
I30 (Region losing this type?) was changed from to Y
I31 (Acreage > than % annual loss rate?) was changed from to N
Q1_1 (Evaporation > precipitation?) was changed from to N
Q1_2 (Rainfall-erosivity > 300?) was changed from to N
Q1_3 (Freeze-over > one month?) was changed from to N
Q2_1_1 (Area < 5 acres?) was changed from to N
Q2_1_2 (Area > 40 acres?) was changed from to Y
Q2_1_3 (Area > 200 acres?) was changed from to Y
Q3_1 (Another Wet Depression within 1 mile?) was changed from to Y
Q3_2 (Cluster wetland?) was changed from to Y
Q3_3 (Oasis wetland?) was changed from to N
Q4_1 (< 5 miles to major water?) was changed from to Y
Q4_2A (< 1 square mile watershed?) was changed from to N
Q4_2B (1 -100 square mile watershed?) was changed from to N
Q4_2C (100-2500 square mile watershed?) was changed from to Y
Q4_2D (> 2500 square mile watershed?) was changed from to N
Q5_1_1 (AA < 5% of watershed?) was changed from to Y
Q5_1_2 (AA > 20% of watershed?) was changed from to N
Q5_2 (Upslope wet depressions > 5% of watershed?) was changed from to Y
Q6_1 (Downslope drop > upslope rise?) was changed from to Y
Q7 (v < 10 cm/s?) was changed from to I

Q8_1 (Permanent inlet?) was changed from to Y
Q8_2 (Intermittent inlet?) was changed from to Y
Q8_3 (Permanent outlet?) was changed from to Y
Q8_4 (Intermittent outlet?) was changed from to N
Q9_1 (Outlet < one third average width?) was changed from to Y
Q9_2 (Sheet flooding?) was changed from to y
Q10_A (Lacustrine?) was changed from to N
Q10_B (Palustrine?) was changed from to N
Q10_C (Riverine nontidal?) was changed from to N
Q10_D (Riverine tidal?) was changed from to N
Q10_E (Estuarine?) was changed from to Y
Q10_F (Marine?) was changed from to N
Q11 (Fringe or island wetland?) was changed from to N
Q12_A (Dominant veg: forested) was changed from to N
Q12_AA (Dominant veg: forested and dead) was changed from to N
Q12_AB (Dominant veg: forested and needle-leaved evergreen) was changed from to N
Q12_AC (Dominant veg: forested and broad-leaved evergreen) was changed from to N
Q12_AD (Dominant veg: forested and needle-leaved deciduous) was changed from to N
Q12_AE (Dominant veg: forested and broad-leaved deciduous) was changed from to N
Q12_B (Dominant veg: Scrub-shrub) was changed from to N
Q12_BA (Dominant veg: Scrub-shrub and dead) was changed from to N
Q12_BB (Dominant veg: Scrub-shrub and needle-leaved evergreen) was changed from to N
Q12_BC (Dominant veg: Scrub-shrub and broad-leaved evergreen) was changed from to N
Q12_BD (Dominant veg: Scrub-shrub and needle-leaved deciduous) was changed from to N
Q12_BE (Dominant veg: Scrub-shrub and broad-leaved deciduous) was changed from to N
Q12_C (Dominant veg: Aquatic bed) was changed from to N
Q12_CA (Dominant veg: Aquatic bed and algal) was changed from to N
Q12_CB (Dominant veg: Aquatic bed and floating vascular) was changed from to N
Q12_CC (Dominant veg: Aquatic bed and rooted vascular) was changed from to N
Q12_CD (Dominant veg: Aquatic bed and aquatic moss) was changed from to N
Q12_D (Dominant veg: Emergent) was changed from to Y
Q12_DA (Dominant veg: Emergent and persistent) was changed from to Y
Q12_DB (Dominant veg: Emergent and non-persistent) was changed from to N
Q12_E (Dominant veg: Moss lichen) was changed from to N
Q13_A (Secondary veg: forested) was changed from to N
Q13_AA (Secondary veg: forested and dead) was changed from to N
Q13_AB (Secondary veg: forested and needle-leaved evergreen) was changed from to N
Q13_AC (Secondary veg: forested and broad-leaved evergreen) was changed from to N
Q13_AD (Secondary veg: forested and needle-leaved deciduous) was changed from to N
Q13_AE (Secondary veg: forested and broad-leaved deciduous) was changed from to N
Q13_B (Secondary veg: Scrub-shrub) was changed from to N
Q13_BA (Secondary veg: Scrub-shrub and dead) was changed from to N
Q13_BB (Secondary veg: Scrub-shrub and needle-leaved evergreen) was changed from to N
Q13_BC (Secondary veg: Scrub-shrub and broad-leaved evergreen) was changed from to N
Q13_BD (Secondary veg: Scrub-shrub and needle-leaved deciduous) was changed from to N
Q13_BE (Secondary veg: Scrub-shrub and broad-leaved deciduous) was changed from to N
Q13_C (Secondary veg: Aquatic bed) was changed from to Y
Q13_CA (Secondary veg: Aquatic bed and algal) was changed from to N
Q13_CB (Secondary veg: Aquatic bed and floating vascular) was changed from to N
Q13_CC (Secondary veg: Aquatic bed and rooted vascular) was changed from to Y
Q13_CD (Secondary veg: Aquatic bed and aquatic moss) was changed from to N
Q13_D (Secondary veg: Emergent) was changed from to Y
Q13_DA (Secondary veg: Emergent and persistent) was changed from to Y
Q13_DB (Secondary veg: Emergent and non-persistent) was changed from to N
Q13_E (Secondary veg: Moss lichen) was changed from to N
Q14_1 (AA on 25 square foot island?) was changed from to Y
Q14_2 (AA on 2 acre island?) was changed from to y
Q15_1_A (Vegetation<-->Water = solid form) was changed from to N
Q15_1_B (Vegetation<-->Water = intermediate) was changed from to N
Q15_1_C (Vegetation<-->Water = checkerboard) was changed from to Y
Q15_2 (Channel flow spreading?) was changed from to Y
Q16_A (Vegetation class = solid) was changed from to N
Q16_B (Vegetation class = intermediate) was changed from to n
Q16_C (Vegetation class = mosaic) was changed from to y
Q17 (Plant form richness) was changed from to y
Q18 (Upland<-->Wetland edge irregular?) was changed from to y
Q19_1_A (Wind shelter?) was changed from to N
Q19_1_B (Wind shelter + fetch?) was changed from to Y

Q19_2 (Wave protection?) was changed from to Y
2 9_a
I23 (Education opportunity?) was changed from N to y
I24 (Research resource?) was changed from N to y
Q9_2 (Sheet flooding?) was changed from N to y
Q13_CC (Secondary veg: Aquatic bed and rooted vascular) was changed from N to y
Q14_1 (AA on 25 square foot island?) was changed from N to y
Q15_1_A (Vegetation<-->Water = solid form) was changed from Y to n
Q15_1_C (Vegetation<-->Water = checkerboard) was changed from N to y
Q16_A (Vegetation class = solid) was changed from Y to n
Q16_C (Vegetation class = mosaic) was changed from N to y
Q17 (Plant form richness) was changed from N to y
Q18 (Upland<-->Wetland edge irregular?) was changed from N to y
Q39 (Special habitat features?) was changed from N to y
Q46_B (Physical Habitat Interspersion = intermediate) was changed from Y to n
Q46_C (Physical Habitat Interspersion = mosaic) was changed from N to y
Q50 (Plants: waterfowl value?) was changed from N to y
Q61 (DO limiting to fish?) was changed from Y to n
2 9_b
I23 (Education opportunity?) was changed from N to y
I24 (Research resource?) was changed from N to y
Q9_2 (Sheet flooding?) was changed from N to y
Q13_CC (Secondary veg: Aquatic bed and rooted vascular) was changed from N to y
Q14_1 (AA on 25 square foot island?) was changed from N to y
Q15_1_A (Vegetation<-->Water = solid form) was changed from Y to n
Q15_1_C (Vegetation<-->Water = checkerboard) was changed from N to y
Q16_A (Vegetation class = solid) was changed from Y to n
Q16_C (Vegetation class = mosaic) was changed from N to y
Q17 (Plant form richness) was changed from N to y
Q18 (Upland<-->Wetland edge irregular?) was changed from N to y
Q39 (Special habitat features?) was changed from N to y
Q46_B (Physical Habitat Interspersion = intermediate) was changed from Y to n
Q46_C (Physical Habitat Interspersion = mosaic) was changed from N to y
Q50 (Plants: waterfowl value?) was changed from N to y
Q61 (DO limiting to fish?) was changed from Y to n
2 C
I23 (Education opportunity?) was changed from N to y
I24 (Research resource?) was changed from N to y
Q2_1_3 (Area > 200 acres?) was changed from N to y
Q9_2 (Sheet flooding?) was changed from N to y
Q13_CA (Secondary veg: Aquatic bed and algal) was changed from N to y
Q13_CC (Secondary veg: Aquatic bed and rooted vascular) was changed from N to y
Q14_1 (AA on 25 square foot island?) was changed from N to y
Q14_2 (AA on 2 acre island?) was changed from N to y
Q15_2 (Channel flow spreading?) was changed from N to y
Q16_A (Vegetation class = solid) was changed from Y to n
Q16_C (Vegetation class = mosaic) was changed from N to y
Q17 (Plant form richness) was changed from N to y
Q22_1_2 (AA contains a Sinuous channel?) was changed from N to y
Q33_I (Permanent Hydroperiod = regularly flooded tidal?) was changed from Y to n
Q33_J (Permanent Hydroperiod = irregularly exposed tidal?) was changed from N to y
Q39 (Special habitat features?) was changed from N to y
Q44_A (Secondary Water Depth < 1 inch) was changed from N to y
Q46_A (Physical Habitat Interspersion = uniform) was changed from Y to n
Q46_C (Physical Habitat Interspersion = mosaic) was changed from N to y
Q61 (DO limiting to fish?) was changed from Y to n
Q99 (Proximity to public transportation) was changed from N to y
2 D
I23 (Education opportunity?) was changed from N to y
I24 (Research resource?) was changed from N to y
Q2_1_3 (Area > 200 acres?) was changed from N to y
Q9_2 (Sheet flooding?) was changed from N to y
Q13_CA (Secondary veg: Aquatic bed and algal) was changed from N to y
Q13_CC (Secondary veg: Aquatic bed and rooted vascular) was changed from N to y
Q14_1 (AA on 25 square foot island?) was changed from N to y
Q14_2 (AA on 2 acre island?) was changed from N to y
Q15_1_A (Vegetation<-->Water = solid form) was changed from Y to n
Q15_1_C (Vegetation<-->Water = checkerboard) was changed from N to y

Q15_2 (Channel flow spreading?) was changed from N to y
Q16_A (Vegetation class = solid) was changed from Y to n
Q16_C (Vegetation class = mosaic) was changed from N to y
Q17 (Plant form richness) was changed from N to y
Q18 (Upland<-->Wetland edge irregular?) was changed from N to y
Q29_1 (Dense understory edge?) was changed from N to y
Q29_2 (Buffer zone slopes < 5%?) was changed from N to y
Q33_I (Permanent Hydroperiod = regularly flooded tidal?) was changed from Y to n
Q33_J (Permanent Hydroperiod = irregularly exposed tidal?) was changed from N to y
Q46_B (Physical Habitat Interspersion = intermediate) was changed from Y to n
Q46_C (Physical Habitat Interspersion = mosaic) was changed from N to y
Q61 (DO limiting to fish?) was changed from Y to n
Q99 (Proximity to public transportation) was changed from N to y

2 E_a

I23 (Education opportunity?) was changed from N to y
I24 (Research resource?) was changed from N to y
Q9_2 (Sheet flooding?) was changed from N to y
Q13_CA (Secondary veg: Aquatic bed and algal) was changed from N to y
Q13_CC (Secondary veg: Aquatic bed and rooted vascular) was changed from N to y
Q14_1 (AA on 25 square foot island?) was changed from N to y
Q15_1_A (Vegetation<-->Water = solid form) was changed from Y to n
Q15_1_C (Vegetation<-->Water = checkerboard) was changed from N to y
Q15_2 (Channel flow spreading?) was changed from N to y
Q16_A (Vegetation class = solid) was changed from Y to n
Q16_C (Vegetation class = mosaic) was changed from N to y
Q17 (Plant form richness) was changed from N to y
Q18 (Upland<-->Wetland edge irregular?) was changed from N to y
Q31_2 (Area of Zone B > 10% of AA?) was changed from N to y
Q31_6_B (emergent in Zone B = 1% - 30% of Zones B and C?) was changed from Y to n
Q31_6_C (emergent in Zone B = 31% - 60% of Zones B and C?) was changed from N to y
Q32_G (Spatial Dominant Hydroperiod = intermit flooded nontidal?) was changed from Y to n
Q32_I (Spatial Dominant Hydroperiod = regularly flooded tidal?) was changed from N to y
Q39 (Special habitat features?) was changed from N to y
Q46_A (Physical Habitat Interspersion = uniform) was changed from Y to n
Q46_C (Physical Habitat Interspersion = mosaic) was changed from N to y
Q50 (Plants: waterfowl value?) was changed from N to y

2 E_b

I23 (Education opportunity?) was changed from N to y
I24 (Research resource?) was changed from N to y
Q9_2 (Sheet flooding?) was changed from N to y
Q13_CA (Secondary veg: Aquatic bed and algal) was changed from N to y
Q13_CC (Secondary veg: Aquatic bed and rooted vascular) was changed from N to y
Q14_1 (AA on 25 square foot island?) was changed from N to y
Q15_1_A (Vegetation<-->Water = solid form) was changed from Y to n
Q15_1_C (Vegetation<-->Water = checkerboard) was changed from N to y
Q15_2 (Channel flow spreading?) was changed from N to y
Q16_A (Vegetation class = solid) was changed from Y to n
Q16_C (Vegetation class = mosaic) was changed from N to y
Q17 (Plant form richness) was changed from N to y
Q18 (Upland<-->Wetland edge irregular?) was changed from N to y
Q31_2 (Area of Zone B > 10% of AA?) was changed from N to y
Q31_6_B (emergent in Zone B = 1% - 30% of Zones B and C?) was changed from Y to n
Q31_6_C (emergent in Zone B = 31% - 60% of Zones B and C?) was changed from N to y
Q32_G (Spatial Dominant Hydroperiod = intermit flooded nontidal?) was changed from Y to n
Q32_I (Spatial Dominant Hydroperiod = regularly flooded tidal?) was changed from N to y
Q39 (Special habitat features?) was changed from N to y
Q44_E (21 in < secondary water depth < 39 inches) was changed from n to y
Q44_F (40 in < secondary water depth < 59 inches) was changed from n to y
Q44_G (5 feet < secondary water depth < 6.5 feet) was changed from n to y
Q44_H (6.5 feet < secondary water depth < 26 feet) was changed from n to y
Q46_A (Physical Habitat Interspersion = uniform) was changed from Y to n
Q46_C (Physical Habitat Interspersion = mosaic) was changed from N to y
Q50 (Plants: waterfowl value?) was changed from N to y

2 E_c

I23 (Education opportunity?) was changed from N to y
I24 (Research resource?) was changed from N to y
Q9_2 (Sheet flooding?) was changed from N to y
Q13_CA (Secondary veg: Aquatic bed and algal) was changed from N to y

Q13_CC (Secondary veg: Aquatic bed and rooted vascular) was changed from N to y
Q14_1 (AA on 25 square foot island?) was changed from N to y
Q15_1_A (Vegetation<-->Water = solid form) was changed from Y to n
Q15_1_C (Vegetation<-->Water = checkerboard) was changed from N to y
Q15_2 (Channel flow spreading?) was changed from N to y
Q16_A (Vegetation class = solid) was changed from Y to n
Q16_C (Vegetation class = mosaic) was changed from N to y
Q17 (Plant form richness) was changed from N to y
Q18 (Upland<-->Wetland edge irregular?) was changed from N to y
Q31_2 (Area of Zone B > 10% of AA?) was changed from N to y
Q31_6_B (emergent in Zone B = 1% - 30% of Zones B and C?) was changed from Y to n
Q31_6_C (emergent in Zone B = 31% - 60% of Zones B and C?) was changed from N to y
Q32_G (Spatial Dominant Hydroperiod = intermit flooded nontidal?) was changed from Y to n
Q32_I (Spatial Dominant Hydroperiod = regularly flooded tidal?) was changed from N to y
Q39 (Special habitat features?) was changed from N to y
Q44_E (21 in < secondary water depth < 39 inches) was changed from n to y
Q44_F (40 in < secondary water depth < 59 inches) was changed from n to y
Q44_G (5 feet < secondary water depth < 6.5 feet) was changed from n to y
Q44_H (6.5 feet < secondary water depth < 26 feet) was changed from n to y
Q46_A (Physical Habitat Interspersion = uniform) was changed from Y to n
Q46_C (Physical Habitat Interspersion = mosaic) was changed from N to y
Q50 (Plants: waterfowl value?) was changed from N to y

2 E_d

I23 (Education opportunity?) was changed from N to y
I24 (Research resource?) was changed from N to y
Q9_2 (Sheet flooding?) was changed from N to y
Q13_CA (Secondary veg: Aquatic bed and algal) was changed from N to y
Q13_CC (Secondary veg: Aquatic bed and rooted vascular) was changed from N to y
Q14_1 (AA on 25 square foot island?) was changed from N to y
Q15_1_A (Vegetation<-->Water = solid form) was changed from Y to n
Q15_1_C (Vegetation<-->Water = checkerboard) was changed from N to y
Q15_2 (Channel flow spreading?) was changed from N to y
Q16_A (Vegetation class = solid) was changed from Y to n
Q16_C (Vegetation class = mosaic) was changed from N to y
Q17 (Plant form richness) was changed from N to y
Q18 (Upland<-->Wetland edge irregular?) was changed from N to y
Q31_2 (Area of Zone B > 10% of AA?) was changed from N to y
Q31_6_B (emergent in Zone B = 1% - 30% of Zones B and C?) was changed from Y to n
Q31_6_C (emergent in Zone B = 31% - 60% of Zones B and C?) was changed from N to y
Q32_G (Spatial Dominant Hydroperiod = intermit flooded nontidal?) was changed from Y to n
Q32_I (Spatial Dominant Hydroperiod = regularly flooded tidal?) was changed from N to y
Q39 (Special habitat features?) was changed from N to y
Q46_A (Physical Habitat Interspersion = uniform) was changed from Y to n
Q46_C (Physical Habitat Interspersion = mosaic) was changed from N to y
Q50 (Plants: waterfowl value?) was changed from N to y

2 F

I23 (Education opportunity?) was changed from N to y
I24 (Research resource?) was changed from N to y
Q8_3 (Permanent outlet?) was changed from N to y
Q9_2 (Sheet flooding?) was changed from N to y
Q12_CC (Dominant veg: Aquatic bed and rooted vascular) was changed from N to y
Q12_DA (Dominant veg: Emergent and persistent) was changed from Y to n
Q13_CA (Secondary veg: Aquatic bed and algal) was changed from N to y
Q13_CB (Secondary veg: Aquatic bed and floating vascular) was changed from N to y
Q13_CC (Secondary veg: Aquatic bed and rooted vascular) was changed from N to y
Q13_DB (Secondary veg: Emergent and non-persistent) was changed from N to y
Q14_1 (AA on 25 square foot island?) was changed from N to y
Q14_2 (AA on 2 acre island?) was changed from N to y
Q15_1_A (Vegetation<-->Water = solid form) was changed from Y to n
Q15_1_C (Vegetation<-->Water = checkerboard) was changed from N to y
Q16_A (Vegetation class = solid) was changed from Y to n
Q16_C (Vegetation class = mosaic) was changed from N to y
Q18 (Upland<-->Wetland edge irregular?) was changed from N to y
Q31_6_B (emergent in Zone B = 1% - 30% of Zones B and C?) was changed from Y to n
Q31_6_C (emergent in Zone B = 31% - 60% of Zones B and C?) was changed from N to y
Q32_A (Spatial Dominant Hydroperiod = perm flooded nontidal?) was changed from N to y
Q32_G (Spatial Dominant Hydroperiod = intermit flooded nontidal?) was changed from Y to n
Q33_A (Permanent Hydroperiod = perm flooded nontidal?) was changed from Y to n

Q33_B (Permanent Hydroperiod = intermit exposed nontidal?) was changed from N to y
Q34_1 (Local dams?) was changed from N to y
Q39 (Special habitat features?) was changed from N to y
Q44_B (1 in < secondary water depth < 4 inches) was changed from N to y
Q44_C (5 in < secondary water depth < 8 inches) was changed from N to y
Q44_D (9 in < secondary water depth < 20 inches) was changed from N to y
Q44_F (40 in < secondary water depth < 59 inches) was changed from N to y
Q44_G (5 feet < secondary water depth < 6.5 feet) was changed from N to y
Q44_H (6.5 feet < secondary water depth < 26 feet) was changed from N to y
Q46_A (Physical Habitat Interspersion = uniform) was changed from Y to n
Q46_C (Physical Habitat Interspersion = mosaic) was changed from N to y
Q99 (Proximity to public transportation) was changed from N to y

2 G_a
I23 (Education opportunity?) was changed from N to y
I24 (Research resource?) was changed from N to y
Q9_2 (Sheet flooding?) was changed from N to y
Q13_CC (Secondary veg: Aquatic bed and rooted vascular) was changed from N to y
Q14_1 (AA on 25 square foot island?) was changed from N to y
Q15_1_A (Vegetation<-->Water = solid form) was changed from Y to n
Q15_1_C (Vegetation<-->Water = checkerboard) was changed from N to y
Q16_A (Vegetation class = solid) was changed from Y to n
Q16_C (Vegetation class = mosaic) was changed from N to y
Q17 (Plant form richness) was changed from N to y
Q18 (Upland<-->Wetland edge irregular?) was changed from N to y
Q31_2 (Area of Zone B > 10% of AA?) was changed from N to y
Q39 (Special habitat features?) was changed from N to y
Q46_A (Physical Habitat Interspersion = uniform) was changed from Y to n
Q46_C (Physical Habitat Interspersion = mosaic) was changed from N to y
Q50 (Plants: waterfowl value?) was changed from N to y
Q99 (Proximity to public transportation) was changed from N to y

2 G_b
I23 (Education opportunity?) was changed from N to y
I24 (Research resource?) was changed from N to y
Q9_2 (Sheet flooding?) was changed from N to y
Q13_CC (Secondary veg: Aquatic bed and rooted vascular) was changed from N to y
Q14_1 (AA on 25 square foot island?) was changed from N to y
Q15_1_A (Vegetation<-->Water = solid form) was changed from Y to n
Q15_1_C (Vegetation<-->Water = checkerboard) was changed from N to y
Q16_A (Vegetation class = solid) was changed from Y to n
Q16_C (Vegetation class = mosaic) was changed from N to y
Q17 (Plant form richness) was changed from N to y
Q31_2 (Area of Zone B > 10% of AA?) was changed from N to y
Q31_6_B (emergent in Zone B = 1% - 30% of Zones B and C?) was changed from Y to n
Q31_6_C (emergent in Zone B = 31% - 60% of Zones B and C?) was changed from N to y
Q39 (Special habitat features?) was changed from N to y
Q44_E (21 in < secondary water depth < 39 inches) was changed from n to y
Q44_F (40 in < secondary water depth < 59 inches) was changed from n to y
Q44_G (5 feet < secondary water depth < 6.5 feet) was changed from n to y
Q44_H (6.5 feet < secondary water depth < 26 feet) was changed from n to y
Q46_A (Physical Habitat Interspersion = uniform) was changed from Y to n
Q46_C (Physical Habitat Interspersion = mosaic) was changed from N to y
Q50 (Plants: waterfowl value?) was changed from N to y
Q99 (Proximity to public transportation) was changed from N to y

2 G_c
I23 (Education opportunity?) was changed from N to y
I24 (Research resource?) was changed from N to y
Q9_2 (Sheet flooding?) was changed from N to y
Q13_CC (Secondary veg: Aquatic bed and rooted vascular) was changed from N to y
Q14_1 (AA on 25 square foot island?) was changed from N to y
Q15_1_A (Vegetation<-->Water = solid form) was changed from Y to n
Q15_1_C (Vegetation<-->Water = checkerboard) was changed from N to y
Q16_A (Vegetation class = solid) was changed from Y to n
Q16_C (Vegetation class = mosaic) was changed from N to y
Q17 (Plant form richness) was changed from N to y
Q31_2 (Area of Zone B > 10% of AA?) was changed from N to y
Q31_6_B (emergent in Zone B = 1% - 30% of Zones B and C?) was changed from Y to n
Q31_6_C (emergent in Zone B = 31% - 60% of Zones B and C?) was changed from N to y
Q39 (Special habitat features?) was changed from N to y

Q46_A (Physical Habitat Interspersion = uniform) was changed from Y to n
Q46_C (Physical Habitat Interspersion = mosaic) was changed from N to y
Q50 (Plants: waterfowl value?) was changed from N to y
Q99 (Proximity to public transportation) was changed from N to y

2 H_a

I23 (Education opportunity?) was changed from N to y
I24 (Research resource?) was changed from N to y
Q9_2 (Sheet flooding?) was changed from N to y
Q13_CC (Secondary veg: Aquatic bed and rooted vascular) was changed from N to y
Q14_1 (AA on 25 square foot island?) was changed from N to y
Q15_1_A (Vegetation<-->Water = solid form) was changed from Y to n
Q15_1_C (Vegetation<-->Water = checkerboard) was changed from N to y
Q16_A (Vegetation class = solid) was changed from Y to n
Q16_C (Vegetation class = mosaic) was changed from N to y
Q17 (Plant form richness) was changed from N to y
Q22_1_2 (AA contains a Sinuous channel?) was changed from N to y
Q29_1 (Dense understory edge?) was changed from N to y
Q29_2 (Buffer zone slopes < 5%?) was changed from N to y
Q46_B (Physical Habitat Interspersion = intermediate) was changed from Y to n
Q46_C (Physical Habitat Interspersion = mosaic) was changed from N to y
Q61 (DO limiting to fish?) was changed from Y to n
Q99 (Proximity to public transportation) was changed from N to y

2 H_b

I23 (Education opportunity?) was changed from N to y
I24 (Research resource?) was changed from N to y
Q9_2 (Sheet flooding?) was changed from N to y
Q13_CC (Secondary veg: Aquatic bed and rooted vascular) was changed from N to y
Q14_1 (AA on 25 square foot island?) was changed from N to y
Q15_1_A (Vegetation<-->Water = solid form) was changed from Y to n
Q15_1_C (Vegetation<-->Water = checkerboard) was changed from N to y
Q16_A (Vegetation class = solid) was changed from Y to n
Q16_C (Vegetation class = mosaic) was changed from N to y
Q17 (Plant form richness) was changed from N to y
Q22_1_2 (AA contains a Sinuous channel?) was changed from N to y
Q29_1 (Dense understory edge?) was changed from N to y
Q29_2 (Buffer zone slopes < 5%?) was changed from N to y
Q46_B (Physical Habitat Interspersion = intermediate) was changed from Y to n
Q46_C (Physical Habitat Interspersion = mosaic) was changed from N to y
Q61 (DO limiting to fish?) was changed from Y to n
Q99 (Proximity to public transportation) was changed from N to y

2 I

I1 (Threatened/Endangered Species?) was changed from to Y
I2 (Designated/Controlled Area?) was changed from to N
I3 (State Listed Cultural Resource?) was changed from to N
I4 (Unusual or rare local type?) was changed from to N
I5 (Only wetland in locality?) was changed from to N
I6 (Substantial previous $ expenditure?) was changed from to N
I7 (Unnaturally high salinities?) was changed from to N
I10 (Dredging - spawning - ss) was changed from to Y
I11 (WWTP Priority Areas?) was changed from to Y
I12 (Drinking water supplies?) was changed from to N
I13 (Nutrient sensitive waters?) was changed from to Y
I14 (Bathing areas?) was changed from to N
I15 (Sole source aquifer, groundwater discharge ?) was changed from to Y
I16 (Actively used wells?) was changed from to N
I17 (Wildlife critically flow limited?) was changed from to N
I18 (Features in erosion prone areas?) was changed from to N
I19 (USFWS/IRP fishery?) was changed from to N
I20 (USFWS/IRP wildlife?) was changed from to Y
I21 (USFWS Waterfowl Use Region?) was changed from to Y
I22 (Limited dependent species?) was changed from to N
I23 (Education opportunity?) was changed from to N
I24 (Research resource?) was changed from to Y
I25 (Pristine?) was changed from to N
I26 (Recreation in deficient area?) was changed from to N
I27 (Recreation access point?) was changed from to N
I28 (Urban area?) was changed from to Y
I29 (Only or closest to named feature?) was changed from to N

I30 (Region losing this type?) was changed from to Y
I31 (Acreage > than % annual loss rate?) was changed from to N
Q1_1 (Evaporation > precipitation?) was changed from to N
Q1_2 (Rainfall-erosivity > 300?) was changed from to N
Q1_3 (Freeze-over > one month?) was changed from to N
Q2_1_1 (Area < 5 acres?) was changed from to Y
Q2_1_2 (Area > 40 acres?) was changed from to N
Q2_1_3 (Area > 200 acres?) was changed from to N
Q3_1 (Another Wet Depression within 1 mile?) was changed from to Y
Q3_2 (Cluster wetland?) was changed from to Y
Q3_3 (Oasis wetland?) was changed from to N
Q4_1 (< 5 miles to major water?) was changed from to Y
Q5_1_1 (AA < 5% of watershed?) was changed from to Y
Q5_1_2 (AA > 20% of watershed?) was changed from to N
Q5_2 (Upslope wet depressions > 5% of watershed?) was changed from to Y
Q6_1 (Downslope drop > upslope rise?) was changed from to Y
Q7 (v < 10 cm/s?) was changed from to I
Q8_1 (Permanent inlet?) was changed from to Y
Q8_2 (Intermittent inlet?) was changed from to N
Q8_3 (Permanent outlet?) was changed from to Y
Q8_4 (Intermittent outlet?) was changed from to y
Q9_1 (Outlet < one third average width?) was changed from to Y
Q9_2 (Sheet flooding?) was changed from to N
Q10_A (Lacustrine?) was changed from to N
Q10_B (Palustrine?) was changed from to N
Q10_C (Riverine nontidal?) was changed from to N
Q10_D (Riverine tidal?) was changed from to N
Q10_E (Estuarine?) was changed from to Y
Q10_F (Marine?) was changed from to N
Q11 (Fringe or island wetland?) was changed from to N
Q12_A (Dominant veg: forested) was changed from to N
Q12_AA (Dominant veg: forested and dead) was changed from to N
Q12_AB (Dominant veg: forested and needle-leaved evergreen) was changed from to N
Q12_AC (Dominant veg: forested and broad-leaved evergreen) was changed from to N
Q12_AD (Dominant veg: forested and needle-leaved deciduous) was changed from to N
Q12_AE (Dominant veg: forested and broad-leaved deciduous) was changed from to N
Q12_B (Dominant veg: Scrub-shrub) was changed from to N
Q12_BA (Dominant veg: Scrub-shrub and dead) was changed from to N
Q12_BB (Dominant veg: Scrub-shrub and needle-leaved evergreen) was changed from to N
Q12_BC (Dominant veg: Scrub-shrub and broad-leaved evergreen) was changed from to N
Q12_BD (Dominant veg: Scrub-shrub and needle-leaved deciduous) was changed from to N
Q12_BE (Dominant veg: Scrub-shrub and broad-leaved deciduous) was changed from to N
Q12_C (Dominant veg: Aquatic bed) was changed from to N
Q12_CA (Dominant veg: Aquatic bed and algal) was changed from to N
Q12_CB (Dominant veg: Aquatic bed and floating vascular) was changed from to N
Q12_CC (Dominant veg: Aquatic bed and rooted vascular) was changed from to y
Q12_CD (Dominant veg: Aquatic bed and aquatic moss) was changed from to N
Q12_D (Dominant veg: Emergent) was changed from to Y
Q12_DA (Dominant veg: Emergent and persistent) was changed from to n
Q12_DB (Dominant veg: Emergent and non-persistent) was changed from to N
Q12_E (Dominant veg: Moss lichen) was changed from to N
Q13_A (Secondary veg: forested) was changed from to N
Q13_AA (Secondary veg: forested and dead) was changed from to N
Q13_AB (Secondary veg: forested and needle-leaved evergreen) was changed from to N
Q13_AC (Secondary veg: forested and broad-leaved evergreen) was changed from to N
Q13_AD (Secondary veg: forested and needle-leaved deciduous) was changed from to N
Q13_AE (Secondary veg: forested and broad-leaved deciduous) was changed from to N
Q13_B (Secondary veg: Scrub-shrub) was changed from to N
Q13_BA (Secondary veg: Scrub-shrub and dead) was changed from to N
Q13_BB (Secondary veg: Scrub-shrub and needle-leaved evergreen) was changed from to N
Q13_BC (Secondary veg: Scrub-shrub and broad-leaved evergreen) was changed from to N
Q13_BD (Secondary veg: Scrub-shrub and needle-leaved deciduous) was changed from to N
Q13_BE (Secondary veg: Scrub-shrub and broad-leaved deciduous) was changed from to N
Q13_C (Secondary veg: Aquatic bed) was changed from to N
Q13_CA (Secondary veg: Aquatic bed and algal) was changed from to y
Q13_CB (Secondary veg: Aquatic bed and floating vascular) was changed from to y
Q13_CC (Secondary veg: Aquatic bed and rooted vascular) was changed from to y
Q13_CD (Secondary veg: Aquatic bed and aquatic moss) was changed from to N

Q13_D (Secondary veg: Emergent) was changed from to Y
Q13_DA (Secondary veg: Emergent and persistent) was changed from to Y
Q13_DB (Secondary veg: Emergent and non-persistent) was changed from to y
Q13_E (Secondary veg: Moss lichen) was changed from to N
Q14_1 (AA on 25 square foot island?) was changed from to y
Q14_2 (AA on 2 acre island?) was changed from to y
Q15_1_A (Vegetation<-->Water = solid form) was changed from to n
Q15_1_B (Vegetation<-->Water = intermediate) was changed from to N
Q15_1_C (Vegetation<-->Water = checkerboard) was changed from to y
Q15_2 (Channel flow spreading?) was changed from to N
Q16_A (Vegetation class = solid) was changed from to n
Q16_B (Vegetation class = intermediate) was changed from to N
Q16_C (Vegetation class = mosaic) was changed from to y
Q17 (Plant form richness) was changed from to y
Q18 (Upland<-->Wetland edge irregular?) was changed from to y
Q19_1_A (Wind shelter?) was changed from to N
Q19_1_B (Wind shelter + fetch?) was changed from to N
Q19_2 (Wave protection?) was changed from to N

2 J

I1 (Threatened/Endangered Species?) was changed from to N
I2 (Designated/Controlled Area?) was changed from to N
I3 (State Listed Cultural Resource?) was changed from to N
I4 (Unusual or rare local type?) was changed from to N
I5 (Only wetland in locality?) was changed from to N
I6 (Substantial previous $ expenditure?) was changed from to N
I7 (Unnaturally high salinities?) was changed from to N
I9 (Downslope sensitive features in floodplain?) was changed from to Y
I10 (Dredging - spawning - ss) was changed from to Y
I11 (WWTP Priority Areas?) was changed from to Y
I12 (Drinking water supplies?) was changed from to N
I13 (Nutrient sensitive waters?) was changed from to Y
I14 (Bathing areas?) was changed from to N
I15 (Sole source aquifer, groundwater discharge ?) was changed from to Y
I16 (Actively used wells?) was changed from to N
I17 (Wildlife critically flow limited?) was changed from to N
I18 (Features in erosion prone areas?) was changed from to N
I19 (USFWS/IRP fishery?) was changed from to N
I20 (USFWS/IRP wildlife?) was changed from to Y
I21 (USFWS Waterfowl Use Region?) was changed from to Y
I22 (Limited dependent species?) was changed from to N
I23 (Education opportunity?) was changed from to N
I24 (Research resource?) was changed from to Y
I25 (Pristine?) was changed from to N
I26 (Recreation in deficient area?) was changed from to N
I27 (Recreation access point?) was changed from to N
I28 (Urban area?) was changed from to Y
I29 (Only or closest to named feature?) was changed from to N
I30 (Region losing this type?) was changed from to Y
I31 (Acreage > than % annual loss rate?) was changed from to N
Q1_1 (Evaporation > precipitation?) was changed from to N
Q1_2 (Rainfall-erosivity > 300?) was changed from to N
Q1_3 (Freeze-over > one month?) was changed from to N
Q2_1_1 (Area < 5 acres?) was changed from to N
Q2_1_2 (Area > 40 acres?) was changed from to y
Q2_1_3 (Area > 200 acres?) was changed from to y
Q3_1 (Another Wet Depression within 1 mile?) was changed from to Y
Q3_2 (Cluster wetland?) was changed from to Y
Q3_3 (Oasis wetland?) was changed from to N
Q4_1 (< 5 miles to major water?) was changed from to Y
Q5_1_1 (AA < 5% of watershed?) was changed from to N
Q5_1_2 (AA > 20% of watershed?) was changed from to Y
Q5_2 (Upslope wet depressions > 5% of watershed?) was changed from to N
Q6_1 (Downslope drop > upslope rise?) was changed from to Y
Q7 (v < 10 cm/s?) was changed from to I
Q8_1 (Permanent inlet?) was changed from to Y
Q8_2 (Intermittent inlet?) was changed from to N
Q8_3 (Permanent outlet?) was changed from to Y
Q8_4 (Intermittent outlet?) was changed from to N

Q9_1 (Outlet < one third average width?) was changed from to Y
Q9_2 (Sheet flooding?) was changed from to N
Q10_A (Lacustrine?) was changed from to N
Q10_B (Palustrine?) was changed from to Y
Q10_C (Riverine nontidal?) was changed from to N
Q10_D (Riverine tidal?) was changed from to N
Q10_E (Estuarine?) was changed from to N
Q10_F (Marine?) was changed from to N
Q11 (Fringe or island wetland?) was changed from to N
Q12_A (Dominant veg: forested) was changed from to N
Q12_AA (Dominant veg: forested and dead) was changed from to N
Q12_AB (Dominant veg: forested and needle-leaved evergreen) was changed from to N
Q12_AC (Dominant veg: forested and broad-leaved evergreen) was changed from to N
Q12_AD (Dominant veg: forested and needle-leaved deciduous) was changed from to N
Q12_AE (Dominant veg: forested and broad-leaved deciduous) was changed from to N
Q12_B (Dominant veg: Scrub-shrub) was changed from to N
Q12_BA (Dominant veg: Scrub-shrub and dead) was changed from to N
Q12_BB (Dominant veg: Scrub-shrub and needle-leaved evergreen) was changed from to N
Q12_BC (Dominant veg: Scrub-shrub and broad-leaved evergreen) was changed from to N
Q12_BD (Dominant veg: Scrub-shrub and needle-leaved deciduous) was changed from to N
Q12_BE (Dominant veg: Scrub-shrub and broad-leaved deciduous) was changed from to N
Q12_C (Dominant veg: Aquatic bed) was changed from to N
Q12_CA (Dominant veg: Aquatic bed and algal) was changed from to N
Q12_CB (Dominant veg: Aquatic bed and floating vascular) was changed from to N
Q12_CC (Dominant veg: Aquatic bed and rooted vascular) was changed from to N
Q12_CD (Dominant veg: Aquatic bed and aquatic moss) was changed from to N
Q12_D (Dominant veg: Emergent) was changed from to Y
Q12_DA (Dominant veg: Emergent and persistent) was changed from to Y
Q12_DB (Dominant veg: Emergent and non-persistent) was changed from to N
Q12_E (Dominant veg: Moss lichen) was changed from to N
Q13_A (Secondary veg: forested) was changed from to N
Q13_AA (Secondary veg: forested and dead) was changed from to N
Q13_AB (Secondary veg: forested and needle-leaved evergreen) was changed from to N
Q13_AC (Secondary veg: forested and broad-leaved evergreen) was changed from to N
Q13_AD (Secondary veg: forested and needle-leaved deciduous) was changed from to N
Q13_AE (Secondary veg: forested and broad-leaved deciduous) was changed from to N
Q13_B (Secondary veg: Scrub-shrub) was changed from to N
Q13_BA (Secondary veg: Scrub-shrub and dead) was changed from to N
Q13_BB (Secondary veg: Scrub-shrub and needle-leaved evergreen) was changed from to N
Q13_BC (Secondary veg: Scrub-shrub and broad-leaved evergreen) was changed from to N
Q13_BD (Secondary veg: Scrub-shrub and needle-leaved deciduous) was changed from to N
Q13_BE (Secondary veg: Scrub-shrub and broad-leaved deciduous) was changed from to N
Q13_C (Secondary veg: Aquatic bed) was changed from to N
Q13_CA (Secondary veg: Aquatic bed and algal) was changed from to y
Q13_CB (Secondary veg: Aquatic bed and floating vascular) was changed from to N
Q13_CC (Secondary veg: Aquatic bed and rooted vascular) was changed from to y
Q13_CD (Secondary veg: Aquatic bed and aquatic moss) was changed from to N
Q13_D (Secondary veg: Emergent) was changed from to Y
Q13_DA (Secondary veg: Emergent and persistent) was changed from to Y
Q13_DB (Secondary veg: Emergent and non-persistent) was changed from to N
Q13_E (Secondary veg: Moss lichen) was changed from to N
Q14_1 (AA on 25 square foot island?) was changed from to y
Q14_2 (AA on 2 acre island?) was changed from to y
Q15_1_A (Vegetation<-->Water = solid form) was changed from to n
Q15_1_B (Vegetation<-->Water = intermediate) was changed from to N
Q15_1_C (Vegetation<-->Water = checkerboard) was changed from to y
Q15_2 (Channel flow spreading?) was changed from to y
Q16_A (Vegetation class = solid) was changed from to n
Q16_B (Vegetation class = intermediate) was changed from to N
Q16_C (Vegetation class = mosaic) was changed from to y
Q17 (Plant form richness) was changed from to y
Q18 (Upland<-->Wetland edge irregular?) was changed from to y
Q19_1_A (Wind shelter?) was changed from to N
Q19_1_B (Wind shelter + fetch?) was changed from to N
Q19_2 (Wave protection?) was changed from to N
Q19_3 (Upland habitat wind shelter?) was changed from to N

2 K

I1 (Threatened/Endangered Species?) was changed from to Y

I2 (Designated/Controlled Area?) was changed from to N
I3 (State Listed Cultural Resource?) was changed from to N
I4 (Unusual or rare local type?) was changed from to N
I5 (Only wetland in locality?) was changed from to N
I6 (Substantial previous $ expenditure?) was changed from to N
I7 (Unnaturally high salinities?) was changed from to N
I10 (Dredging - spawning - ss) was changed from to Y
I11 (WWTP Priority Areas?) was changed from to Y
I12 (Drinking water supplies?) was changed from to N
I13 (Nutrient sensitive waters?) was changed from to Y
I14 (Bathing areas?) was changed from to N
I15 (Sole source aquifer, groundwater discharge ?) was changed from to Y
I16 (Actively used wells?) was changed from to N
I17 (Wildlife critically flow limited?) was changed from to N
I18 (Features in erosion prone areas?) was changed from to N
I19 (USFWS/IRP fishery?) was changed from to Y
I20 (USFWS/IRP wildlife?) was changed from to Y
I21 (USFWS Waterfowl Use Region?) was changed from to Y
I22 (Limited dependent species?) was changed from to N
I23 (Education opportunity?) was changed from to N
I24 (Research resource?) was changed from to N
I25 (Pristine?) was changed from to N
I26 (Recreation in deficient area?) was changed from to N
I27 (Recreation access point?) was changed from to N
I28 (Urban area?) was changed from to Y
I29 (Only or closest to named feature?) was changed from to N
I30 (Region losing this type?) was changed from to Y
I31 (Acreage > than % annual loss rate?) was changed from to N
Q1_1 (Evaporation > precipitation?) was changed from to N
Q1_2 (Rainfall-erosivity > 300?) was changed from to N
Q1_3 (Freeze-over > one month?) was changed from to N
Q2_1_1 (Area < 5 acres?) was changed from to N
Q2_1_2 (Area > 40 acres?) was changed from to Y
Q2_1_3 (Area > 200 acres?) was changed from to Y
Q3_1 (Another Wet Depression within 1 mile?) was changed from to Y
Q3_2 (Cluster wetland?) was changed from to Y
Q3_3 (Oasis wetland?) was changed from to N
Q4_1 (< 5 miles to major water?) was changed from to Y
Q4_2A (< 1 square mile watershed?) was changed from to N
Q4_2B (1 -100 square mile watershed?) was changed from to N
Q4_2C (100-2500 square mile watershed?) was changed from to Y
Q4_2D (> 2500 square mile watershed?) was changed from to N
Q5_1_1 (AA < 5% of watershed?) was changed from to Y
Q5_1_2 (AA > 20% of watershed?) was changed from to N
Q5_2 (Upslope wet depressions > 5% of watershed?) was changed from to Y
Q6_1 (Downslope drop > upslope rise?) was changed from to Y
Q7 (v < 10 cm/s?) was changed from to I
Q8_1 (Permanent inlet?) was changed from to Y
Q8_2 (Intermittent inlet?) was changed from to N
Q8_3 (Permanent outlet?) was changed from to Y
Q8_4 (Intermittent outlet?) was changed from to N
Q9_1 (Outlet < one third average width?) was changed from to Y
Q9_2 (Sheet flooding?) was changed from to N
Q10_A (Lacustrine?) was changed from to N
Q10_B (Palustrine?) was changed from to N
Q10_C (Riverine nontidal?) was changed from to N
Q10_D (Riverine tidal?) was changed from to N
Q10_E (Estuarine?) was changed from to Y
Q10_F (Marine?) was changed from to N
Q11 (Fringe or island wetland?) was changed from to N
Q12_A (Dominant veg: forested) was changed from to N
Q12_AA (Dominant veg: forested and dead) was changed from to N
Q12_AB (Dominant veg: forested and needle-leaved evergreen) was changed from to N
Q12_AC (Dominant veg: forested and broad-leaved evergreen) was changed from to N
Q12_AD (Dominant veg: forested and needle-leaved deciduous) was changed from to N
Q12_AE (Dominant veg: forested and broad-leaved deciduous) was changed from to N
Q12_B (Dominant veg: Scrub-shrub) was changed from to N
Q12_BA (Dominant veg: Scrub-shrub and dead) was changed from to N

Q12_BB (Dominant veg: Scrub-shrub and needle-leaved evergreen) was changed from to N
Q12_BC (Dominant veg: Scrub-shrub and broad-leaved evergreen) was changed from to N
Q12_BD (Dominant veg: Scrub-shrub and needle-leaved deciduous) was changed from to N
Q12_BE (Dominant veg: Scrub-shrub and broad-leaved deciduous) was changed from to N
Q12_C (Dominant veg: Aquatic bed) was changed from to N
Q12_CA (Dominant veg: Aquatic bed and algal) was changed from to N
Q12_CB (Dominant veg: Aquatic bed and floating vascular) was changed from to N
Q12_CC (Dominant veg: Aquatic bed and rooted vascular) was changed from to N
Q12_CD (Dominant veg: Aquatic bed and aquatic moss) was changed from to N
Q12_D (Dominant veg: Emergent) was changed from to Y
Q12_DA (Dominant veg: Emergent and persistent) was changed from to Y
Q12_DB (Dominant veg: Emergent and non-persistent) was changed from to N
Q12_E (Dominant veg: Moss lichen) was changed from to N
Q13_A (Secondary veg: forested) was changed from to N
Q13_AA (Secondary veg: forested and dead) was changed from to N
Q13_AB (Secondary veg: forested and needle-leaved evergreen) was changed from to N
Q13_AC (Secondary veg: forested and broad-leaved evergreen) was changed from to N
Q13_AD (Secondary veg: forested and needle-leaved deciduous) was changed from to N
Q13_AE (Secondary veg: forested and broad-leaved deciduous) was changed from to N
Q13_B (Secondary veg: Scrub-shrub) was changed from to N
Q13_BA (Secondary veg: Scrub-shrub and dead) was changed from to N
Q13_BB (Secondary veg: Scrub-shrub and needle-leaved evergreen) was changed from to N
Q13_BC (Secondary veg: Scrub-shrub and broad-leaved evergreen) was changed from to N
Q13_BD (Secondary veg: Scrub-shrub and needle-leaved deciduous) was changed from to N
Q13_BE (Secondary veg: Scrub-shrub and broad-leaved deciduous) was changed from to N
Q13_C (Secondary veg: Aquatic bed) was changed from to N
Q13_CA (Secondary veg: Aquatic bed and algal) was changed from to N
Q13_CB (Secondary veg: Aquatic bed and floating vascular) was changed from to N
Q13_CC (Secondary veg: Aquatic bed and rooted vascular) was changed from to y
Q13_CD (Secondary veg: Aquatic bed and aquatic moss) was changed from to N
Q13_D (Secondary veg: Emergent) was changed from to Y
Q13_DA (Secondary veg: Emergent and persistent) was changed from to Y
Q13_DB (Secondary veg: Emergent and non-persistent) was changed from to N
Q13_E (Secondary veg: Moss lichen) was changed from to N
Q14_1 (AA on 25 square foot island?) was changed from to y
Q14_2 (AA on 2 acre island?) was changed from to y
Q15_1_A (Vegetation<-->Water = solid form) was changed from to n
Q15_1_B (Vegetation<-->Water = intermediate) was changed from to N
Q15_1_C (Vegetation<-->Water = checkerboard) was changed from to y
Q15_2 (Channel flow spreading?) was changed from to N
Q16_A (Vegetation class = solid) was changed from to n
Q16_B (Vegetation class = intermediate) was changed from to N
Q16_C (Vegetation class = mosaic) was changed from to y
Q17 (Plant form richness) was changed from to y
Q18 (Upland<-->Wetland edge irregular?) was changed from to y
Q19_1_A (Wind shelter?) was changed from to N
Q19_1_B (Wind shelter + fetch?) was changed from to N
Q19_2 (Wave protection?) was changed from to Y

2 L

I1 (Threatened/Endangered Species?) was changed from to N
I2 (Designated/Controlled Area?) was changed from to Y
I3 (State Listed Cultural Resource?) was changed from to N
I4 (Unusual or rare local type?) was changed from to N
I5 (Only wetland in locality?) was changed from to N
I6 (Substantial previous $ expenditure?) was changed from to N
I7 (Unnaturally high salinities?) was changed from to N
I10 (Dredging - spawning - ss) was changed from to Y
I11 (WWTP Priority Areas?) was changed from to Y
I12 (Drinking water supplies?) was changed from to N
I13 (Nutrient sensitive waters?) was changed from to Y
I14 (Bathing areas?) was changed from to N
I15 (Sole source aquifer, groundwater discharge ?) was changed from to Y
I16 (Actively used wells?) was changed from to N
I17 (Wildlife critically flow limited?) was changed from to N
I18 (Features in erosion prone areas?) was changed from to Y
I19 (USFWS/IRP fishery?) was changed from to N
I20 (USFWS/IRP wildlife?) was changed from to Y
I21 (USFWS Waterfowl Use Region?) was changed from to Y

I22 (Limited dependent species?) was changed from to N
I23 (Education opportunity?) was changed from to N
I24 (Research resource?) was changed from to N
I25 (Pristine?) was changed from to N
I26 (Recreation in deficient area?) was changed from to N
I27 (Recreation access point?) was changed from to N
I28 (Urban area?) was changed from to Y
I29 (Only or closest to named feature?) was changed from to N
I30 (Region losing this type?) was changed from to Y
I31 (Acreage > than % annual loss rate?) was changed from to N
Q1_1 (Evaporation > precipitation?) was changed from to N
Q1_2 (Rainfall-erosivity > 300?) was changed from to N
Q1_3 (Freeze-over > one month?) was changed from to N
Q2_1_1 (Area < 5 acres?) was changed from to N
Q2_1_2 (Area > 40 acres?) was changed from to y
Q2_1_3 (Area > 200 acres?) was changed from to N
Q3_1 (Another Wet Depression within 1 mile?) was changed from to Y
Q3_2 (Cluster wetland?) was changed from to Y
Q3_3 (Oasis wetland?) was changed from to N
Q4_1 (< 5 miles to major water?) was changed from to Y
Q5_1_1 (AA < 5% of watershed?) was changed from to Y
Q5_1_2 (AA > 20% of watershed?) was changed from to N
Q5_2 (Upslope wet depressions > 5% of watershed?) was changed from to Y
Q6_1 (Downslope drop > upslope rise?) was changed from to Y
Q7 (v < 10 cm/s?) was changed from to I
Q8_1 (Permanent inlet?) was changed from to Y
Q8_2 (Intermittent inlet?) was changed from to Y
Q8_3 (Permanent outlet?) was changed from to Y
Q8_4 (Intermittent outlet?) was changed from to N
Q9_1 (Outlet < one third average width?) was changed from to Y
Q9_2 (Sheet flooding?) was changed from to y
Q10_A (Lacustrine?) was changed from to N
Q10_B (Palustrine?) was changed from to N
Q10_C (Riverine nontidal?) was changed from to N
Q10_D (Riverine tidal?) was changed from to N
Q10_E (Estuarine?) was changed from to Y
Q10_F (Marine?) was changed from to N
Q11 (Fringe or island wetland?) was changed from to N
Q12_A (Dominant veg: forested) was changed from to N
Q12_AA (Dominant veg: forested and dead) was changed from to N
Q12_AB (Dominant veg: forested and needle-leaved evergreen) was changed from to N
Q12_AC (Dominant veg: forested and broad-leaved evergreen) was changed from to N
Q12_AD (Dominant veg: forested and needle-leaved deciduous) was changed from to N
Q12_AE (Dominant veg: forested and broad-leaved deciduous) was changed from to N
Q12_B (Dominant veg: Scrub-shrub) was changed from to N
Q12_BA (Dominant veg: Scrub-shrub and dead) was changed from to N
Q12_BB (Dominant veg: Scrub-shrub and needle-leaved evergreen) was changed from to N
Q12_BC (Dominant veg: Scrub-shrub and broad-leaved evergreen) was changed from to N
Q12_BD (Dominant veg: Scrub-shrub and needle-leaved deciduous) was changed from to N
Q12_BE (Dominant veg: Scrub-shrub and broad-leaved deciduous) was changed from to N
Q12_C (Dominant veg: Aquatic bed) was changed from to N
Q12_CA (Dominant veg: Aquatic bed and algal) was changed from to N
Q12_CB (Dominant veg: Aquatic bed and floating vascular) was changed from to N
Q12_CC (Dominant veg: Aquatic bed and rooted vascular) was changed from to N
Q12_CD (Dominant veg: Aquatic bed and aquatic moss) was changed from to N
Q12_D (Dominant veg: Emergent) was changed from to Y
Q12_DA (Dominant veg: Emergent and persistent) was changed from to Y
Q12_DB (Dominant veg: Emergent and non-persistent) was changed from to N
Q12_E (Dominant veg: Moss lichen) was changed from to N
Q13_A (Secondary veg: forested) was changed from to N
Q13_AA (Secondary veg: forested and dead) was changed from to N
Q13_AB (Secondary veg: forested and needle-leaved evergreen) was changed from to N
Q13_AC (Secondary veg: forested and broad-leaved evergreen) was changed from to N
Q13_AD (Secondary veg: forested and needle-leaved deciduous) was changed from to N
Q13_AE (Secondary veg: forested and broad-leaved deciduous) was changed from to N
Q13_B (Secondary veg: Scrub-shrub) was changed from to N
Q13_BA (Secondary veg: Scrub-shrub and dead) was changed from to N
Q13_BB (Secondary veg: Scrub-shrub and needle-leaved evergreen) was changed from to N

Q13_BC (Secondary veg: Scrub-shrub and broad-leaved evergreen) was changed from to N
Q13_BD (Secondary veg: Scrub-shrub and needle-leaved deciduous) was changed from to N
Q13_BE (Secondary veg: Scrub-shrub and broad-leaved deciduous) was changed from to N
Q13_C (Secondary veg: Aquatic bed) was changed from to N
Q13_CA (Secondary veg: Aquatic bed and algal) was changed from to y
Q13_CB (Secondary veg: Aquatic bed and floating vascular) was changed from to N
Q13_CC (Secondary veg: Aquatic bed and rooted vascular) was changed from to y
Q13_CD (Secondary veg: Aquatic bed and aquatic moss) was changed from to N
Q13_D (Secondary veg: Emergent) was changed from to Y
Q13_DA (Secondary veg: Emergent and persistent) was changed from to Y
Q13_DB (Secondary veg: Emergent and non-persistent) was changed from to N
Q13_E (Secondary veg: Moss lichen) was changed from to N
Q14_1 (AA on 25 square foot island?) was changed from to y
Q14_2 (AA on 2 acre island?) was changed from to y
Q15_1_A (Vegetation<-->Water = solid form) was changed from to N
Q15_1_B (Vegetation<-->Water = intermediate) was changed from to n
Q15_1_C (Vegetation<-->Water = checkerboard) was changed from to y
Q15_2 (Channel flow spreading?) was changed from to Y
Q16_A (Vegetation class = solid) was changed from to n
Q16_B (Vegetation class = intermediate) was changed from to N
Q16_C (Vegetation class = mosaic) was changed from to y
Q17 (Plant form richness) was changed from to y
Q18 (Upland<-->Wetland edge irregular?) was changed from to y
Q19_1_A (Wind shelter?) was changed from to N
Q19_1_B (Wind shelter + fetch?) was changed from to N
Q19_2 (Wave protection?) was changed from to N

2 M

I23 (Education opportunity?) was changed from N to y
I24 (Research resource?) was changed from n to y
Q9_2 (Sheet flooding?) was changed from N to y
Q13_CA (Secondary veg: Aquatic bed and algal) was changed from N to y
Q13_CC (Secondary veg: Aquatic bed and rooted vascular) was changed from N to y
Q14_1 (AA on 25 square foot island?) was changed from N to y
Q14_2 (AA on 2 acre island?) was changed from N to y
Q15_1_B (Vegetation<-->Water = intermediate) was changed from Y to n
Q15_1_C (Vegetation<-->Water = checkerboard) was changed from N to y
Q16_A (Vegetation class = solid) was changed from Y to n
Q16_C (Vegetation class = mosaic) was changed from N to y
Q17 (Plant form richness) was changed from N to y
Q39 (Special habitat features?) was changed from N to y
Q46_B (Physical Habitat Interspersion = intermediate) was changed from Y to n
Q46_C (Physical Habitat Interspersion = mosaic) was changed from N to y
Q50 (Plants: waterfowl value?) was changed from N to y
Q61 (DO limiting to fish?) was changed from Y to n
Q99 (Proximity to public transportation) was changed from N to y

2 N

I1 (Threatened/Endangered Species?) was changed from to N
I2 (Designated/Controlled Area?) was changed from to Y
I3 (State Listed Cultural Resource?) was changed from to N
I4 (Unusual or rare local type?) was changed from to Y
I5 (Only wetland in locality?) was changed from to N
I6 (Substantial previous $ expenditure?) was changed from to N
I7 (Unnaturally high salinities?) was changed from to N
I8 (Features sensitive to flooding?) was changed from to N
I9 (Downslope sensitive features in floodplain?) was changed from to Y
I10 (Dredging - spawning - ss) was changed from to Y
I11 (WWTP Priority Areas?) was changed from to Y
I12 (Drinking water supplies?) was changed from to N
I13 (Nutrient sensitive waters?) was changed from to Y
I14 (Bathing areas?) was changed from to N
I15 (Sole source aquifer, groundwater discharge ?) was changed from to Y
I16 (Actively used wells?) was changed from to N
I17 (Wildlife critically flow limited?) was changed from to N
I18 (Features in erosion prone areas?) was changed from to N
I19 (USFWS/IRP fishery?) was changed from to N
I20 (USFWS/IRP wildlife?) was changed from to Y
I21 (USFWS Waterfowl Use Region?) was changed from to Y
I22 (Limited dependent species?) was changed from to N

I23 (Education opportunity?) was changed from to y
I24 (Research resource?) was changed from to y
I25 (Pristine?) was changed from to N
I26 (Recreation in deficient area?) was changed from to N
I27 (Recreation access point?) was changed from to N
I28 (Urban area?) was changed from to Y
I29 (Only or closest to named feature?) was changed from to N
I30 (Region losing this type?) was changed from to Y
I31 (Acreage > than % annual loss rate?) was changed from to N
Q1_1 (Evaporation > precipitation?) was changed from to N
Q1_2 (Rainfall-erosivity > 300?) was changed from to N
Q1_3 (Freeze-over > one month?) was changed from to N
Q2_1_1 (Area < 5 acres?) was changed from to N
Q2_1_2 (Area > 40 acres?) was changed from to N
Q2_1_3 (Area > 200 acres?) was changed from to N
Q3_1 (Another Wet Depression within 1 mile?) was changed from to Y
Q3_2 (Cluster wetland?) was changed from to Y
Q3_3 (Oasis wetland?) was changed from to N
Q4_1 (< 5 miles to major water?) was changed from to Y
Q5_1_1 (AA < 5% of watershed?) was changed from to Y
Q5_1_2 (AA > 20% of watershed?) was changed from to N
Q5_2 (Upslope wet depressions > 5% of watershed?) was changed from to Y
Q6_1 (Downslope drop > upslope rise?) was changed from to Y
Q7 (v < 10 cm/s?) was changed from to I
Q8_1 (Permanent inlet?) was changed from to Y
Q8_2 (Intermittent inlet?) was changed from to Y
Q8_3 (Permanent outlet?) was changed from to Y
Q8_4 (Intermittent outlet?) was changed from to y
Q9_1 (Outlet < one third average width?) was changed from to Y
Q9_2 (Sheet flooding?) was changed from to y
Q10_A (Lacustrine?) was changed from to N
Q10_B (Palustrine?) was changed from to Y
Q10_C (Riverine nontidal?) was changed from to N
Q10_D (Riverine tidal?) was changed from to N
Q10_E (Estuarine?) was changed from to N
Q10_F (Marine?) was changed from to N
Q11 (Fringe or island wetland?) was changed from to N
Q12_A (Dominant veg: forested) was changed from to N
Q12_AA (Dominant veg: forested and dead) was changed from to N
Q12_AB (Dominant veg: forested and needle-leaved evergreen) was changed from to N
Q12_AC (Dominant veg: forested and broad-leaved evergreen) was changed from to N
Q12_AD (Dominant veg: forested and needle-leaved deciduous) was changed from to N
Q12_AE (Dominant veg: forested and broad-leaved deciduous) was changed from to N
Q12_B (Dominant veg: Scrub-shrub) was changed from to N
Q12_BA (Dominant veg: Scrub-shrub and dead) was changed from to N
Q12_BB (Dominant veg: Scrub-shrub and needle-leaved evergreen) was changed from to N
Q12_BC (Dominant veg: Scrub-shrub and broad-leaved evergreen) was changed from to N
Q12_BD (Dominant veg: Scrub-shrub and needle-leaved deciduous) was changed from to N
Q12_BE (Dominant veg: Scrub-shrub and broad-leaved deciduous) was changed from to N
Q12_C (Dominant veg: Aquatic bed) was changed from to N
Q12_CA (Dominant veg: Aquatic bed and algal) was changed from to N
Q12_CB (Dominant veg: Aquatic bed and floating vascular) was changed from to N
Q12_CC (Dominant veg: Aquatic bed and rooted vascular) was changed from to y
Q12_CD (Dominant veg: Aquatic bed and aquatic moss) was changed from to N
Q12_D (Dominant veg: Emergent) was changed from to Y
Q12_DA (Dominant veg: Emergent and persistent) was changed from to n
Q12_DB (Dominant veg: Emergent and non-persistent) was changed from to N
Q12_E (Dominant veg: Moss lichen) was changed from to N
Q13_A (Secondary veg: forested) was changed from to N
Q13_AA (Secondary veg: forested and dead) was changed from to N
Q13_AB (Secondary veg: forested and needle-leaved evergreen) was changed from to N
Q13_AC (Secondary veg: forested and broad-leaved evergreen) was changed from to N
Q13_AD (Secondary veg: forested and needle-leaved deciduous) was changed from to N
Q13_AE (Secondary veg: forested and broad-leaved deciduous) was changed from to N
Q13_B (Secondary veg: Scrub-shrub) was changed from to Y
Q13_BA (Secondary veg: Scrub-shrub and dead) was changed from to N
Q13_BB (Secondary veg: Scrub-shrub and needle-leaved evergreen) was changed from to N
Q13_BC (Secondary veg: Scrub-shrub and broad-leaved evergreen) was changed from to N

Q13_BD (Secondary veg: Scrub-shrub and needle-leaved deciduous) was changed from to N
Q13_BE (Secondary veg: Scrub-shrub and broad-leaved deciduous) was changed from to Y
Q13_C (Secondary veg: Aquatic bed) was changed from to N
Q13_CA (Secondary veg: Aquatic bed and algal) was changed from to y
Q13_CB (Secondary veg: Aquatic bed and floating vascular) was changed from to y
Q13_CC (Secondary veg: Aquatic bed and rooted vascular) was changed from to y
Q13_CD (Secondary veg: Aquatic bed and aquatic moss) was changed from to N
Q13_D (Secondary veg: Emergent) was changed from to Y
Q13_DA (Secondary veg: Emergent and persistent) was changed from to Y
Q13_DB (Secondary veg: Emergent and non-persistent) was changed from to y
Q13_E (Secondary veg: Moss lichen) was changed from to N
Q14_1 (AA on 25 square foot island?) was changed from to y
Q14_2 (AA on 2 acre island?) was changed from to y
Q15_1_A (Vegetation<-->Water = solid form) was changed from to n
Q15_1_B (Vegetation<-->Water = intermediate) was changed from to N
Q15_1_C (Vegetation<-->Water = checkerboard) was changed from to y
Q15_2 (Channel flow spreading?) was changed from to N
Q16_A (Vegetation class = solid) was changed from to n
Q16_B (Vegetation class = intermediate) was changed from to N
Q16_C (Vegetation class = mosaic) was changed from to y
Q17 (Plant form richness) was changed from to y
Q18 (Upland<-->Wetland edge irregular?) was changed from to Y
Q19_1_A (Wind shelter?) was changed from to N
Q19_1_B (Wind shelter + fetch?) was changed from to N
Q19_2 (Wave protection?) was changed from to N
Q19_3 (Upland habitat wind shelter?) was changed from to N
2 P
I1 (Threatened/Endangered Species?) was changed from to Y
I2 (Designated/Controlled Area?) was changed from to N
I3 (State Listed Cultural Resource?) was changed from to N
I4 (Unusual or rare local type?) was changed from to N
I5 (Only wetland in locality?) was changed from to N
I6 (Substantial previous $ expenditure?) was changed from to N
I7 (Unnaturally high salinities?) was changed from to N
I10 (Dredging - spawning - ss) was changed from to Y
I11 (WWTP Priority Areas?) was changed from to Y
I12 (Drinking water supplies?) was changed from to N
I13 (Nutrient sensitive waters?) was changed from to Y
I14 (Bathing areas?) was changed from to N
I15 (Sole source aquifer, groundwater discharge ?) was changed from to Y
I16 (Actively used wells?) was changed from to N
I17 (Wildlife critically flow limited?) was changed from to N
I18 (Features in erosion prone areas?) was changed from to N
I19 (USFWS/IRP fishery?) was changed from to Y
I20 (USFWS/IRP wildlife?) was changed from to Y
I21 (USFWS Waterfowl Use Region?) was changed from to Y
I22 (Limited dependent species?) was changed from to N
I23 (Education opportunity?) was changed from to N
I24 (Research resource?) was changed from to N
I25 (Pristine?) was changed from to N
I26 (Recreation in deficient area?) was changed from to N
I27 (Recreation access point?) was changed from to N
I28 (Urban area?) was changed from to Y
I29 (Only or closest to named feature?) was changed from to N
I30 (Region losing this type?) was changed from to Y
I31 (Acreage > than % annual loss rate?) was changed from to N
Q1_1 (Evaporation > precipitation?) was changed from to N
Q1_2 (Rainfall-erosivity > 300?) was changed from to N
Q1_3 (Freeze-over > one month?) was changed from to N
Q2_1_1 (Area < 5 acres?) was changed from to N
Q2_1_2 (Area > 40 acres?) was changed from to Y
Q2_1_3 (Area > 200 acres?) was changed from to Y
Q3_1 (Another Wet Depression within 1 mile?) was changed from to Y
Q3_2 (Cluster wetland?) was changed from to Y
Q3_3 (Oasis wetland?) was changed from to N
Q4_1 (< 5 miles to major water?) was changed from to Y
Q4_2A (< 1 square mile watershed?) was changed from to N
Q4_2B (1 -100 square mile watershed?) was changed from to N

Q4_2C (100-2500 square mile watershed?) was changed from to Y
Q4_2D (> 2500 square mile watershed?) was changed from to N
Q5_1_1 (AA < 5% of watershed?) was changed from to Y
Q5_1_2 (AA > 20% of watershed?) was changed from to N
Q5_2 (Upslope wet depressions > 5% of watershed?) was changed from to Y
Q6_1 (Downslope drop > upslope rise?) was changed from to Y
Q7 (v < 10 cm/s?) was changed from to I
Q8_1 (Permanent inlet?) was changed from to Y
Q8_2 (Intermittent inlet?) was changed from to Y
Q8_3 (Permanent outlet?) was changed from to Y
Q8_4 (Intermittent outlet?) was changed from to N
Q9_1 (Outlet < one third average width?) was changed from to Y
Q9_2 (Sheet flooding?) was changed from to y
Q10_A (Lacustrine?) was changed from to N
Q10_B (Palustrine?) was changed from to N
Q10_C (Riverine nontidal?) was changed from to N
Q10_D (Riverine tidal?) was changed from to N
Q10_E (Estuarine?) was changed from to Y
Q10_F (Marine?) was changed from to N
Q11 (Fringe or island wetland?) was changed from to N
Q12_A (Dominant veg: forested) was changed from to N
Q12_AA (Dominant veg: forested and dead) was changed from to N
Q12_AB (Dominant veg: forested and needle-leaved evergreen) was changed from to N
Q12_AC (Dominant veg: forested and broad-leaved evergreen) was changed from to N
Q12_AD (Dominant veg: forested and needle-leaved deciduous) was changed from to N
Q12_AE (Dominant veg: forested and broad-leaved deciduous) was changed from to N
Q12_B (Dominant veg: Scrub-shrub) was changed from to N
Q12_BA (Dominant veg: Scrub-shrub and dead) was changed from to N
Q12_BB (Dominant veg: Scrub-shrub and needle-leaved evergreen) was changed from to N
Q12_BC (Dominant veg: Scrub-shrub and broad-leaved evergreen) was changed from to N
Q12_BD (Dominant veg: Scrub-shrub and needle-leaved deciduous) was changed from to N
Q12_BE (Dominant veg: Scrub-shrub and broad-leaved deciduous) was changed from to N
Q12_C (Dominant veg: Aquatic bed) was changed from to N
Q12_CA (Dominant veg: Aquatic bed and algal) was changed from to N
Q12_CB (Dominant veg: Aquatic bed and floating vascular) was changed from to N
Q12_CC (Dominant veg: Aquatic bed and rooted vascular) was changed from to N
Q12_CD (Dominant veg: Aquatic bed and aquatic moss) was changed from to N
Q12_D (Dominant veg: Emergent) was changed from to Y
Q12_DA (Dominant veg: Emergent and persistent) was changed from to Y
Q12_DB (Dominant veg: Emergent and non-persistent) was changed from to N
Q12_E (Dominant veg: Moss lichen) was changed from to N
Q13_A (Secondary veg: forested) was changed from to N
Q13_AA (Secondary veg: forested and dead) was changed from to N
Q13_AB (Secondary veg: forested and needle-leaved evergreen) was changed from to N
Q13_AC (Secondary veg: forested and broad-leaved evergreen) was changed from to N
Q13_AD (Secondary veg: forested and needle-leaved deciduous) was changed from to N
Q13_AE (Secondary veg: forested and broad-leaved deciduous) was changed from to N
Q13_B (Secondary veg: Scrub-shrub) was changed from to N
Q13_BA (Secondary veg: Scrub-shrub and dead) was changed from to N
Q13_BB (Secondary veg: Scrub-shrub and needle-leaved evergreen) was changed from to N
Q13_BC (Secondary veg: Scrub-shrub and broad-leaved evergreen) was changed from to N
Q13_BD (Secondary veg: Scrub-shrub and needle-leaved deciduous) was changed from to N
Q13_BE (Secondary veg: Scrub-shrub and broad-leaved deciduous) was changed from to N
Q13_C (Secondary veg: Aquatic bed) was changed from to N
Q13_CA (Secondary veg: Aquatic bed and algal) was changed from to N
Q13_CB (Secondary veg: Aquatic bed and floating vascular) was changed from to N
Q13_CC (Secondary veg: Aquatic bed and rooted vascular) was changed from to y
Q13_CD (Secondary veg: Aquatic bed and aquatic moss) was changed from to N
Q13_D (Secondary veg: Emergent) was changed from to Y
Q13_DA (Secondary veg: Emergent and persistent) was changed from to Y
Q13_DB (Secondary veg: Emergent and non-persistent) was changed from to N
Q13_E (Secondary veg: Moss lichen) was changed from to N
Q14_1 (AA on 25 square foot island?) was changed from to y
Q14_2 (AA on 2 acre island?) was changed from to y
Q15_1_A (Vegetation<-->Water = solid form) was changed from to n
Q15_1_B (Vegetation<-->Water = intermediate) was changed from to N
Q15_1_C (Vegetation<-->Water = checkerboard) was changed from to y
Q15_2 (Channel flow spreading?) was changed from to N

Q16_A (Vegetation class = solid) was changed from to n
Q16_B (Vegetation class = intermediate) was changed from to N
Q16_C (Vegetation class = mosaic) was changed from to y
Q17 (Plant form richness) was changed from to y
Q18 (Upland<-->Wetland edge irregular?) was changed from to y
Q19_1_A (Wind shelter?) was changed from to N
Q19_1_B (Wind shelter + fetch?) was changed from to N
Q19_2 (Wave protection?) was changed from to N
Q19_3 (Upland habitat wind shelter?) was changed from to N

2 Q

I23 (Education opportunity?) was changed from N to y
I24 (Research resource?) was changed from n to y
Q9_2 (Sheet flooding?) was changed from N to y
Q13_CC (Secondary veg: Aquatic bed and rooted vascular) was changed from N to y
Q14_1 (AA on 25 square foot island?) was changed from N to y
Q14_2 (AA on 2 acre island?) was changed from N to y
Q15_1_B (Vegetation<-->Water = intermediate) was changed from Y to n
Q15_1_C (Vegetation<-->Water = checkerboard) was changed from N to y
Q16_A (Vegetation class = solid) was changed from Y to n
Q16_C (Vegetation class = mosaic) was changed from N to y
Q17 (Plant form richness) was changed from N to y
Q18 (Upland<-->Wetland edge irregular?) was changed from N to y
Q39 (Special habitat features?) was changed from N to y
Q46_B (Physical Habitat Interspersion = intermediate) was changed from Y to n
Q46_C (Physical Habitat Interspersion = mosaic) was changed from N to y
Q50 (Plants: waterfowl value?) was changed from N to y
Q61 (DO limiting to fish?) was changed from Y to n

2 R

I23 (Education opportunity?) was changed from N to y
I24 (Research resource?) was changed from N to y
Q9_2 (Sheet flooding?) was changed from N to y
Q13_CC (Secondary veg: Aquatic bed and rooted vascular) was changed from N to y
Q14_1 (AA on 25 square foot island?) was changed from N to y
Q14_2 (AA on 2 acre island?) was changed from N to y
Q16_A (Vegetation class = solid) was changed from Y to n
Q16_C (Vegetation class = mosaic) was changed from N to y
Q17 (Plant form richness) was changed from N to y
Q29_2 (Buffer zone slopes < 5%?) was changed from N to y
Q39 (Special habitat features?) was changed from N to y
Q46_B (Physical Habitat Interspersion = intermediate) was changed from Y to n
Q46_C (Physical Habitat Interspersion = mosaic) was changed from N to y
Q50 (Plants: waterfowl value?) was changed from N to y
Q61 (DO limiting to fish?) was changed from Y to n

2 T

I23 (Education opportunity?) was changed from N to y
I24 (Research resource?) was changed from N to y
Q8_3 (Permanent outlet?) was changed from N to y
Q9_2 (Sheet flooding?) was changed from N to y
Q13_CA (Secondary veg: Aquatic bed and algal) was changed from N to y
Q13_CC (Secondary veg: Aquatic bed and rooted vascular) was changed from N to y
Q14_1 (AA on 25 square foot island?) was changed from N to y
Q15_1_A (Vegetation<-->Water = solid form) was changed from Y to n
Q15_1_C (Vegetation<-->Water = checkerboard) was changed from N to y
Q15_2 (Channel flow spreading?) was changed from N to y
Q16_B (Vegetation class = intermediate) was changed from Y to n
Q16_C (Vegetation class = mosaic) was changed from N to y
Q17 (Plant form richness) was changed from N to y
Q18 (Upland<-->Wetland edge irregular?) was changed from N to y
Q29_1 (Dense understory edge?) was changed from N to y
Q31_2 (Area of Zone B > 10% of AA?) was changed from N to y
Q32_G (Spatial Dominant Hydroperiod = intermit flooded nontidal?) was changed from Y to n
Q32_I (Spatial Dominant Hydroperiod = regularly flooded tidal?) was changed from N to y
Q33_C (Permanent Hydroperiod = semiperm flooded nontidal?) was changed from Y to n
Q33_J (Permanent Hydroperiod = irregularly exposed tidal?) was changed from N to y
Q39 (Special habitat features?) was changed from N to y
Q46_A (Physical Habitat Interspersion = uniform) was changed from Y to n
Q46_C (Physical Habitat Interspersion = mosaic) was changed from N to y
Q49_1_1 (20%-80% Pools?) was changed from N to y

Q49_1_2 (Riffles?) was changed from N to y
Q49_2 (Fish cover?) was changed from N to y
Q50 (Plants: waterfowl value?) was changed from N to y

2 U

I23 (Education opportunity?) was changed from N to y
I24 (Research resource?) was changed from N to y
Q9_2 (Sheet flooding?) was changed from N to y
Q13_CA (Secondary veg: Aquatic bed and algal) was changed from N to y
Q15_1_B (Vegetation<-->Water = intermediate) was changed from Y to n
Q15_1_C (Vegetation<-->Water = checkerboard) was changed from N to y
Q15_2 (Channel flow spreading?) was changed from N to y
Q16_A (Vegetation class = solid) was changed from Y to n
Q16_C (Vegetation class = mosaic) was changed from N to y
Q17 (Plant form richness) was changed from N to y
Q18 (Upland<-->Wetland edge irregular?) was changed from N to y
Q22_1_2 (AA contains a Sinuous channel?) was changed from N to y
Q31_6_B (emergent in Zone B = 1% - 30% of Zones B and C?) was changed from Y to n
Q31_6_C (emergent in Zone B = 31% - 60% of Zones B and C?) was changed from N to y
Q33_I (Permanent Hydroperiod = regularly flooded tidal?) was changed from Y to n
Q33_J (Permanent Hydroperiod = irregularly exposed tidal?) was changed from N to y
Q39 (Special habitat features?) was changed from N to y
Q44_A (Secondary Water Depth < 1 inch) was changed from N to y
Q46_A (Physical Habitat Interspersion = uniform) was changed from Y to n
Q46_C (Physical Habitat Interspersion = mosaic) was changed from N to y

2 V

I1 (Threatened/Endangered Species?) was changed from to N
I2 (Designated/Controlled Area?) was changed from to N
I3 (State Listed Cultural Resource?) was changed from to N
I4 (Unusual or rare local type?) was changed from to N
I5 (Only wetland in locality?) was changed from to N
I6 (Substantial previous $ expenditure?) was changed from to N
I7 (Unnaturally high salinities?) was changed from to N
I10 (Dredging - spawning - ss) was changed from to Y
I11 (WWTP Priority Areas?) was changed from to Y
I12 (Drinking water supplies?) was changed from to N
I13 (Nutrient sensitive waters?) was changed from to Y
I14 (Bathing areas?) was changed from to N
I15 (Sole source aquifer, groundwater discharge ?) was changed from to Y
I16 (Actively used wells?) was changed from to N
I17 (Wildlife critically flow limited?) was changed from to N
I18 (Features in erosion prone areas?) was changed from to N
I19 (USFWS/IRP fishery?) was changed from to N
I20 (USFWS/IRP wildlife?) was changed from to Y
I21 (USFWS Waterfowl Use Region?) was changed from to Y
I22 (Limited dependent species?) was changed from to N
I23 (Education opportunity?) was changed from to y
I24 (Research resource?) was changed from to y
I25 (Pristine?) was changed from to N
I26 (Recreation in deficient area?) was changed from to N
I27 (Recreation access point?) was changed from to N
I28 (Urban area?) was changed from to Y
I29 (Only or closest to named feature?) was changed from to N
I30 (Region losing this type?) was changed from to Y
I31 (Acreage > than % annual loss rate?) was changed from to N
Q1_1 (Evaporation > precipitation?) was changed from to N
Q1_2 (Rainfall-erosivity > 300?) was changed from to N
Q1_3 (Freeze-over > one month?) was changed from to N
Q2_1_1 (Area < 5 acres?) was changed from to N
Q2_1_2 (Area > 40 acres?) was changed from to y
Q2_1_3 (Area > 200 acres?) was changed from to N
Q3_1 (Another Wet Depression within 1 mile?) was changed from to Y
Q3_2 (Cluster wetland?) was changed from to Y
Q3_3 (Oasis wetland?) was changed from to N
Q4_1 (< 5 miles to major water?) was changed from to Y
Q4_2A (< 1 square mile watershed?) was changed from to Y
Q4_2B (1 -100 square mile watershed?) was changed from to N
Q4_2C (100-2500 square mile watershed?) was changed from to N
Q4_2D (> 2500 square mile watershed?) was changed from to N

Q5_1_1 (AA < 5% of watershed?) was changed from to N
Q5_1_2 (AA > 20% of watershed?) was changed from to Y
Q5_2 (Upslope wet depressions > 5% of watershed?) was changed from to N
Q6_1 (Downslope drop > upslope rise?) was changed from to Y
Q7 (v < 10 cm/s?) was changed from to I
Q8_1 (Permanent inlet?) was changed from to Y
Q8_2 (Intermittent inlet?) was changed from to N
Q8_3 (Permanent outlet?) was changed from to Y
Q8_4 (Intermittent outlet?) was changed from to N
Q9_1 (Outlet < one third average width?) was changed from to N
Q9_2 (Sheet flooding?) was changed from to y
Q10_A (Lacustrine?) was changed from to N
Q10_B (Palustrine?) was changed from to N
Q10_C (Riverine nontidal?) was changed from to N
Q10_D (Riverine tidal?) was changed from to N
Q10_E (Estuarine?) was changed from to Y
Q10_F (Marine?) was changed from to N
Q11 (Fringe or island wetland?) was changed from to N
Q12_A (Dominant veg: forested) was changed from to N
Q12_AA (Dominant veg: forested and dead) was changed from to N
Q12_AB (Dominant veg: forested and needle-leaved evergreen) was changed from to N
Q12_AC (Dominant veg: forested and broad-leaved evergreen) was changed from to N
Q12_AD (Dominant veg: forested and needle-leaved deciduous) was changed from to N
Q12_AE (Dominant veg: forested and broad-leaved deciduous) was changed from to N
Q12_B (Dominant veg: Scrub-shrub) was changed from to N
Q12_BA (Dominant veg: Scrub-shrub and dead) was changed from to N
Q12_BB (Dominant veg: Scrub-shrub and needle-leaved evergreen) was changed from to N
Q12_BC (Dominant veg: Scrub-shrub and broad-leaved evergreen) was changed from to N
Q12_BD (Dominant veg: Scrub-shrub and needle-leaved deciduous) was changed from to N
Q12_BE (Dominant veg: Scrub-shrub and broad-leaved deciduous) was changed from to N
Q12_C (Dominant veg: Aquatic bed) was changed from to N
Q12_CA (Dominant veg: Aquatic bed and algal) was changed from to N
Q12_CB (Dominant veg: Aquatic bed and floating vascular) was changed from to N
Q12_CC (Dominant veg: Aquatic bed and rooted vascular) was changed from to N
Q12_CD (Dominant veg: Aquatic bed and aquatic moss) was changed from to N
Q12_D (Dominant veg: Emergent) was changed from to Y
Q12_DA (Dominant veg: Emergent and persistent) was changed from to Y
Q12_DB (Dominant veg: Emergent and non-persistent) was changed from to N
Q12_E (Dominant veg: Moss lichen) was changed from to N
Q13_A (Secondary veg: forested) was changed from to N
Q13_AA (Secondary veg: forested and dead) was changed from to N
Q13_AB (Secondary veg: forested and needle-leaved evergreen) was changed from to N
Q13_AC (Secondary veg: forested and broad-leaved evergreen) was changed from to N
Q13_AD (Secondary veg: forested and needle-leaved deciduous) was changed from to N
Q13_AE (Secondary veg: forested and broad-leaved deciduous) was changed from to N
Q13_B (Secondary veg: Scrub-shrub) was changed from to N
Q13_BA (Secondary veg: Scrub-shrub and dead) was changed from to N
Q13_BB (Secondary veg: Scrub-shrub and needle-leaved evergreen) was changed from to N
Q13_BC (Secondary veg: Scrub-shrub and broad-leaved evergreen) was changed from to N
Q13_BD (Secondary veg: Scrub-shrub and needle-leaved deciduous) was changed from to N
Q13_BE (Secondary veg: Scrub-shrub and broad-leaved deciduous) was changed from to N
Q13_C (Secondary veg: Aquatic bed) was changed from to N
Q13_CA (Secondary veg: Aquatic bed and algal) was changed from to y
Q13_CB (Secondary veg: Aquatic bed and floating vascular) was changed from to N
Q13_CC (Secondary veg: Aquatic bed and rooted vascular) was changed from to y
Q13_CD (Secondary veg: Aquatic bed and aquatic moss) was changed from to N
Q13_D (Secondary veg: Emergent) was changed from to Y
Q13_DA (Secondary veg: Emergent and persistent) was changed from to Y
Q13_DB (Secondary veg: Emergent and non-persistent) was changed from to N
Q13_E (Secondary veg: Moss lichen) was changed from to N
Q14_1 (AA on 25 square foot island?) was changed from to N
Q14_2 (AA on 2 acre island?) was changed from to N
Q15_1_A (Vegetation<-->Water = solid form) was changed from to N
Q15_1_B (Vegetation<-->Water = intermediate) was changed from to n
Q15_1_C (Vegetation<-->Water = checkerboard) was changed from to y
Q15_2 (Channel flow spreading?) was changed from to Y
Q16_A (Vegetation class = solid) was changed from to n
Q16_B (Vegetation class = intermediate) was changed from to N

Q16_C (Vegetation class = mosaic) was changed from to y
Q17 (Plant form richness) was changed from to y
Q18 (Upland<-->Wetland edge irregular?) was changed from to y
Q19_1_A (Wind shelter?) was changed from to Y
Q19_1_B (Wind shelter + fetch?) was changed from to N
Q19_2 (Wave protection?) was changed from to N

2 W

I1 (Threatened/Endangered Species?) was changed from to N
I2 (Designated/Controlled Area?) was changed from to N
I3 (State Listed Cultural Resource?) was changed from to N
I4 (Unusual or rare local type?) was changed from to N
I5 (Only wetland in locality?) was changed from to N
I6 (Substantial previous $ expenditure?) was changed from to N
I7 (Unnaturally high salinities?) was changed from to N
I10 (Dredging - spawning - ss) was changed from to Y
I11 (WWTP Priority Areas?) was changed from to Y
I12 (Drinking water supplies?) was changed from to N
I13 (Nutrient sensitive waters?) was changed from to Y
I14 (Bathing areas?) was changed from to N
I15 (Sole source aquifer, groundwater discharge ?) was changed from to Y
I16 (Actively used wells?) was changed from to N
I17 (Wildlife critically flow limited?) was changed from to N
I18 (Features in erosion prone areas?) was changed from to N
I19 (USFWS/IRP fishery?) was changed from to N
I20 (USFWS/IRP wildlife?) was changed from to Y
I21 (USFWS Waterfowl Use Region?) was changed from to Y
I22 (Limited dependent species?) was changed from to N
I23 (Education opportunity?) was changed from to N
I24 (Research resource?) was changed from to N
I25 (Pristine?) was changed from to N
I26 (Recreation in deficient area?) was changed from to N
I27 (Recreation access point?) was changed from to N
I28 (Urban area?) was changed from to Y
I29 (Only or closest to named feature?) was changed from to N
I30 (Region losing this type?) was changed from to Y
I31 (Acreage > than % annual loss rate?) was changed from to N
Q1_1 (Evaporation > precipitation?) was changed from to N
Q1_2 (Rainfall-erosivity > 300?) was changed from to N
Q1_3 (Freeze-over > one month?) was changed from to N
Q2_1_1 (Area < 5 acres?) was changed from to N
Q2_1_2 (Area > 40 acres?) was changed from to N
Q2_1_3 (Area > 200 acres?) was changed from to N
Q3_1 (Another Wet Depression within 1 mile?) was changed from to Y
Q3_2 (Cluster wetland?) was changed from to Y
Q3_3 (Oasis wetland?) was changed from to N
Q4_1 (< 5 miles to major water?) was changed from to Y
Q4_2A (< 1 square mile watershed?) was changed from to Y
Q4_2B (1 -100 square mile watershed?) was changed from to N
Q4_2C (100-2500 square mile watershed?) was changed from to N
Q4_2D (> 2500 square mile watershed?) was changed from to N
Q5_1_1 (AA < 5% of watershed?) was changed from to N
Q5_1_2 (AA > 20% of watershed?) was changed from to Y
Q5_2 (Upslope wet depressions > 5% of watershed?) was changed from to N
Q6_1 (Downslope drop > upslope rise?) was changed from to Y
Q7 (v < 10 cm/s?) was changed from to I
Q8_1 (Permanent inlet?) was changed from to Y
Q8_2 (Intermittent inlet?) was changed from to N
Q8_3 (Permanent outlet?) was changed from to Y
Q8_4 (Intermittent outlet?) was changed from to N
Q9_1 (Outlet < one third average width?) was changed from to N
Q9_2 (Sheet flooding?) was changed from to N
Q10_A (Lacustrine?) was changed from to N
Q10_B (Palustrine?) was changed from to N
Q10_C (Riverine nontidal?) was changed from to N
Q10_D (Riverine tidal?) was changed from to N
Q10_E (Estuarine?) was changed from to Y
Q10_F (Marine?) was changed from to N
Q11 (Fringe or island wetland?) was changed from to N

Q12_A (Dominant veg: forested) was changed from to N
Q12_AA (Dominant veg: forested and dead) was changed from to N
Q12_AB (Dominant veg: forested and needle-leaved evergreen) was changed from to N
Q12_AC (Dominant veg: forested and broad-leaved evergreen) was changed from to N
Q12_AD (Dominant veg: forested and needle-leaved deciduous) was changed from to N
Q12_AE (Dominant veg: forested and broad-leaved deciduous) was changed from to N
Q12_B (Dominant veg: Scrub-shrub) was changed from to N
Q12_BA (Dominant veg: Scrub-shrub and dead) was changed from to N
Q12_BB (Dominant veg: Scrub-shrub and needle-leaved evergreen) was changed from to N
Q12_BC (Dominant veg: Scrub-shrub and broad-leaved evergreen) was changed from to N
Q12_BD (Dominant veg: Scrub-shrub and needle-leaved deciduous) was changed from to N
Q12_BE (Dominant veg: Scrub-shrub and broad-leaved deciduous) was changed from to N
Q12_C (Dominant veg: Aquatic bed) was changed from to N
Q12_CA (Dominant veg: Aquatic bed and algal) was changed from to N
Q12_CB (Dominant veg: Aquatic bed and floating vascular) was changed from to N
Q12_CC (Dominant veg: Aquatic bed and rooted vascular) was changed from to N
Q12_CD (Dominant veg: Aquatic bed and aquatic moss) was changed from to N
Q12_D (Dominant veg: Emergent) was changed from to Y
Q12_DA (Dominant veg: Emergent and persistent) was changed from to Y
Q12_DB (Dominant veg: Emergent and non-persistent) was changed from to N
Q12_E (Dominant veg: Moss lichen) was changed from to N
Q13_A (Secondary veg: forested) was changed from to N
Q13_AA (Secondary veg: forested and dead) was changed from to N
Q13_AB (Secondary veg: forested and needle-leaved evergreen) was changed from to N
Q13_AC (Secondary veg: forested and broad-leaved evergreen) was changed from to N
Q13_AD (Secondary veg: forested and needle-leaved deciduous) was changed from to N
Q13_AE (Secondary veg: forested and broad-leaved deciduous) was changed from to N
Q13_B (Secondary veg: Scrub-shrub) was changed from to N
Q13_BA (Secondary veg: Scrub-shrub and dead) was changed from to N
Q13_BB (Secondary veg: Scrub-shrub and needle-leaved evergreen) was changed from to N
Q13_BC (Secondary veg: Scrub-shrub and broad-leaved evergreen) was changed from to N
Q13_BD (Secondary veg: Scrub-shrub and needle-leaved deciduous) was changed from to N
Q13_BE (Secondary veg: Scrub-shrub and broad-leaved deciduous) was changed from to N
Q13_C (Secondary veg: Aquatic bed) was changed from to N
Q13_CA (Secondary veg: Aquatic bed and algal) was changed from to N
Q13_CB (Secondary veg: Aquatic bed and floating vascular) was changed from to N
Q13_CC (Secondary veg: Aquatic bed and rooted vascular) was changed from to y
Q13_CD (Secondary veg: Aquatic bed and aquatic moss) was changed from to N
Q13_D (Secondary veg: Emergent) was changed from to Y
Q13_DA (Secondary veg: Emergent and persistent) was changed from to Y
Q13_DB (Secondary veg: Emergent and non-persistent) was changed from to N
Q13_E (Secondary veg: Moss lichen) was changed from to N
Q14_1 (AA on 25 square foot island?) was changed from to N
Q14_2 (AA on 2 acre island?) was changed from to N
Q15_1_A (Vegetation<-->Water = solid form) was changed from to N
Q15_1_B (Vegetation<-->Water = intermediate) was changed from to n
Q15_1_C (Vegetation<-->Water = checkerboard) was changed from to y
Q15_2 (Channel flow spreading?) was changed from to Y
Q16_A (Vegetation class = solid) was changed from to n
Q16_B (Vegetation class = intermediate) was changed from to N
Q16_C (Vegetation class = mosaic) was changed from to y
Q17 (Plant form richness) was changed from to y
Q18 (Upland<-->Wetland edge irregular?) was changed from to N
Q19_1_A (Wind shelter?) was changed from to Y
Q19_1_B (Wind shelter + fetch?) was changed from to N
Q19_2 (Wave protection?) was changed from to N

2 X

I1 (Threatened/Endangered Species?) was changed from to Y
I2 (Designated/Controlled Area?) was changed from to N
I3 (State Listed Cultural Resource?) was changed from to N
I4 (Unusual or rare local type?) was changed from to N
I5 (Only wetland in locality?) was changed from to N
I6 (Substantial previous $ expenditure?) was changed from to N
I7 (Unnaturally high salinities?) was changed from to N
I10 (Dredging - spawning - ss) was changed from to Y
I11 (WWTP Priority Areas?) was changed from to Y
I12 (Drinking water supplies?) was changed from to N
I13 (Nutrient sensitive waters?) was changed from to Y

I14 (Bathing areas?) was changed from to N
I15 (Sole source aquifer, groundwater discharge ?) was changed from to Y
I16 (Actively used wells?) was changed from to N
I17 (Wildlife critically flow limited?) was changed from to N
I18 (Features in erosion prone areas?) was changed from to N
I19 (USFWS/IRP fishery?) was changed from to N
I20 (USFWS/IRP wildlife?) was changed from to Y
I21 (USFWS Waterfowl Use Region?) was changed from to Y
I22 (Limited dependent species?) was changed from to N
I23 (Education opportunity?) was changed from to y
I24 (Research resource?) was changed from to y
I25 (Pristine?) was changed from to N
I26 (Recreation in deficient area?) was changed from to N
I27 (Recreation access point?) was changed from to N
I28 (Urban area?) was changed from to Y
I29 (Only or closest to named feature?) was changed from to N
I30 (Region losing this type?) was changed from to Y
I31 (Acreage > than % annual loss rate?) was changed from to N
Q1_1 (Evaporation > precipitation?) was changed from to N
Q1_2 (Rainfall-erosivity > 300?) was changed from to N
Q1_3 (Freeze-over > one month?) was changed from to N
Q2_1_1 (Area < 5 acres?) was changed from to N
Q2_1_2 (Area > 40 acres?) was changed from to Y
Q2_1_3 (Area > 200 acres?) was changed from to y
Q3_1 (Another Wet Depression within 1 mile?) was changed from to Y
Q3_2 (Cluster wetland?) was changed from to Y
Q3_3 (Oasis wetland?) was changed from to N
Q4_1 (< 5 miles to major water?) was changed from to Y
Q4_2A (< 1 square mile watershed?) was changed from to Y
Q4_2B (1 -100 square mile watershed?) was changed from to N
Q4_2C (100-2500 square mile watershed?) was changed from to N
Q4_2D (> 2500 square mile watershed?) was changed from to N
Q5_1_1 (AA < 5% of watershed?) was changed from to N
Q5_1_2 (AA > 20% of watershed?) was changed from to Y
Q5_2 (Upslope wet depressions > 5% of watershed?) was changed from to N
Q6_1 (Downslope drop > upslope rise?) was changed from to Y
Q7 (v < 10 cm/s?) was changed from to I
Q8_1 (Permanent inlet?) was changed from to N
Q8_2 (Intermittent inlet?) was changed from to N
Q8_3 (Permanent outlet?) was changed from to y
Q8_4 (Intermittent outlet?) was changed from to N
Q10_A (Lacustrine?) was changed from to N
Q10_B (Palustrine?) was changed from to Y
Q10_C (Riverine nontidal?) was changed from to N
Q10_D (Riverine tidal?) was changed from to N
Q10_E (Estuarine?) was changed from to N
Q10_F (Marine?) was changed from to N
Q11 (Fringe or island wetland?) was changed from to N
Q12_A (Dominant veg: forested) was changed from to N
Q12_AA (Dominant veg: forested and dead) was changed from to N
Q12_AB (Dominant veg: forested and needle-leaved evergreen) was changed from to N
Q12_AC (Dominant veg: forested and broad-leaved evergreen) was changed from to N
Q12_AD (Dominant veg: forested and needle-leaved deciduous) was changed from to N
Q12_AE (Dominant veg: forested and broad-leaved deciduous) was changed from to N
Q12_B (Dominant veg: Scrub-shrub) was changed from to N
Q12_BA (Dominant veg: Scrub-shrub and dead) was changed from to N
Q12_BB (Dominant veg: Scrub-shrub and needle-leaved evergreen) was changed from to N
Q12_BC (Dominant veg: Scrub-shrub and broad-leaved evergreen) was changed from to N
Q12_BD (Dominant veg: Scrub-shrub and needle-leaved deciduous) was changed from to N
Q12_BE (Dominant veg: Scrub-shrub and broad-leaved deciduous) was changed from to N
Q12_C (Dominant veg: Aquatic bed) was changed from to N
Q12_CA (Dominant veg: Aquatic bed and algal) was changed from to N
Q12_CB (Dominant veg: Aquatic bed and floating vascular) was changed from to N
Q12_CC (Dominant veg: Aquatic bed and rooted vascular) was changed from to N
Q12_CD (Dominant veg: Aquatic bed and aquatic moss) was changed from to N
Q12_D (Dominant veg: Emergent) was changed from to Y
Q12_DA (Dominant veg: Emergent and persistent) was changed from to Y
Q12_DB (Dominant veg: Emergent and non-persistent) was changed from to N

Q12_E (Dominant veg: Moss lichen) was changed from to N
Q13_A (Secondary veg: forested) was changed from to N
Q13_AA (Secondary veg: forested and dead) was changed from to N
Q13_AB (Secondary veg: forested and needle-leaved evergreen) was changed from to N
Q13_AC (Secondary veg: forested and broad-leaved evergreen) was changed from to N
Q13_AD (Secondary veg: forested and needle-leaved deciduous) was changed from to N
Q13_AE (Secondary veg: forested and broad-leaved deciduous) was changed from to N
Q13_B (Secondary veg: Scrub-shrub) was changed from to N
Q13_BA (Secondary veg: Scrub-shrub and dead) was changed from to N
Q13_BB (Secondary veg: Scrub-shrub and needle-leaved evergreen) was changed from to N
Q13_BC (Secondary veg: Scrub-shrub and broad-leaved evergreen) was changed from to N
Q13_BD (Secondary veg: Scrub-shrub and needle-leaved deciduous) was changed from to N
Q13_BE (Secondary veg: Scrub-shrub and broad-leaved deciduous) was changed from to N
Q13_C (Secondary veg: Aquatic bed) was changed from to N
Q13_CA (Secondary veg: Aquatic bed and algal) was changed from to y
Q13_CB (Secondary veg: Aquatic bed and floating vascular) was changed from to N
Q13_CC (Secondary veg: Aquatic bed and rooted vascular) was changed from to y
Q13_CD (Secondary veg: Aquatic bed and aquatic moss) was changed from to N
Q13_D (Secondary veg: Emergent) was changed from to Y
Q13_DA (Secondary veg: Emergent and persistent) was changed from to Y
Q13_DB (Secondary veg: Emergent and non-persistent) was changed from to N
Q13_E (Secondary veg: Moss lichen) was changed from to N
Q14_1 (AA on 25 square foot island?) was changed from to y
Q14_2 (AA on 2 acre island?) was changed from to y
Q15_1_A (Vegetation<-->Water = solid form) was changed from to n
Q15_1_B (Vegetation<-->Water = intermediate) was changed from to N
Q15_1_C (Vegetation<-->Water = checkerboard) was changed from to y
Q16_A (Vegetation class = solid) was changed from to n
Q16_B (Vegetation class = intermediate) was changed from to N
Q16_C (Vegetation class = mosaic) was changed from to y
Q17 (Plant form richness) was changed from to y
Q18 (Upland<-->Wetland edge irregular?) was changed from to y
Q19_1_A (Wind shelter?) was changed from to N
Q19_1_B (Wind shelter + fetch?) was changed from to N
Q19_2 (Wave protection?) was changed from to N
2 YA
I1 (Threatened/Endangered Species?) was changed from to N
I2 (Designated/Controlled Area?) was changed from to N
I3 (State Listed Cultural Resource?) was changed from to N
I4 (Unusual or rare local type?) was changed from to N
I5 (Only wetland in locality?) was changed from to N
I6 (Substantial previous $ expenditure?) was changed from to N
I7 (Unnaturally high salinities?) was changed from to N
I10 (Dredging - spawning - ss) was changed from to Y
I11 (WWTP Priority Areas?) was changed from to Y
I12 (Drinking water supplies?) was changed from to N
I13 (Nutrient sensitive waters?) was changed from to Y
I14 (Bathing areas?) was changed from to N
I15 (Sole source aquifer, groundwater discharge ?) was changed from to Y
I16 (Actively used wells?) was changed from to N
I17 (Wildlife critically flow limited?) was changed from to N
I18 (Features in erosion prone areas?) was changed from to N
I19 (USFWS/IRP fishery?) was changed from to N
I20 (USFWS/IRP wildlife?) was changed from to Y
I21 (USFWS Waterfowl Use Region?) was changed from to Y
I22 (Limited dependent species?) was changed from to N
I23 (Education opportunity?) was changed from to y
I24 (Research resource?) was changed from to y
I25 (Pristine?) was changed from to N
I26 (Recreation in deficient area?) was changed from to N
I27 (Recreation access point?) was changed from to N
I28 (Urban area?) was changed from to Y
I29 (Only or closest to named feature?) was changed from to N
I30 (Region losing this type?) was changed from to Y
I31 (Acreage > than % annual loss rate?) was changed from to N
Q1_1 (Evaporation > precipitation?) was changed from to N
Q1_2 (Rainfall-erosivity > 300?) was changed from to N
Q1_3 (Freeze-over > one month?) was changed from to N

Q2_1_1 (Area < 5 acres?) was changed from to N
Q2_1_2 (Area > 40 acres?) was changed from to y
Q2_1_3 (Area > 200 acres?) was changed from to y
Q3_1 (Another Wet Depression within 1 mile?) was changed from to Y
Q3_2 (Cluster wetland?) was changed from to Y
Q3_3 (Oasis wetland?) was changed from to N
Q4_1 (< 5 miles to major water?) was changed from to Y
Q4_2A (< 1 square mile watershed?) was changed from to Y
Q4_2B (1 -100 square mile watershed?) was changed from to N
Q4_2C (100-2500 square mile watershed?) was changed from to N
Q4_2D (> 2500 square mile watershed?) was changed from to N
Q5_1_1 (AA < 5% of watershed?) was changed from to N
Q5_1_2 (AA > 20% of watershed?) was changed from to Y
Q5_2 (Upslope wet depressions > 5% of watershed?) was changed from to N
Q6_1 (Downslope drop > upslope rise?) was changed from to Y
Q7 (v < 10 cm/s?) was changed from to I
Q8_1 (Permanent inlet?) was changed from to N
Q8_2 (Intermittent inlet?) was changed from to N
Q8_3 (Permanent outlet?) was changed from to y
Q8_4 (Intermittent outlet?) was changed from to N
Q10_A (Lacustrine?) was changed from to N
Q10_B (Palustrine?) was changed from to Y
Q10_C (Riverine nontidal?) was changed from to N
Q10_D (Riverine tidal?) was changed from to N
Q10_E (Estuarine?) was changed from to N
Q10_F (Marine?) was changed from to N
Q11 (Fringe or island wetland?) was changed from to N
Q12_A (Dominant veg: forested) was changed from to N
Q12_AA (Dominant veg: forested and dead) was changed from to N
Q12_AB (Dominant veg: forested and needle-leaved evergreen) was changed from to N
Q12_AC (Dominant veg: forested and broad-leaved evergreen) was changed from to N
Q12_AD (Dominant veg: forested and needle-leaved deciduous) was changed from to N
Q12_AE (Dominant veg: forested and broad-leaved deciduous) was changed from to N
Q12_B (Dominant veg: Scrub-shrub) was changed from to N
Q12_BA (Dominant veg: Scrub-shrub and dead) was changed from to N
Q12_BB (Dominant veg: Scrub-shrub and needle-leaved evergreen) was changed from to N
Q12_BC (Dominant veg: Scrub-shrub and broad-leaved evergreen) was changed from to N
Q12_BD (Dominant veg: Scrub-shrub and needle-leaved deciduous) was changed from to N
Q12_BE (Dominant veg: Scrub-shrub and broad-leaved deciduous) was changed from to N
Q12_C (Dominant veg: Aquatic bed) was changed from to N
Q12_CA (Dominant veg: Aquatic bed and algal) was changed from to N
Q12_CB (Dominant veg: Aquatic bed and floating vascular) was changed from to N
Q12_CC (Dominant veg: Aquatic bed and rooted vascular) was changed from to N
Q12_CD (Dominant veg: Aquatic bed and aquatic moss) was changed from to N
Q12_D (Dominant veg: Emergent) was changed from to Y
Q12_DA (Dominant veg: Emergent and persistent) was changed from to Y
Q12_DB (Dominant veg: Emergent and non-persistent) was changed from to N
Q12_E (Dominant veg: Moss lichen) was changed from to N
Q13_A (Secondary veg: forested) was changed from to N
Q13_AA (Secondary veg: forested and dead) was changed from to N
Q13_AB (Secondary veg: forested and needle-leaved evergreen) was changed from to N
Q13_AC (Secondary veg: forested and broad-leaved evergreen) was changed from to N
Q13_AD (Secondary veg: forested and needle-leaved deciduous) was changed from to N
Q13_AE (Secondary veg: forested and broad-leaved deciduous) was changed from to N
Q13_B (Secondary veg: Scrub-shrub) was changed from to N
Q13_BA (Secondary veg: Scrub-shrub and dead) was changed from to N
Q13_BB (Secondary veg: Scrub-shrub and needle-leaved evergreen) was changed from to N
Q13_BC (Secondary veg: Scrub-shrub and broad-leaved evergreen) was changed from to N
Q13_BD (Secondary veg: Scrub-shrub and needle-leaved deciduous) was changed from to N
Q13_BE (Secondary veg: Scrub-shrub and broad-leaved deciduous) was changed from to N
Q13_C (Secondary veg: Aquatic bed) was changed from to N
Q13_CA (Secondary veg: Aquatic bed and algal) was changed from to y
Q13_CB (Secondary veg: Aquatic bed and floating vascular) was changed from to N
Q13_CC (Secondary veg: Aquatic bed and rooted vascular) was changed from to N
Q13_CD (Secondary veg: Aquatic bed and aquatic moss) was changed from to N
Q13_D (Secondary veg: Emergent) was changed from to Y
Q13_DA (Secondary veg: Emergent and persistent) was changed from to Y
Q13_DB (Secondary veg: Emergent and non-persistent) was changed from to N

Q13_E (Secondary veg: Moss lichen) was changed from to N
Q14_1 (AA on 25 square foot island?) was changed from to N
Q14_2 (AA on 2 acre island?) was changed from to N
Q15_1_A (Vegetation<-->Water = solid form) was changed from to n
Q15_1_B (Vegetation<-->Water = intermediate) was changed from to N
Q15_1_C (Vegetation<-->Water = checkerboard) was changed from to y
Q16_A (Vegetation class = solid) was changed from to n
Q16_B (Vegetation class = intermediate) was changed from to N
Q16_C (Vegetation class = mosaic) was changed from to y
Q17 (Plant form richness) was changed from to y
Q18 (Upland<-->Wetland edge irregular?) was changed from to y
Q19_1_A (Wind shelter?) was changed from to N
Q19_1_B (Wind shelter + fetch?) was changed from to N
Q19_2 (Wave protection?) was changed from to N

2 YB

I1 (Threatened/Endangered Species?) was changed from to N
I2 (Designated/Controlled Area?) was changed from to N
I3 (State Listed Cultural Resource?) was changed from to N
I4 (Unusual or rare local type?) was changed from to N
I5 (Only wetland in locality?) was changed from to N
I6 (Substantial previous $ expenditure?) was changed from to N
I7 (Unnaturally high salinities?) was changed from to N
I10 (Dredging - spawning - ss) was changed from to Y
I11 (WWTP Priority Areas?) was changed from to Y
I12 (Drinking water supplies?) was changed from to N
I13 (Nutrient sensitive waters?) was changed from to Y
I14 (Bathing areas?) was changed from to N
I15 (Sole source aquifer, groundwater discharge ?) was changed from to Y
I16 (Actively used wells?) was changed from to N
I17 (Wildlife critically flow limited?) was changed from to N
I18 (Features in erosion prone areas?) was changed from to N
I19 (USFWS/IRP fishery?) was changed from to N
I20 (USFWS/IRP wildlife?) was changed from to Y
I21 (USFWS Waterfowl Use Region?) was changed from to Y
I22 (Limited dependent species?) was changed from to N
I23 (Education opportunity?) was changed from to y
I24 (Research resource?) was changed from to y
I25 (Pristine?) was changed from to N
I26 (Recreation in deficient area?) was changed from to N
I27 (Recreation access point?) was changed from to N
I28 (Urban area?) was changed from to Y
I29 (Only or closest to named feature?) was changed from to N
I30 (Region losing this type?) was changed from to Y
I31 (Acreage > than % annual loss rate?) was changed from to N
Q1_1 (Evaporation > precipitation?) was changed from to N
Q1_2 (Rainfall-erosivity > 300?) was changed from to N
Q1_3 (Freeze-over > one month?) was changed from to N
Q2_1_1 (Area < 5 acres?) was changed from to N
Q2_1_2 (Area > 40 acres?) was changed from to y
Q2_1_3 (Area > 200 acres?) was changed from to y
Q3_1 (Another Wet Depression within 1 mile?) was changed from to Y
Q3_2 (Cluster wetland?) was changed from to Y
Q3_3 (Oasis wetland?) was changed from to N
Q4_1 (< 5 miles to major water?) was changed from to Y
Q5_1_1 (AA < 5% of watershed?) was changed from to N
Q5_1_2 (AA > 20% of watershed?) was changed from to Y
Q5_2 (Upslope wet depressions > 5% of watershed?) was changed from to Y
Q6_1 (Downslope drop > upslope rise?) was changed from to Y
Q7 (v < 10 cm/s?) was changed from to I
Q8_1 (Permanent inlet?) was changed from to Y
Q8_2 (Intermittent inlet?) was changed from to N
Q8_3 (Permanent outlet?) was changed from to Y
Q8_4 (Intermittent outlet?) was changed from to N
Q9_1 (Outlet < one third average width?) was changed from to Y
Q9_2 (Sheet flooding?) was changed from to y
Q10_A (Lacustrine?) was changed from to N
Q10_B (Palustrine?) was changed from to N
Q10_C (Riverine nontidal?) was changed from to N

Q10_D (Riverine tidal?) was changed from to N
Q10_E (Estuarine?) was changed from to Y
Q10_F (Marine?) was changed from to N
Q11 (Fringe or island wetland?) was changed from to N
Q12_A (Dominant veg: forested) was changed from to N
Q12_AA (Dominant veg: forested and dead) was changed from to N
Q12_AB (Dominant veg: forested and needle-leaved evergreen) was changed from to N
Q12_AC (Dominant veg: forested and broad-leaved evergreen) was changed from to N
Q12_AD (Dominant veg: forested and needle-leaved deciduous) was changed from to N
Q12_AE (Dominant veg: forested and broad-leaved deciduous) was changed from to N
Q12_B (Dominant veg: Scrub-shrub) was changed from to N
Q12_BA (Dominant veg: Scrub-shrub and dead) was changed from to N
Q12_BB (Dominant veg: Scrub-shrub and needle-leaved evergreen) was changed from to N
Q12_BC (Dominant veg: Scrub-shrub and broad-leaved evergreen) was changed from to N
Q12_BD (Dominant veg: Scrub-shrub and needle-leaved deciduous) was changed from to N
Q12_BE (Dominant veg: Scrub-shrub and broad-leaved deciduous) was changed from to N
Q12_C (Dominant veg: Aquatic bed) was changed from to N
Q12_CA (Dominant veg: Aquatic bed and algal) was changed from to N
Q12_CB (Dominant veg: Aquatic bed and floating vascular) was changed from to N
Q12_CC (Dominant veg: Aquatic bed and rooted vascular) was changed from to N
Q12_CD (Dominant veg: Aquatic bed and aquatic moss) was changed from to N
Q12_D (Dominant veg: Emergent) was changed from to Y
Q12_DA (Dominant veg: Emergent and persistent) was changed from to Y
Q12_DB (Dominant veg: Emergent and non-persistent) was changed from to N
Q12_E (Dominant veg: Moss lichen) was changed from to N
Q13_A (Secondary veg: forested) was changed from to N
Q13_AA (Secondary veg: forested and dead) was changed from to N
Q13_AB (Secondary veg: forested and needle-leaved evergreen) was changed from to N
Q13_AC (Secondary veg: forested and broad-leaved evergreen) was changed from to N
Q13_AD (Secondary veg: forested and needle-leaved deciduous) was changed from to N
Q13_AE (Secondary veg: forested and broad-leaved deciduous) was changed from to N
Q13_B (Secondary veg: Scrub-shrub) was changed from to N
Q13_BA (Secondary veg: Scrub-shrub and dead) was changed from to N
Q13_BB (Secondary veg: Scrub-shrub and needle-leaved evergreen) was changed from to N
Q13_BC (Secondary veg: Scrub-shrub and broad-leaved evergreen) was changed from to N
Q13_BD (Secondary veg: Scrub-shrub and needle-leaved deciduous) was changed from to N
Q13_BE (Secondary veg: Scrub-shrub and broad-leaved deciduous) was changed from to N
Q13_C (Secondary veg: Aquatic bed) was changed from to Y
Q13_CA (Secondary veg: Aquatic bed and algal) was changed from to Y
Q13_CB (Secondary veg: Aquatic bed and floating vascular) was changed from to N
Q13_CC (Secondary veg: Aquatic bed and rooted vascular) was changed from to N
Q13_CD (Secondary veg: Aquatic bed and aquatic moss) was changed from to N
Q13_D (Secondary veg: Emergent) was changed from to Y
Q13_DA (Secondary veg: Emergent and persistent) was changed from to Y
Q13_DB (Secondary veg: Emergent and non-persistent) was changed from to N
Q13_E (Secondary veg: Moss lichen) was changed from to N
Q14_1 (AA on 25 square foot island?) was changed from to N
Q14_2 (AA on 2 acre island?) was changed from to N
Q15_1_A (Vegetation<-->Water = solid form) was changed from to N
Q15_1_B (Vegetation<-->Water = intermediate) was changed from to Y
Q15_1_C (Vegetation<-->Water = checkerboard) was changed from to N
Q15_2 (Channel flow spreading?) was changed from to Y
Q16_A (Vegetation class = solid) was changed from to n
Q16_B (Vegetation class = intermediate) was changed from to N
Q16_C (Vegetation class = mosaic) was changed from to y
Q17 (Plant form richness) was changed from to y
Q18 (Upland<-->Wetland edge irregular?) was changed from to y
Q19_1_A (Wind shelter?) was changed from to N
Q19_1_B (Wind shelter + fetch?) was changed from to N
Q19_2 (Wave protection?) was changed from to N

2 Z

I1 (Threatened/Endangered Species?) was changed from to Y
I2 (Designated/Controlled Area?) was changed from to N
I3 (State Listed Cultural Resource?) was changed from to N
I4 (Unusual or rare local type?) was changed from to N
I5 (Only wetland in locality?) was changed from to N
I6 (Substantial previous $ expenditure?) was changed from to N
I7 (Unnaturally high salinities?) was changed from to N

I10 (Dredging - spawning - ss) was changed from to Y
I11 (WWTP Priority Areas?) was changed from to Y
I12 (Drinking water supplies?) was changed from to N
I13 (Nutrient sensitive waters?) was changed from to Y
I14 (Bathing areas?) was changed from to N
I15 (Sole source aquifer, groundwater discharge ?) was changed from to Y
I16 (Actively used wells?) was changed from to N
I17 (Wildlife critically flow limited?) was changed from to N
I18 (Features in erosion prone areas?) was changed from to N
I19 (USFWS/IRP fishery?) was changed from to Y
I20 (USFWS/IRP wildlife?) was changed from to Y
I21 (USFWS Waterfowl Use Region?) was changed from to Y
I22 (Limited dependent species?) was changed from to N
I23 (Education opportunity?) was changed from to N
I24 (Research resource?) was changed from to N
I25 (Pristine?) was changed from to N
I26 (Recreation in deficient area?) was changed from to N
I27 (Recreation access point?) was changed from to N
I28 (Urban area?) was changed from to Y
I29 (Only or closest to named feature?) was changed from to N
I30 (Region losing this type?) was changed from to Y
I31 (Acreage > than % annual loss rate?) was changed from to N
Q1_1 (Evaporation > precipitation?) was changed from to N
Q1_2 (Rainfall-erosivity > 300?) was changed from to N
Q1_3 (Freeze-over > one month?) was changed from to N
Q2_1_1 (Area < 5 acres?) was changed from to N
Q2_1_2 (Area > 40 acres?) was changed from to N
Q2_1_3 (Area > 200 acres?) was changed from to N
Q3_1 (Another Wet Depression within 1 mile?) was changed from to Y
Q3_2 (Cluster wetland?) was changed from to Y
Q3_3 (Oasis wetland?) was changed from to N
Q4_1 (< 5 miles to major water?) was changed from to Y
Q4_2A (< 1 square mile watershed?) was changed from to N
Q4_2B (1 -100 square mile watershed?) was changed from to N
Q4_2C (100-2500 square mile watershed?) was changed from to Y
Q4_2D (> 2500 square mile watershed?) was changed from to N
Q5_1_1 (AA < 5% of watershed?) was changed from to Y
Q5_1_2 (AA > 20% of watershed?) was changed from to N
Q5_2 (Upslope wet depressions > 5% of watershed?) was changed from to Y
Q6_1 (Downslope drop > upslope rise?) was changed from to Y
Q7 (v < 10 cm/s?) was changed from to I
Q8_1 (Permanent inlet?) was changed from to Y
Q8_2 (Intermittent inlet?) was changed from to N
Q8_3 (Permanent outlet?) was changed from to Y
Q8_4 (Intermittent outlet?) was changed from to N
Q9_1 (Outlet < one third average width?) was changed from to N
Q9_2 (Sheet flooding?) was changed from to N
Q10_A (Lacustrine?) was changed from to N
Q10_B (Palustrine?) was changed from to N
Q10_C (Riverine nontidal?) was changed from to N
Q10_D (Riverine tidal?) was changed from to N
Q10_E (Estuarine?) was changed from to Y
Q10_F (Marine?) was changed from to N
Q11 (Fringe or island wetland?) was changed from to Y
Q12_A (Dominant veg: forested) was changed from to N
Q12_AA (Dominant veg: forested and dead) was changed from to N
Q12_AB (Dominant veg: forested and needle-leaved evergreen) was changed from to N
Q12_AC (Dominant veg: forested and broad-leaved evergreen) was changed from to N
Q12_AD (Dominant veg: forested and needle-leaved deciduous) was changed from to N
Q12_AE (Dominant veg: forested and broad-leaved deciduous) was changed from to N
Q12_B (Dominant veg: Scrub-shrub) was changed from to N
Q12_BA (Dominant veg: Scrub-shrub and dead) was changed from to N
Q12_BB (Dominant veg: Scrub-shrub and needle-leaved evergreen) was changed from to N
Q12_BC (Dominant veg: Scrub-shrub and broad-leaved evergreen) was changed from to N
Q12_BD (Dominant veg: Scrub-shrub and needle-leaved deciduous) was changed from to N
Q12_BE (Dominant veg: Scrub-shrub and broad-leaved deciduous) was changed from to N
Q12_C (Dominant veg: Aquatic bed) was changed from to N
Q12_CA (Dominant veg: Aquatic bed and algal) was changed from to N

Q12_CB (Dominant veg: Aquatic bed and floating vascular) was changed from to N
Q12_CC (Dominant veg: Aquatic bed and rooted vascular) was changed from to N
Q12_CD (Dominant veg: Aquatic bed and aquatic moss) was changed from to N
Q12_D (Dominant veg: Emergent) was changed from to Y
Q12_DA (Dominant veg: Emergent and persistent) was changed from to Y
Q12_DB (Dominant veg: Emergent and non-persistent) was changed from to N
Q12_E (Dominant veg: Moss lichen) was changed from to N
Q13_A (Secondary veg: forested) was changed from to N
Q13_AA (Secondary veg: forested and dead) was changed from to N
Q13_AB (Secondary veg: forested and needle-leaved evergreen) was changed from to N
Q13_AC (Secondary veg: forested and broad-leaved evergreen) was changed from to N
Q13_AD (Secondary veg: forested and needle-leaved deciduous) was changed from to N
Q13_AE (Secondary veg: forested and broad-leaved deciduous) was changed from to N
Q13_B (Secondary veg: Scrub-shrub) was changed from to N
Q13_BA (Secondary veg: Scrub-shrub and dead) was changed from to N
Q13_BB (Secondary veg: Scrub-shrub and needle-leaved evergreen) was changed from to N
Q13_BC (Secondary veg: Scrub-shrub and broad-leaved evergreen) was changed from to N
Q13_BD (Secondary veg: Scrub-shrub and needle-leaved deciduous) was changed from to N
Q13_BE (Secondary veg: Scrub-shrub and broad-leaved deciduous) was changed from to N
Q13_C (Secondary veg: Aquatic bed) was changed from to Y
Q13_CA (Secondary veg: Aquatic bed and algal) was changed from to N
Q13_CB (Secondary veg: Aquatic bed and floating vascular) was changed from to N
Q13_CC (Secondary veg: Aquatic bed and rooted vascular) was changed from to Y
Q13_CD (Secondary veg: Aquatic bed and aquatic moss) was changed from to N
Q13_D (Secondary veg: Emergent) was changed from to Y
Q13_DA (Secondary veg: Emergent and persistent) was changed from to Y
Q13_DB (Secondary veg: Emergent and non-persistent) was changed from to N
Q13_E (Secondary veg: Moss lichen) was changed from to N
Q14_1 (AA on 25 square foot island?) was changed from to y
Q14_2 (AA on 2 acre island?) was changed from to y
Q15_1_A (Vegetation<-->Water = solid form) was changed from to N
Q15_1_B (Vegetation<-->Water = intermediate) was changed from to n
Q15_1_C (Vegetation<-->Water = checkerboard) was changed from to y
Q15_2 (Channel flow spreading?) was changed from to N
Q16_A (Vegetation class = solid) was changed from to n
Q16_B (Vegetation class = intermediate) was changed from to N
Q16_C (Vegetation class = mosaic) was changed from to y
Q17 (Plant form richness) was changed from to y
Q18 (Upland<-->Wetland edge irregular?) was changed from to N
Q19_1_A (Wind shelter?) was changed from to N
Q19_1_B (Wind shelter + fetch?) was changed from to N
Q19_2 (Wave protection?) was changed from to N

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I23 (Education opportunity?) was changed from N to y
I24 (Research resource?) was changed from N to y
Q8_3 (Permanent outlet?) was changed from N to y
Q13_CA (Secondary veg: Aquatic bed and algal) was changed from N to y
Q13_CC (Secondary veg: Aquatic bed and rooted vascular) was changed from N to y
Q14_1 (AA on 25 square foot island?) was changed from N to y
Q14_2 (AA on 2 acre island?) was changed from N to y
Q15_2 (Channel flow spreading?) was changed from N to y
Q16_A (Vegetation class = solid) was changed from Y to n
Q16_C (Vegetation class = mosaic) was changed from N to y
Q18 (Upland<-->Wetland edge irregular?) was changed from N to y
Q22_1_1 (AA contains a Channel?) was changed from N to y
Q22_1_2 (AA contains a Sinuous channel?) was changed from N to y
Q29_1 (Dense understory edge?) was changed from N to y
Q31_2 (Area of Zone B > 10% of AA?) was changed from N to y
Q32_G (Spatial Dominant Hydroperiod = intermit flooded nontidal?) was changed from Y to n
Q32_I (Spatial Dominant Hydroperiod = regularly flooded tidal?) was changed from N to y
Q33_G (Permanent Hydroperiod = intermit flooded nontidal?) was changed from Y to n
Q33_J (Permanent Hydroperiod = irregularly exposed tidal?) was changed from N to y
Q39 (Special habitat features?) was changed from N to y
Q44_A (Secondary Water Depth < 1 inch) was changed from N to y
Q44_B (1 in < secondary water depth < 4 inches) was changed from N to y
Q44_C (5 in < secondary water depth < 8 inches) was changed from N to y
Q44_E (21 in < secondary water depth < 39 inches) was changed from N to y
Q46_A (Physical Habitat Interspersion = uniform) was changed from Y to n

Q46_C (Physical Habitat Interspersion = mosaic) was changed from N to y
Q49_1_2 (Riffles?) was changed from N to y
Q50 (Plants: waterfowl value?) was changed from N to y

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I1 (Threatened/Endangered Species?) was changed from to N
I2 (Designated/Controlled Area?) was changed from to N
I3 (State Listed Cultural Resource?) was changed from to N
I4 (Unusual or rare local type?) was changed from to N
I5 (Only wetland in locality?) was changed from to N
I6 (Substantial previous $ expenditure?) was changed from to N
I7 (Unnaturally high salinities?) was changed from to N
I8 (Features sensitive to flooding?) was changed from to N
I9 (Downslope sensitive features in floodplain?) was changed from to N
I10 (Dredging - spawning - ss) was changed from to N
I11 (WWTP Priority Areas?) was changed from to N
I12 (Drinking water supplies?) was changed from to N
I13 (Nutrient sensitive waters?) was changed from to Y
I14 (Bathing areas?) was changed from to N
I15 (Sole source aquifer, groundwater discharge ?) was changed from to Y
I16 (Actively used wells?) was changed from to N
I17 (Wildlife critically flow limited?) was changed from to N
I18 (Features in erosion prone areas?) was changed from to N
I19 (USFWS/IRP fishery?) was changed from to N
I20 (USFWS/IRP wildlife?) was changed from to N
I21 (USFWS Waterfowl Use Region?) was changed from to Y
I22 (Limited dependent species?) was changed from to N
I23 (Education opportunity?) was changed from to N
I24 (Research resource?) was changed from to N
I25 (Pristine?) was changed from to N
I26 (Recreation in deficient area?) was changed from to N
I27 (Recreation access point?) was changed from to N
I28 (Urban area?) was changed from to Y
I29 (Only or closest to named feature?) was changed from to N
I30 (Region losing this type?) was changed from to Y
I31 (Acreage > than % annual loss rate?) was changed from to N
Q1_1 (Evaporation > precipitation?) was changed from to N
Q1_2 (Rainfall-erosivity > 300?) was changed from to N
Q1_3 (Freeze-over > one month?) was changed from to N
Q2_1_1 (Area < 5 acres?) was changed from to Y
Q2_1_2 (Area > 40 acres?) was changed from to N
Q2_1_3 (Area > 200 acres?) was changed from to N
Q3_1 (Another Wet Depression within 1 mile?) was changed from to Y
Q3_2 (Cluster wetland?) was changed from to Y
Q3_3 (Oasis wetland?) was changed from to N
Q4_1 (< 5 miles to major water?) was changed from to Y
Q5_1_1 (AA < 5% of watershed?) was changed from to Y
Q5_1_2 (AA > 20% of watershed?) was changed from to N
Q5_2 (Upslope wet depressions > 5% of watershed?) was changed from to Y
Q6_1 (Downslope drop > upslope rise?) was changed from to Y
Q7 (v < 10 cm/s?) was changed from to I
Q8_1 (Permanent inlet?) was changed from to N
Q8_2 (Intermittent inlet?) was changed from to Y
Q8_3 (Permanent outlet?) was changed from to y
Q8_4 (Intermittent outlet?) was changed from to Y
Q9_1 (Outlet < one third average width?) was changed from to Y
Q9_2 (Sheet flooding?) was changed from to N
Q10_A (Lacustrine?) was changed from to N
Q10_B (Palustrine?) was changed from to Y
Q10_C (Riverine nontidal?) was changed from to N
Q10_D (Riverine tidal?) was changed from to N
Q10_E (Estuarine?) was changed from to N
Q10_F (Marine?) was changed from to N
Q11 (Fringe or island wetland?) was changed from to N
Q12_A (Dominant veg: forested) was changed from to N
Q12_AA (Dominant veg: forested and dead) was changed from to N
Q12_AB (Dominant veg: forested and needle-leaved evergreen) was changed from to N
Q12_AC (Dominant veg: forested and broad-leaved evergreen) was changed from to N
Q12_AD (Dominant veg: forested and needle-leaved deciduous) was changed from to N

Q12_AE (Dominant veg: forested and broad-leaved deciduous) was changed from to N
Q12_B (Dominant veg: Scrub-shrub) was changed from to N
Q12_BA (Dominant veg: Scrub-shrub and dead) was changed from to N
Q12_BB (Dominant veg: Scrub-shrub and needle-leaved evergreen) was changed from to N
Q12_BC (Dominant veg: Scrub-shrub and broad-leaved evergreen) was changed from to N
Q12_BD (Dominant veg: Scrub-shrub and needle-leaved deciduous) was changed from to N
Q12_BE (Dominant veg: Scrub-shrub and broad-leaved deciduous) was changed from to N
Q12_C (Dominant veg: Aquatic bed) was changed from to N
Q12_CA (Dominant veg: Aquatic bed and algal) was changed from to N
Q12_CB (Dominant veg: Aquatic bed and floating vascular) was changed from to N
Q12_CC (Dominant veg: Aquatic bed and rooted vascular) was changed from to N
Q12_CD (Dominant veg: Aquatic bed and aquatic moss) was changed from to N
Q12_D (Dominant veg: Emergent) was changed from to Y
Q12_DA (Dominant veg: Emergent and persistent) was changed from to Y
Q12_DB (Dominant veg: Emergent and non-persistent) was changed from to N
Q12_E (Dominant veg: Moss lichen) was changed from to N
Q13_A (Secondary veg: forested) was changed from to N
Q13_AA (Secondary veg: forested and dead) was changed from to N
Q13_AB (Secondary veg: forested and needle-leaved evergreen) was changed from to N
Q13_AC (Secondary veg: forested and broad-leaved evergreen) was changed from to N
Q13_AD (Secondary veg: forested and needle-leaved deciduous) was changed from to N
Q13_AE (Secondary veg: forested and broad-leaved deciduous) was changed from to N
Q13_B (Secondary veg: Scrub-shrub) was changed from to N
Q13_BA (Secondary veg: Scrub-shrub and dead) was changed from to N
Q13_BB (Secondary veg: Scrub-shrub and needle-leaved evergreen) was changed from to N
Q13_BC (Secondary veg: Scrub-shrub and broad-leaved evergreen) was changed from to N
Q13_BD (Secondary veg: Scrub-shrub and needle-leaved deciduous) was changed from to N
Q13_BE (Secondary veg: Scrub-shrub and broad-leaved deciduous) was changed from to N
Q13_C (Secondary veg: Aquatic bed) was changed from to N
Q13_CA (Secondary veg: Aquatic bed and algal) was changed from to y
Q13_CB (Secondary veg: Aquatic bed and floating vascular) was changed from to N
Q13_CC (Secondary veg: Aquatic bed and rooted vascular) was changed from to N
Q13_CD (Secondary veg: Aquatic bed and aquatic moss) was changed from to N
Q13_D (Secondary veg: Emergent) was changed from to Y
Q13_DA (Secondary veg: Emergent and persistent) was changed from to Y
Q13_DB (Secondary veg: Emergent and non-persistent) was changed from to N
Q13_E (Secondary veg: Moss lichen) was changed from to N
Q14_1 (AA on 25 square foot island?) was changed from to N
Q14_2 (AA on 2 acre island?) was changed from to N
Q15_1_A (Vegetation<-->Water = solid form) was changed from to N
Q15_1_B (Vegetation<-->Water = intermediate) was changed from to Y
Q15_1_C (Vegetation<-->Water = checkerboard) was changed from to N
Q15_2 (Channel flow spreading?) was changed from to y
Q16_A (Vegetation class = solid) was changed from to Y
Q16_B (Vegetation class = intermediate) was changed from to N
Q16_C (Vegetation class = mosaic) was changed from to N
Q18 (Upland<-->Wetland edge irregular?) was changed from to y
Q19_1_A (Wind shelter?) was changed from to N
Q19_1_B (Wind shelter + fetch?) was changed from to N
Q19_2 (Wave protection?) was changed from to N
Q19_3 (Upland habitat wind shelter?) was changed from to Y

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I1 (Threatened/Endangered Species?) was changed from to N
I2 (Designated/Controlled Area?) was changed from to N
I3 (State Listed Cultural Resource?) was changed from to N
I4 (Unusual or rare local type?) was changed from to Y
I5 (Only wetland in locality?) was changed from to N
I6 (Substantial previous $ expenditure?) was changed from to N
I7 (Unnaturally high salinities?) was changed from to N
I9 (Downslope sensitive features in floodplain?) was changed from to Y
I10 (Dredging - spawning - ss) was changed from to Y
I11 (WWTP Priority Areas?) was changed from to N
I12 (Drinking water supplies?) was changed from to N
I13 (Nutrient sensitive waters?) was changed from to Y
I14 (Bathing areas?) was changed from to N
I15 (Sole source aquifer, groundwater discharge ?) was changed from to Y
I16 (Actively used wells?) was changed from to N
I17 (Wildlife critically flow limited?) was changed from to N

I18 (Features in erosion prone areas?) was changed from to N
I19 (USFWS/IRP fishery?) was changed from to N
I20 (USFWS/IRP wildlife?) was changed from to Y
I21 (USFWS Waterfowl Use Region?) was changed from to Y
I22 (Limited dependent species?) was changed from to N
I23 (Education opportunity?) was changed from to N
I24 (Research resource?) was changed from to N
I25 (Pristine?) was changed from to N
I26 (Recreation in deficient area?) was changed from to N
I27 (Recreation access point?) was changed from to N
I28 (Urban area?) was changed from to Y
I29 (Only or closest to named feature?) was changed from to Y
I30 (Region losing this type?) was changed from to Y
I31 (Acreage > than % annual loss rate?) was changed from to Y
Q1_1 (Evaporation > precipitation?) was changed from to N
Q1_2 (Rainfall-erosivity > 300?) was changed from to N
Q1_3 (Freeze-over > one month?) was changed from to N
Q2_1_1 (Area < 5 acres?) was changed from to N
Q2_1_2 (Area > 40 acres?) was changed from to Y
Q2_1_3 (Area > 200 acres?) was changed from to N
Q2_2_1 (Forested area < 5 acres ?) was changed from to N
Q2_2_2 (Forested area > 40 acres ?) was changed from to Y
Q3_1 (Another Wet Depression within 1 mile?) was changed from to Y
Q3_2 (Cluster wetland?) was changed from to Y
Q3_3 (Oasis wetland?) was changed from to N
Q4_1 (< 5 miles to major water?) was changed from to Y
Q4_2A (< 1 square mile watershed?) was changed from to N
Q4_2B (1 -100 square mile watershed?) was changed from to Y
Q4_2C (100-2500 square mile watershed?) was changed from to N
Q4_2D (> 2500 square mile watershed?) was changed from to N
Q5_1_1 (AA < 5% of watershed?) was changed from to Y
Q5_1_2 (AA > 20% of watershed?) was changed from to N
Q5_2 (Upslope wet depressions > 5% of watershed?) was changed from to N
Q6_1 (Downslope drop > upslope rise?) was changed from to Y
Q7 (v < 10 cm/s?) was changed from to I
Q8_2 (Intermittent inlet?) was changed from to Y
Q8_3 (Permanent outlet?) was changed from to Y
Q8_4 (Intermittent outlet?) was changed from to y
Q9_1 (Outlet < one third average width?) was changed from to Y
Q9_2 (Sheet flooding?) was changed from to N
Q10_A (Lacustrine?) was changed from to N
Q10_B (Palustrine?) was changed from to Y
Q10_C (Riverine nontidal?) was changed from to N
Q10_D (Riverine tidal?) was changed from to N
Q10_E (Estuarine?) was changed from to N
Q10_F (Marine?) was changed from to N
Q11 (Fringe or island wetland?) was changed from to N
Q12_A (Dominant veg: forested) was changed from to Y
Q12_AA (Dominant veg: forested and dead) was changed from to N
Q12_AB (Dominant veg: forested and needle-leaved evergreen) was changed from to N
Q12_AC (Dominant veg: forested and broad-leaved evergreen) was changed from to N
Q12_AD (Dominant veg: forested and needle-leaved deciduous) was changed from to N
Q12_AE (Dominant veg: forested and broad-leaved deciduous) was changed from to n
Q12_B (Dominant veg: Scrub-shrub) was changed from to N
Q12_BA (Dominant veg: Scrub-shrub and dead) was changed from to N
Q12_BB (Dominant veg: Scrub-shrub and needle-leaved evergreen) was changed from to N
Q12_BC (Dominant veg: Scrub-shrub and broad-leaved evergreen) was changed from to N
Q12_BD (Dominant veg: Scrub-shrub and needle-leaved deciduous) was changed from to N
Q12_BE (Dominant veg: Scrub-shrub and broad-leaved deciduous) was changed from to N
Q12_C (Dominant veg: Aquatic bed) was changed from to N
Q12_CA (Dominant veg: Aquatic bed and algal) was changed from to N
Q12_CB (Dominant veg: Aquatic bed and floating vascular) was changed from to N
Q12_CC (Dominant veg: Aquatic bed and rooted vascular) was changed from to y
Q12_CD (Dominant veg: Aquatic bed and aquatic moss) was changed from to N
Q12_D (Dominant veg: Emergent) was changed from to N
Q12_DA (Dominant veg: Emergent and persistent) was changed from to N
Q12_DB (Dominant veg: Emergent and non-persistent) was changed from to N
Q12_E (Dominant veg: Moss lichen) was changed from to N

Q13_A (Secondary veg: forested) was changed from to Y
Q13_AA (Secondary veg: forested and dead) was changed from to N
Q13_AB (Secondary veg: forested and needle-leaved evergreen) was changed from to N
Q13_AC (Secondary veg: forested and broad-leaved evergreen) was changed from to N
Q13_AD (Secondary veg: forested and needle-leaved deciduous) was changed from to N
Q13_AE (Secondary veg: forested and broad-leaved deciduous) was changed from to Y
Q13_B (Secondary veg: Scrub-shrub) was changed from to Y
Q13_BA (Secondary veg: Scrub-shrub and dead) was changed from to N
Q13_BB (Secondary veg: Scrub-shrub and needle-leaved evergreen) was changed from to N
Q13_BC (Secondary veg: Scrub-shrub and broad-leaved evergreen) was changed from to N
Q13_BD (Secondary veg: Scrub-shrub and needle-leaved deciduous) was changed from to N
Q13_BE (Secondary veg: Scrub-shrub and broad-leaved deciduous) was changed from to Y
Q13_C (Secondary veg: Aquatic bed) was changed from to Y
Q13_CA (Secondary veg: Aquatic bed and algal) was changed from to Y
Q13_CB (Secondary veg: Aquatic bed and floating vascular) was changed from to y
Q13_CC (Secondary veg: Aquatic bed and rooted vascular) was changed from to y
Q13_CD (Secondary veg: Aquatic bed and aquatic moss) was changed from to N
Q13_D (Secondary veg: Emergent) was changed from to Y
Q13_DA (Secondary veg: Emergent and persistent) was changed from to Y
Q13_DB (Secondary veg: Emergent and non-persistent) was changed from to y
Q13_E (Secondary veg: Moss lichen) was changed from to N
Q14_1 (AA on 25 square foot island?) was changed from to N
Q14_2 (AA on 2 acre island?) was changed from to N
Q15_1_A (Vegetation<-->Water = solid form) was changed from to Y
Q15_1_B (Vegetation<-->Water = intermediate) was changed from to N
Q15_1_C (Vegetation<-->Water = checkerboard) was changed from to N
Q16_A (Vegetation class = solid) was changed from to N
Q16_B (Vegetation class = intermediate) was changed from to Y
Q16_C (Vegetation class = mosaic) was changed from to N
Q17 (Plant form richness) was changed from to Y
Q18 (Upland<-->Wetland edge irregular?) was changed from to Y
Q19_3 (Upland habitat wind shelter?) was changed from to Y
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I1 (Threatened/Endangered Species?) was changed from to N
I2 (Designated/Controlled Area?) was changed from to N
I3 (State Listed Cultural Resource?) was changed from to N
I4 (Unusual or rare local type?) was changed from to Y
I5 (Only wetland in locality?) was changed from to N
I6 (Substantial previous $ expenditure?) was changed from to N
I7 (Unnaturally high salinities?) was changed from to N
I9 (Downslope sensitive features in floodplain?) was changed from to Y
I10 (Dredging - spawning - ss) was changed from to Y
I11 (WWTP Priority Areas?) was changed from to N
I12 (Drinking water supplies?) was changed from to N
I13 (Nutrient sensitive waters?) was changed from to Y
I14 (Bathing areas?) was changed from to N
I15 (Sole source aquifer, groundwater discharge ?) was changed from to Y
I16 (Actively used wells?) was changed from to N
I17 (Wildlife critically flow limited?) was changed from to N
I18 (Features in erosion prone areas?) was changed from to N
I19 (USFWS/IRP fishery?) was changed from to N
I20 (USFWS/IRP wildlife?) was changed from to Y
I21 (USFWS Waterfowl Use Region?) was changed from to Y
I22 (Limited dependent species?) was changed from to N
I23 (Education opportunity?) was changed from to N
I24 (Research resource?) was changed from to N
I25 (Pristine?) was changed from to N
I26 (Recreation in deficient area?) was changed from to N
I27 (Recreation access point?) was changed from to N
I28 (Urban area?) was changed from to Y
I29 (Only or closest to named feature?) was changed from to Y
I30 (Region losing this type?) was changed from to Y
I31 (Acreage > than % annual loss rate?) was changed from to Y
Q1_1 (Evaporation > precipitation?) was changed from to N
Q1_2 (Rainfall-erosivity > 300?) was changed from to N
Q1_3 (Freeze-over > one month?) was changed from to N
Q2_1_1 (Area < 5 acres?) was changed from to N
Q2_1_2 (Area > 40 acres?) was changed from to Y

Q2_1_3 (Area > 200 acres?) was changed from to N
Q2_2_1 (Forested area < 5 acres ?) was changed from to N
Q2_2_2 (Forested area > 40 acres ?) was changed from to Y
Q3_1 (Another Wet Depression within 1 mile?) was changed from to Y
Q3_2 (Cluster wetland?) was changed from to Y
Q3_3 (Oasis wetland?) was changed from to N
Q4_1 (< 5 miles to major water?) was changed from to Y
Q4_2A (< 1 square mile watershed?) was changed from to N
Q4_2B (1 -100 square mile watershed?) was changed from to Y
Q4_2C (100-2500 square mile watershed?) was changed from to N
Q4_2D (> 2500 square mile watershed?) was changed from to N
Q5_1_1 (AA < 5% of watershed?) was changed from to N
Q5_1_2 (AA > 20% of watershed?) was changed from to N
Q5_2 (Upslope wet depressions > 5% of watershed?) was changed from to N
Q6_1 (Downslope drop > upslope rise?) was changed from to Y
Q7 (v < 10 cm/s?) was changed from to I
Q8_2 (Intermittent inlet?) was changed from to Y
Q8_3 (Permanent outlet?) was changed from to Y
Q8_4 (Intermittent outlet?) was changed from to y
Q9_1 (Outlet < one third average width?) was changed from to Y
Q9_2 (Sheet flooding?) was changed from to y
Q10_A (Lacustrine?) was changed from to N
Q10_B (Palustrine?) was changed from to Y
Q10_C (Riverine nontidal?) was changed from to N
Q10_D (Riverine tidal?) was changed from to N
Q10_E (Estuarine?) was changed from to N
Q10_F (Marine?) was changed from to N
Q11 (Fringe or island wetland?) was changed from to N
Q12_A (Dominant veg: forested) was changed from to Y
Q12_AA (Dominant veg: forested and dead) was changed from to N
Q12_AB (Dominant veg: forested and needle-leaved evergreen) was changed from to N
Q12_AC (Dominant veg: forested and broad-leaved evergreen) was changed from to N
Q12_AD (Dominant veg: forested and needle-leaved deciduous) was changed from to N
Q12_AE (Dominant veg: forested and broad-leaved deciduous) was changed from to n
Q12_B (Dominant veg: Scrub-shrub) was changed from to N
Q12_BA (Dominant veg: Scrub-shrub and dead) was changed from to N
Q12_BB (Dominant veg: Scrub-shrub and needle-leaved evergreen) was changed from to N
Q12_BC (Dominant veg: Scrub-shrub and broad-leaved evergreen) was changed from to N
Q12_BD (Dominant veg: Scrub-shrub and needle-leaved deciduous) was changed from to N
Q12_BE (Dominant veg: Scrub-shrub and broad-leaved deciduous) was changed from to N
Q12_C (Dominant veg: Aquatic bed) was changed from to N
Q12_CA (Dominant veg: Aquatic bed and algal) was changed from to N
Q12_CB (Dominant veg: Aquatic bed and floating vascular) was changed from to N
Q12_CC (Dominant veg: Aquatic bed and rooted vascular) was changed from to y
Q12_CD (Dominant veg: Aquatic bed and aquatic moss) was changed from to N
Q12_D (Dominant veg: Emergent) was changed from to N
Q12_DA (Dominant veg: Emergent and persistent) was changed from to N
Q12_DB (Dominant veg: Emergent and non-persistent) was changed from to N
Q12_E (Dominant veg: Moss lichen) was changed from to N
Q13_A (Secondary veg: forested) was changed from to Y
Q13_AA (Secondary veg: forested and dead) was changed from to Y
Q13_AB (Secondary veg: forested and needle-leaved evergreen) was changed from to N
Q13_AC (Secondary veg: forested and broad-leaved evergreen) was changed from to N
Q13_AD (Secondary veg: forested and needle-leaved deciduous) was changed from to N
Q13_AE (Secondary veg: forested and broad-leaved deciduous) was changed from to Y
Q13_B (Secondary veg: Scrub-shrub) was changed from to Y
Q13_BA (Secondary veg: Scrub-shrub and dead) was changed from to Y
Q13_BB (Secondary veg: Scrub-shrub and needle-leaved evergreen) was changed from to N
Q13_BC (Secondary veg: Scrub-shrub and broad-leaved evergreen) was changed from to N
Q13_BD (Secondary veg: Scrub-shrub and needle-leaved deciduous) was changed from to N
Q13_BE (Secondary veg: Scrub-shrub and broad-leaved deciduous) was changed from to Y
Q13_C (Secondary veg: Aquatic bed) was changed from to Y
Q13_CA (Secondary veg: Aquatic bed and algal) was changed from to Y
Q13_CB (Secondary veg: Aquatic bed and floating vascular) was changed from to y
Q13_CC (Secondary veg: Aquatic bed and rooted vascular) was changed from to y
Q13_CD (Secondary veg: Aquatic bed and aquatic moss) was changed from to N
Q13_D (Secondary veg: Emergent) was changed from to Y
Q13_DA (Secondary veg: Emergent and persistent) was changed from to Y

Q13_DB (Secondary veg: Emergent and non-persistent) was changed from to y
Q13_E (Secondary veg: Moss lichen) was changed from to N
Q14_1 (AA on 25 square foot island?) was changed from to N
Q14_2 (AA on 2 acre island?) was changed from to N
Q15_1_A (Vegetation<-->Water = solid form) was changed from to Y
Q15_1_B (Vegetation<-->Water = intermediate) was changed from to N
Q15_1_C (Vegetation<-->Water = checkerboard) was changed from to N
Q16_A (Vegetation class = solid) was changed from to N
Q16_B (Vegetation class = intermediate) was changed from to N
Q16_C (Vegetation class = mosaic) was changed from to Y
Q17 (Plant form richness) was changed from to Y
Q18 (Upland<-->Wetland edge irregular?) was changed from to Y
Q19_3 (Upland habitat wind shelter?) was changed from to Y
213
I1 (Threatened/Endangered Species?) was changed from to N
I2 (Designated/Controlled Area?) was changed from to N
I3 (State Listed Cultural Resource?) was changed from to N
I4 (Unusual or rare local type?) was changed from to N
I5 (Only wetland in locality?) was changed from to N
I6 (Substantial previous $ expenditure?) was changed from to N
I7 (Unnaturally high salinities?) was changed from to N
I9 (Downslope sensitive features in floodplain?) was changed from to Y
I10 (Dredging - spawning - ss) was changed from to Y
I11 (WWTP Priority Areas?) was changed from to N
I12 (Drinking water supplies?) was changed from to N
I13 (Nutrient sensitive waters?) was changed from to Y
I14 (Bathing areas?) was changed from to N
I15 (Sole source aquifer, groundwater discharge ?) was changed from to Y
I16 (Actively used wells?) was changed from to N
I17 (Wildlife critically flow limited?) was changed from to N
I18 (Features in erosion prone areas?) was changed from to N
I19 (USFWS/IRP fishery?) was changed from to N
I20 (USFWS/IRP wildlife?) was changed from to N
I21 (USFWS Waterfowl Use Region?) was changed from to Y
I22 (Limited dependent species?) was changed from to N
I23 (Education opportunity?) was changed from to N
I24 (Research resource?) was changed from to N
I25 (Pristine?) was changed from to N
I26 (Recreation in deficient area?) was changed from to N
I27 (Recreation access point?) was changed from to N
I28 (Urban area?) was changed from to Y
I29 (Only or closest to named feature?) was changed from to Y
I30 (Region losing this type?) was changed from to Y
I31 (Acreage > than % annual loss rate?) was changed from to Y
Q1_1 (Evaporation > precipitation?) was changed from to N
Q1_2 (Rainfall-erosivity > 300?) was changed from to N
Q1_3 (Freeze-over > one month?) was changed from to N
Q2_1_1 (Area < 5 acres?) was changed from to N
Q2_1_2 (Area > 40 acres?) was changed from to N
Q2_1_3 (Area > 200 acres?) was changed from to N
Q3_1 (Another Wet Depression within 1 mile?) was changed from to Y
Q3_2 (Cluster wetland?) was changed from to Y
Q3_3 (Oasis wetland?) was changed from to N
Q4_1 (< 5 miles to major water?) was changed from to Y
Q4_2A (< 1 square mile watershed?) was changed from to N
Q4_2B (1 -100 square mile watershed?) was changed from to Y
Q4_2C (100-2500 square mile watershed?) was changed from to N
Q4_2D (> 2500 square mile watershed?) was changed from to N
Q5_1_1 (AA < 5% of watershed?) was changed from to Y
Q5_1_2 (AA > 20% of watershed?) was changed from to N
Q5_2 (Upslope wet depressions > 5% of watershed?) was changed from to N
Q6_1 (Downslope drop > upslope rise?) was changed from to Y
Q7 (v < 10 cm/s?) was changed from to I
Q8_2 (Intermittent inlet?) was changed from to N
Q8_3 (Permanent outlet?) was changed from to Y
Q8_4 (Intermittent outlet?) was changed from to y
Q9_1 (Outlet < one third average width?) was changed from to Y
Q9_2 (Sheet flooding?) was changed from to y

Q10_A (Lacustrine?) was changed from to N
Q10_B (Palustrine?) was changed from to Y
Q10_C (Riverine nontidal?) was changed from to N
Q10_D (Riverine tidal?) was changed from to N
Q10_E (Estuarine?) was changed from to N
Q10_F (Marine?) was changed from to N
Q11 (Fringe or island wetland?) was changed from to N
Q12_A (Dominant veg: forested) was changed from to N
Q12_AA (Dominant veg: forested and dead) was changed from to N
Q12_AB (Dominant veg: forested and needle-leaved evergreen) was changed from to N
Q12_AC (Dominant veg: forested and broad-leaved evergreen) was changed from to N
Q12_AD (Dominant veg: forested and needle-leaved deciduous) was changed from to N
Q12_AE (Dominant veg: forested and broad-leaved deciduous) was changed from to N
Q12_B (Dominant veg: Scrub-shrub) was changed from to N
Q12_BA (Dominant veg: Scrub-shrub and dead) was changed from to N
Q12_BB (Dominant veg: Scrub-shrub and needle-leaved evergreen) was changed from to N
Q12_BC (Dominant veg: Scrub-shrub and broad-leaved evergreen) was changed from to N
Q12_BD (Dominant veg: Scrub-shrub and needle-leaved deciduous) was changed from to N
Q12_BE (Dominant veg: Scrub-shrub and broad-leaved deciduous) was changed from to N
Q12_C (Dominant veg: Aquatic bed) was changed from to N
Q12_CA (Dominant veg: Aquatic bed and algal) was changed from to N
Q12_CB (Dominant veg: Aquatic bed and floating vascular) was changed from to N
Q12_CC (Dominant veg: Aquatic bed and rooted vascular) was changed from to y
Q12_CD (Dominant veg: Aquatic bed and aquatic moss) was changed from to N
Q12_D (Dominant veg: Emergent) was changed from to Y
Q12_DA (Dominant veg: Emergent and persistent) was changed from to n
Q12_DB (Dominant veg: Emergent and non-persistent) was changed from to N
Q12_E (Dominant veg: Moss lichen) was changed from to N
Q13_A (Secondary veg: forested) was changed from to N
Q13_AA (Secondary veg: forested and dead) was changed from to N
Q13_AB (Secondary veg: forested and needle-leaved evergreen) was changed from to N
Q13_AC (Secondary veg: forested and broad-leaved evergreen) was changed from to N
Q13_AD (Secondary veg: forested and needle-leaved deciduous) was changed from to N
Q13_AE (Secondary veg: forested and broad-leaved deciduous) was changed from to N
Q13_B (Secondary veg: Scrub-shrub) was changed from to Y
Q13_BA (Secondary veg: Scrub-shrub and dead) was changed from to N
Q13_BB (Secondary veg: Scrub-shrub and needle-leaved evergreen) was changed from to N
Q13_BC (Secondary veg: Scrub-shrub and broad-leaved evergreen) was changed from to N
Q13_BD (Secondary veg: Scrub-shrub and needle-leaved deciduous) was changed from to N
Q13_BE (Secondary veg: Scrub-shrub and broad-leaved deciduous) was changed from to N
Q13_C (Secondary veg: Aquatic bed) was changed from to Y
Q13_CA (Secondary veg: Aquatic bed and algal) was changed from to Y
Q13_CB (Secondary veg: Aquatic bed and floating vascular) was changed from to y
Q13_CC (Secondary veg: Aquatic bed and rooted vascular) was changed from to y
Q13_CD (Secondary veg: Aquatic bed and aquatic moss) was changed from to N
Q13_D (Secondary veg: Emergent) was changed from to Y
Q13_DA (Secondary veg: Emergent and persistent) was changed from to Y
Q13_DB (Secondary veg: Emergent and non-persistent) was changed from to y
Q13_E (Secondary veg: Moss lichen) was changed from to N
Q14_1 (AA on 25 square foot island?) was changed from to N
Q14_2 (AA on 2 acre island?) was changed from to N
Q15_1_A (Vegetation<-->Water = solid form) was changed from to Y
Q15_1_B (Vegetation<-->Water = intermediate) was changed from to N
Q15_1_C (Vegetation<-->Water = checkerboard) was changed from to N
Q16_A (Vegetation class = solid) was changed from to n
Q16_B (Vegetation class = intermediate) was changed from to N
Q16_C (Vegetation class = mosaic) was changed from to y
Q17 (Plant form richness) was changed from to y
Q18 (Upland<-->Wetland edge irregular?) was changed from to y
Q19_3 (Upland habitat wind shelter?) was changed from to N

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I1 (Threatened/Endangered Species?) was changed from to N
I2 (Designated/Controlled Area?) was changed from to N
I3 (State Listed Cultural Resource?) was changed from to N
I4 (Unusual or rare local type?) was changed from to N
I5 (Only wetland in locality?) was changed from to N
I6 (Substantial previous $ expenditure?) was changed from to N
I7 (Unnaturally high salinities?) was changed from to N

I10 (Dredging - spawning - ss) was changed from to Y
I11 (WWTP Priority Areas?) was changed from to Y
I12 (Drinking water supplies?) was changed from to N
I13 (Nutrient sensitive waters?) was changed from to Y
I14 (Bathing areas?) was changed from to N
I15 (Sole source aquifer, groundwater discharge ?) was changed from to Y
I16 (Actively used wells?) was changed from to N
I17 (Wildlife critically flow limited?) was changed from to N
I18 (Features in erosion prone areas?) was changed from to N
I19 (USFWS/IRP fishery?) was changed from to N
I20 (USFWS/IRP wildlife?) was changed from to Y
I21 (USFWS Waterfowl Use Region?) was changed from to Y
I22 (Limited dependent species?) was changed from to N
I23 (Education opportunity?) was changed from to N
I24 (Research resource?) was changed from to N
I25 (Pristine?) was changed from to N
I26 (Recreation in deficient area?) was changed from to N
I27 (Recreation access point?) was changed from to N
I28 (Urban area?) was changed from to Y
I29 (Only or closest to named feature?) was changed from to N
I30 (Region losing this type?) was changed from to Y
I31 (Acreage > than % annual loss rate?) was changed from to N
Q1_1 (Evaporation > precipitation?) was changed from to N
Q1_2 (Rainfall-erosivity > 300?) was changed from to N
Q1_3 (Freeze-over > one month?) was changed from to N
Q2_1_1 (Area < 5 acres?) was changed from to N
Q2_1_2 (Area > 40 acres?) was changed from to N
Q2_1_3 (Area > 200 acres?) was changed from to N
Q3_1 (Another Wet Depression within 1 mile?) was changed from to Y
Q3_2 (Cluster wetland?) was changed from to Y
Q3_3 (Oasis wetland?) was changed from to N
Q4_1 (< 5 miles to major water?) was changed from to Y
Q4_2A (< 1 square mile watershed?) was changed from to Y
Q4_2B (1 -100 square mile watershed?) was changed from to N
Q4_2C (100-2500 square mile watershed?) was changed from to N
Q4_2D (> 2500 square mile watershed?) was changed from to N
Q5_1_1 (AA < 5% of watershed?) was changed from to N
Q5_1_2 (AA > 20% of watershed?) was changed from to N
Q5_2 (Upslope wet depressions > 5% of watershed?) was changed from to Y
Q6_1 (Downslope drop > upslope rise?) was changed from to Y
Q7 (v < 10 cm/s?) was changed from to I
Q8_1 (Permanent inlet?) was changed from to Y
Q8_2 (Intermittent inlet?) was changed from to N
Q8_3 (Permanent outlet?) was changed from to Y
Q8_4 (Intermittent outlet?) was changed from to N
Q9_1 (Outlet < one third average width?) was changed from to Y
Q9_2 (Sheet flooding?) was changed from to N
Q10_A (Lacustrine?) was changed from to N
Q10_B (Palustrine?) was changed from to N
Q10_C (Riverine nontidal?) was changed from to N
Q10_D (Riverine tidal?) was changed from to N
Q10_E (Estuarine?) was changed from to Y
Q10_F (Marine?) was changed from to N
Q11 (Fringe or island wetland?) was changed from to N
Q12_A (Dominant veg: forested) was changed from to N
Q12_AA (Dominant veg: forested and dead) was changed from to N
Q12_AB (Dominant veg: forested and needle-leaved evergreen) was changed from to N
Q12_AC (Dominant veg: forested and broad-leaved evergreen) was changed from to N
Q12_AD (Dominant veg: forested and needle-leaved deciduous) was changed from to N
Q12_AE (Dominant veg: forested and broad-leaved deciduous) was changed from to N
Q12_B (Dominant veg: Scrub-shrub) was changed from to N
Q12_BA (Dominant veg: Scrub-shrub and dead) was changed from to N
Q12_BB (Dominant veg: Scrub-shrub and needle-leaved evergreen) was changed from to N
Q12_BC (Dominant veg: Scrub-shrub and broad-leaved evergreen) was changed from to N
Q12_BD (Dominant veg: Scrub-shrub and needle-leaved deciduous) was changed from to N
Q12_BE (Dominant veg: Scrub-shrub and broad-leaved deciduous) was changed from to N
Q12_C (Dominant veg: Aquatic bed) was changed from to N
Q12_CA (Dominant veg: Aquatic bed and algal) was changed from to N

Q12_CB (Dominant veg: Aquatic bed and floating vascular) was changed from to N
Q12_CC (Dominant veg: Aquatic bed and rooted vascular) was changed from to N
Q12_CD (Dominant veg: Aquatic bed and aquatic moss) was changed from to N
Q12_D (Dominant veg: Emergent) was changed from to Y
Q12_DA (Dominant veg: Emergent and persistent) was changed from to Y
Q12_DB (Dominant veg: Emergent and non-persistent) was changed from to N
Q12_E (Dominant veg: Moss lichen) was changed from to N
Q13_A (Secondary veg: forested) was changed from to N
Q13_AA (Secondary veg: forested and dead) was changed from to N
Q13_AB (Secondary veg: forested and needle-leaved evergreen) was changed from to N
Q13_AC (Secondary veg: forested and broad-leaved evergreen) was changed from to N
Q13_AD (Secondary veg: forested and needle-leaved deciduous) was changed from to N
Q13_AE (Secondary veg: forested and broad-leaved deciduous) was changed from to N
Q13_B (Secondary veg: Scrub-shrub) was changed from to N
Q13_BA (Secondary veg: Scrub-shrub and dead) was changed from to N
Q13_BB (Secondary veg: Scrub-shrub and needle-leaved evergreen) was changed from to N
Q13_BC (Secondary veg: Scrub-shrub and broad-leaved evergreen) was changed from to N
Q13_BD (Secondary veg: Scrub-shrub and needle-leaved deciduous) was changed from to N
Q13_BE (Secondary veg: Scrub-shrub and broad-leaved deciduous) was changed from to N
Q13_C (Secondary veg: Aquatic bed) was changed from to Y
Q13_CA (Secondary veg: Aquatic bed and algal) was changed from to N
Q13_CB (Secondary veg: Aquatic bed and floating vascular) was changed from to Y
Q13_CC (Secondary veg: Aquatic bed and rooted vascular) was changed from to N
Q13_CD (Secondary veg: Aquatic bed and aquatic moss) was changed from to N
Q13_D (Secondary veg: Emergent) was changed from to Y
Q13_DA (Secondary veg: Emergent and persistent) was changed from to Y
Q13_DB (Secondary veg: Emergent and non-persistent) was changed from to N
Q13_E (Secondary veg: Moss lichen) was changed from to N
Q14_1 (AA on 25 square foot island?) was changed from to N
Q14_2 (AA on 2 acre island?) was changed from to N
Q15_1_A (Vegetation<-->Water = solid form) was changed from to N
Q15_1_B (Vegetation<-->Water = intermediate) was changed from to Y
Q15_1_C (Vegetation<-->Water = checkerboard) was changed from to N
Q15_2 (Channel flow spreading?) was changed from to N
Q16_A (Vegetation class = solid) was changed from to N
Q16_B (Vegetation class = intermediate) was changed from to Y
Q16_C (Vegetation class = mosaic) was changed from to N
Q17 (Plant form richness) was changed from to N
Q18 (Upland<-->Wetland edge irregular?) was changed from to N
Q19_1_A (Wind shelter?) was changed from to Y
Q19_1_B (Wind shelter + fetch?) was changed from to N
Q19_2 (Wave protection?) was changed from to N
Q19_3 (Upland habitat wind shelter?) was changed from to N
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I1 (Threatened/Endangered Species?) was changed from to N
I2 (Designated/Controlled Area?) was changed from to N
I3 (State Listed Cultural Resource?) was changed from to N
I4 (Unusual or rare local type?) was changed from to N
I5 (Only wetland in locality?) was changed from to N
I6 (Substantial previous $ expenditure?) was changed from to N
I7 (Unnaturally high salinities?) was changed from to N
I9 (Downslope sensitive features in floodplain?) was changed from to Y
I10 (Dredging - spawning - ss) was changed from to Y
I11 (WWTP Priority Areas?) was changed from to Y
I12 (Drinking water supplies?) was changed from to N
I13 (Nutrient sensitive waters?) was changed from to Y
I14 (Bathing areas?) was changed from to N
I15 (Sole source aquifer, groundwater discharge ?) was changed from to Y
I16 (Actively used wells?) was changed from to N
I17 (Wildlife critically flow limited?) was changed from to N
I18 (Features in erosion prone areas?) was changed from to N
I19 (USFWS/IRP fishery?) was changed from to N
I20 (USFWS/IRP wildlife?) was changed from to Y
I21 (USFWS Waterfowl Use Region?) was changed from to Y
I22 (Limited dependent species?) was changed from to N
I23 (Education opportunity?) was changed from to N
I24 (Research resource?) was changed from to N
I25 (Pristine?) was changed from to N

I26 (Recreation in deficient area?) was changed from to N
I27 (Recreation access point?) was changed from to N
I28 (Urban area?) was changed from to Y
I29 (Only or closest to named feature?) was changed from to N
I30 (Region losing this type?) was changed from to Y
I31 (Acreage > than % annual loss rate?) was changed from to N
Q1_1 (Evaporation > precipitation?) was changed from to N
Q1_2 (Rainfall-erosivity > 300?) was changed from to N
Q1_3 (Freeze-over > one month?) was changed from to N
Q2_1_1 (Area < 5 acres?) was changed from to N
Q2_1_2 (Area > 40 acres?) was changed from to N
Q2_1_3 (Area > 200 acres?) was changed from to N
Q3_1 (Another Wet Depression within 1 mile?) was changed from to Y
Q3_2 (Cluster wetland?) was changed from to Y
Q3_3 (Oasis wetland?) was changed from to N
Q4_1 (< 5 miles to major water?) was changed from to Y
Q4_2A (< 1 square mile watershed?) was changed from to Y
Q4_2B (1 -100 square mile watershed?) was changed from to N
Q4_2C (100-2500 square mile watershed?) was changed from to N
Q4_2D (> 2500 square mile watershed?) was changed from to N
Q5_1_1 (AA < 5% of watershed?) was changed from to N
Q5_1_2 (AA > 20% of watershed?) was changed from to N
Q5_2 (Upslope wet depressions > 5% of watershed?) was changed from to Y
Q6_1 (Downslope drop > upslope rise?) was changed from to Y
Q7 (v < 10 cm/s?) was changed from to I
Q8_1 (Permanent inlet?) was changed from to Y
Q8_2 (Intermittent inlet?) was changed from to N
Q8_3 (Permanent outlet?) was changed from to N
Q8_4 (Intermittent outlet?) was changed from to Y
Q9_1 (Outlet < one third average width?) was changed from to Y
Q9_2 (Sheet flooding?) was changed from to N
Q10_A (Lacustrine?) was changed from to N
Q10_B (Palustrine?) was changed from to Y
Q10_C (Riverine nontidal?) was changed from to N
Q10_D (Riverine tidal?) was changed from to N
Q10_E (Estuarine?) was changed from to N
Q10_F (Marine?) was changed from to N
Q11 (Fringe or island wetland?) was changed from to N
Q12_A (Dominant veg: forested) was changed from to N
Q12_AA (Dominant veg: forested and dead) was changed from to N
Q12_AB (Dominant veg: forested and needle-leaved evergreen) was changed from to N
Q12_AC (Dominant veg: forested and broad-leaved evergreen) was changed from to N
Q12_AD (Dominant veg: forested and needle-leaved deciduous) was changed from to N
Q12_AE (Dominant veg: forested and broad-leaved deciduous) was changed from to N
Q12_B (Dominant veg: Scrub-shrub) was changed from to N
Q12_BA (Dominant veg: Scrub-shrub and dead) was changed from to N
Q12_BB (Dominant veg: Scrub-shrub and needle-leaved evergreen) was changed from to N
Q12_BC (Dominant veg: Scrub-shrub and broad-leaved evergreen) was changed from to N
Q12_BD (Dominant veg: Scrub-shrub and needle-leaved deciduous) was changed from to N
Q12_BE (Dominant veg: Scrub-shrub and broad-leaved deciduous) was changed from to N
Q12_C (Dominant veg: Aquatic bed) was changed from to N
Q12_CA (Dominant veg: Aquatic bed and algal) was changed from to N
Q12_CB (Dominant veg: Aquatic bed and floating vascular) was changed from to N
Q12_CC (Dominant veg: Aquatic bed and rooted vascular) was changed from to N
Q12_CD (Dominant veg: Aquatic bed and aquatic moss) was changed from to N
Q12_D (Dominant veg: Emergent) was changed from to Y
Q12_DA (Dominant veg: Emergent and persistent) was changed from to Y
Q12_DB (Dominant veg: Emergent and non-persistent) was changed from to N
Q12_E (Dominant veg: Moss lichen) was changed from to N
Q13_A (Secondary veg: forested) was changed from to N
Q13_AA (Secondary veg: forested and dead) was changed from to N
Q13_AB (Secondary veg: forested and needle-leaved evergreen) was changed from to N
Q13_AC (Secondary veg: forested and broad-leaved evergreen) was changed from to N
Q13_AD (Secondary veg: forested and needle-leaved deciduous) was changed from to N
Q13_AE (Secondary veg: forested and broad-leaved deciduous) was changed from to N
Q13_B (Secondary veg: Scrub-shrub) was changed from to N
Q13_BA (Secondary veg: Scrub-shrub and dead) was changed from to N
Q13_BB (Secondary veg: Scrub-shrub and needle-leaved evergreen) was changed from to N

Q13_BC (Secondary veg: Scrub-shrub and broad-leaved evergreen) was changed from to N
Q13_BD (Secondary veg: Scrub-shrub and needle-leaved deciduous) was changed from to N
Q13_BE (Secondary veg: Scrub-shrub and broad-leaved deciduous) was changed from to N
Q13_C (Secondary veg: Aquatic bed) was changed from to Y
Q13_CA (Secondary veg: Aquatic bed and algal) was changed from to N
Q13_CB (Secondary veg: Aquatic bed and floating vascular) was changed from to Y
Q13_CC (Secondary veg: Aquatic bed and rooted vascular) was changed from to N
Q13_CD (Secondary veg: Aquatic bed and aquatic moss) was changed from to N
Q13_D (Secondary veg: Emergent) was changed from to Y
Q13_DA (Secondary veg: Emergent and persistent) was changed from to Y
Q13_DB (Secondary veg: Emergent and non-persistent) was changed from to N
Q13_E (Secondary veg: Moss lichen) was changed from to N
Q14_1 (AA on 25 square foot island?) was changed from to N
Q14_2 (AA on 2 acre island?) was changed from to N
Q15_1_A (Vegetation<-->Water = solid form) was changed from to N
Q15_1_B (Vegetation<-->Water = intermediate) was changed from to Y
Q15_1_C (Vegetation<-->Water = checkerboard) was changed from to N
Q15_2 (Channel flow spreading?) was changed from to Y
Q16_A (Vegetation class = solid) was changed from to N
Q16_B (Vegetation class = intermediate) was changed from to Y
Q16_C (Vegetation class = mosaic) was changed from to N
Q17 (Plant form richness) was changed from to N
Q18 (Upland<-->Wetland edge irregular?) was changed from to N
Q19_1_A (Wind shelter?) was changed from to Y
Q19_1_B (Wind shelter + fetch?) was changed from to N

225

I1 (Threatened/Endangered Species?) was changed from to N
I2 (Designated/Controlled Area?) was changed from to N
I3 (State Listed Cultural Resource?) was changed from to N
I4 (Unusual or rare local type?) was changed from to N
I5 (Only wetland in locality?) was changed from to N
I6 (Substantial previous $ expenditure?) was changed from to N
I7 (Unnaturally high salinities?) was changed from to N
I8 (Features sensitive to flooding?) was changed from to N
I9 (Downslope sensitive features in floodplain?) was changed from to N
I10 (Dredging - spawning - ss) was changed from to N
I11 (WWTP Priority Areas?) was changed from to N
I12 (Drinking water supplies?) was changed from to N
I13 (Nutrient sensitive waters?) was changed from to N
I14 (Bathing areas?) was changed from to N
I15 (Sole source aquifer, groundwater discharge ?) was changed from to Y
I16 (Actively used wells?) was changed from to N
I17 (Wildlife critically flow limited?) was changed from to N
I18 (Features in erosion prone areas?) was changed from to N
I19 (USFWS/IRP fishery?) was changed from to N
I20 (USFWS/IRP wildlife?) was changed from to Y
I21 (USFWS Waterfowl Use Region?) was changed from to Y
I22 (Limited dependent species?) was changed from to N
I23 (Education opportunity?) was changed from to N
I24 (Research resource?) was changed from to N
I25 (Pristine?) was changed from to N
I26 (Recreation in deficient area?) was changed from to N
I27 (Recreation access point?) was changed from to N
I28 (Urban area?) was changed from to Y
I29 (Only or closest to named feature?) was changed from to N
I30 (Region losing this type?) was changed from to Y
I31 (Acreage > than % annual loss rate?) was changed from to N
Q1_1 (Evaporation > precipitation?) was changed from to N
Q1_2 (Rainfall-erosivity > 300?) was changed from to N
Q1_3 (Freeze-over > one month?) was changed from to N
Q2_1_1 (Area < 5 acres?) was changed from to Y
Q2_1_2 (Area > 40 acres?) was changed from to N
Q2_1_3 (Area > 200 acres?) was changed from to N
Q3_1 (Another Wet Depression within 1 mile?) was changed from to Y
Q3_2 (Cluster wetland?) was changed from to Y
Q3_3 (Oasis wetland?) was changed from to N
Q4_1 (< 5 miles to major water?) was changed from to Y
Q4_2A (< 1 square mile watershed?) was changed from to Y

Q4_2B (1 -100 square mile watershed?) was changed from to N
Q4_2C (100-2500 square mile watershed?) was changed from to N
Q4_2D (> 2500 square mile watershed?) was changed from to N
Q5_1_1 (AA < 5% of watershed?) was changed from to N
Q5_1_2 (AA > 20% of watershed?) was changed from to Y
Q5_2 (Upslope wet depressions > 5% of watershed?) was changed from to N
Q6_1 (Downslope drop > upslope rise?) was changed from to Y
Q7 (v < 10 cm/s?) was changed from to I
Q8_1 (Permanent inlet?) was changed from to N
Q8_2 (Intermittent inlet?) was changed from to N
Q8_3 (Permanent outlet?) was changed from to N
Q8_4 (Intermittent outlet?) was changed from to N
Q10_A (Lacustrine?) was changed from to N
Q10_B (Palustrine?) was changed from to Y
Q10_C (Riverine nontidal?) was changed from to N
Q10_D (Riverine tidal?) was changed from to N
Q10_E (Estuarine?) was changed from to N
Q10_F (Marine?) was changed from to N
Q11 (Fringe or island wetland?) was changed from to N
Q12_A (Dominant veg: forested) was changed from to N
Q12_AA (Dominant veg: forested and dead) was changed from to N
Q12_AB (Dominant veg: forested and needle-leaved evergreen) was changed from to N
Q12_AC (Dominant veg: forested and broad-leaved evergreen) was changed from to N
Q12_AD (Dominant veg: forested and needle-leaved deciduous) was changed from to N
Q12_AE (Dominant veg: forested and broad-leaved deciduous) was changed from to N
Q12_B (Dominant veg: Scrub-shrub) was changed from to N
Q12_BA (Dominant veg: Scrub-shrub and dead) was changed from to N
Q12_BB (Dominant veg: Scrub-shrub and needle-leaved evergreen) was changed from to N
Q12_BC (Dominant veg: Scrub-shrub and broad-leaved evergreen) was changed from to N
Q12_BD (Dominant veg: Scrub-shrub and needle-leaved deciduous) was changed from to N
Q12_BE (Dominant veg: Scrub-shrub and broad-leaved deciduous) was changed from to N
Q12_C (Dominant veg: Aquatic bed) was changed from to Y
Q12_CA (Dominant veg: Aquatic bed and algal) was changed from to N
Q12_CB (Dominant veg: Aquatic bed and floating vascular) was changed from to Y
Q12_CC (Dominant veg: Aquatic bed and rooted vascular) was changed from to N
Q12_CD (Dominant veg: Aquatic bed and aquatic moss) was changed from to N
Q12_D (Dominant veg: Emergent) was changed from to N
Q12_DA (Dominant veg: Emergent and persistent) was changed from to N
Q12_DB (Dominant veg: Emergent and non-persistent) was changed from to N
Q12_E (Dominant veg: Moss lichen) was changed from to N
Q13_A (Secondary veg: forested) was changed from to N
Q13_AA (Secondary veg: forested and dead) was changed from to N
Q13_AB (Secondary veg: forested and needle-leaved evergreen) was changed from to N
Q13_AC (Secondary veg: forested and broad-leaved evergreen) was changed from to N
Q13_AD (Secondary veg: forested and needle-leaved deciduous) was changed from to N
Q13_AE (Secondary veg: forested and broad-leaved deciduous) was changed from to N
Q13_B (Secondary veg: Scrub-shrub) was changed from to N
Q13_BA (Secondary veg: Scrub-shrub and dead) was changed from to N
Q13_BB (Secondary veg: Scrub-shrub and needle-leaved evergreen) was changed from to N
Q13_BC (Secondary veg: Scrub-shrub and broad-leaved evergreen) was changed from to N
Q13_BD (Secondary veg: Scrub-shrub and needle-leaved deciduous) was changed from to N
Q13_BE (Secondary veg: Scrub-shrub and broad-leaved deciduous) was changed from to N
Q13_C (Secondary veg: Aquatic bed) was changed from to Y
Q13_CA (Secondary veg: Aquatic bed and algal) was changed from to N
Q13_CB (Secondary veg: Aquatic bed and floating vascular) was changed from to Y
Q13_CC (Secondary veg: Aquatic bed and rooted vascular) was changed from to N
Q13_CD (Secondary veg: Aquatic bed and aquatic moss) was changed from to N
Q13_D (Secondary veg: Emergent) was changed from to Y
Q13_DA (Secondary veg: Emergent and persistent) was changed from to Y
Q13_DB (Secondary veg: Emergent and non-persistent) was changed from to N
Q13_E (Secondary veg: Moss lichen) was changed from to N
Q14_1 (AA on 25 square foot island?) was changed from to N
Q14_2 (AA on 2 acre island?) was changed from to N
Q15_1_A (Vegetation<-->Water = solid form) was changed from to Y
Q15_1_B (Vegetation<-->Water = intermediate) was changed from to N
Q15_1_C (Vegetation<-->Water = checkerboard) was changed from to N
Q16_A (Vegetation class = solid) was changed from to N
Q16_B (Vegetation class = intermediate) was changed from to Y

Q16_C (Vegetation class = mosaic) was changed from to N
Q17 (Plant form richness) was changed from to N
Q18 (Upland<-->Wetland edge irregular?) was changed from to N
Q19_1_A (Wind shelter?) was changed from to Y
Q19_1_B (Wind shelter + fetch?) was changed from to N
Q19_3 (Upland habitat wind shelter?) was changed from to Y

27_a

I23 (Education opportunity?) was changed from N to y
I24 (Research resource?) was changed from N to y
Q13_CA (Secondary veg: Aquatic bed and algal) was changed from N to y
Q13_CC (Secondary veg: Aquatic bed and rooted vascular) was changed from N to y
Q14_1 (AA on 25 square foot island?) was changed from N to y
Q15_1_A (Vegetation<-->Water = solid form) was changed from Y to n
Q15_1_C (Vegetation<-->Water = checkerboard) was changed from N to y
Q16_A (Vegetation class = solid) was changed from Y to n
Q16_C (Vegetation class = mosaic) was changed from N to y
Q17 (Plant form richness) was changed from N to y
Q18 (Upland<-->Wetland edge irregular?) was changed from N to y
Q22_1_2 (AA contains a Sinuous channel?) was changed from N to y
Q29_2 (Buffer zone slopes < 5%?) was changed from N to y
Q33_I (Permanent Hydroperiod = regularly flooded tidal?) was changed from Y to n
Q33_J (Permanent Hydroperiod = irregularly exposed tidal?) was changed from N to y
Q39 (Special habitat features?) was changed from N to y
Q46_B (Physical Habitat Interspersion = intermediate) was changed from Y to n
Q46_C (Physical Habitat Interspersion = mosaic) was changed from N to y
Q50 (Plants: waterfowl value?) was changed from N to y
Q61 (DO limiting to fish?) was changed from Y to n
Q99 (Proximity to public transportation) was changed from N to y

27_b

I23 (Education opportunity?) was changed from N to y
I24 (Research resource?) was changed from N to y
Q13_CA (Secondary veg: Aquatic bed and algal) was changed from N to y
Q13_CC (Secondary veg: Aquatic bed and rooted vascular) was changed from N to y
Q14_1 (AA on 25 square foot island?) was changed from N to y
Q15_1_A (Vegetation<-->Water = solid form) was changed from Y to n
Q15_1_C (Vegetation<-->Water = checkerboard) was changed from N to y
Q16_A (Vegetation class = solid) was changed from Y to n
Q16_C (Vegetation class = mosaic) was changed from N to y
Q17 (Plant form richness) was changed from N to y
Q18 (Upland<-->Wetland edge irregular?) was changed from N to y
Q22_1_2 (AA contains a Sinuous channel?) was changed from N to y
Q29_2 (Buffer zone slopes < 5%?) was changed from N to y
Q33_I (Permanent Hydroperiod = regularly flooded tidal?) was changed from Y to n
Q33_J (Permanent Hydroperiod = irregularly exposed tidal?) was changed from N to y
Q39 (Special habitat features?) was changed from N to y
Q46_B (Physical Habitat Interspersion = intermediate) was changed from Y to n
Q46_C (Physical Habitat Interspersion = mosaic) was changed from N to y
Q50 (Plants: waterfowl value?) was changed from N to y
Q61 (DO limiting to fish?) was changed from Y to n
Q99 (Proximity to public transportation) was changed from N to y

28

I23 (Education opportunity?) was changed from N to y
I24 (Research resource?) was changed from N to y
Q2_1_2 (Area > 40 acres?) was changed from N to y
Q13_CA (Secondary veg: Aquatic bed and algal) was changed from N to y
Q13_CC (Secondary veg: Aquatic bed and rooted vascular) was changed from N to y
Q14_1 (AA on 25 square foot island?) was changed from N to y
Q14_2 (AA on 2 acre island?) was changed from N to y
Q15_1_A (Vegetation<-->Water = solid form) was changed from Y to n
Q15_1_C (Vegetation<-->Water = checkerboard) was changed from N to y
Q16_A (Vegetation class = solid) was changed from Y to n
Q16_C (Vegetation class = mosaic) was changed from N to y
Q17 (Plant form richness) was changed from N to y
Q18 (Upland<-->Wetland edge irregular?) was changed from N to y
Q22_1_2 (AA contains a Sinuous channel?) was changed from N to y
Q29_2 (Buffer zone slopes < 5%?) was changed from N to y
Q33_I (Permanent Hydroperiod = regularly flooded tidal?) was changed from Y to n
Q33_J (Permanent Hydroperiod = irregularly exposed tidal?) was changed from N to y

Q46_B (Physical Habitat Interspersion = intermediate) was changed from Y to n
Q46_C (Physical Habitat Interspersion = mosaic) was changed from N to y
Q50 (Plants: waterfowl value?) was changed from N to y
Q61 (DO limiting to fish?) was changed from Y to n
Q99 (Proximity to public transportation) was changed from N to y

3 1_a

I23 (Education opportunity?) was changed from N to y
I24 (Research resource?) was changed from N to y
Q8_4 (Intermittent outlet?) was changed from N to y
Q9_2 (Sheet flooding?) was changed from N to y
Q12_CC (Dominant veg: Aquatic bed and rooted vascular) was changed from N to y
Q12_DA (Dominant veg: Emergent and persistent) was changed from Y to n
Q13_CA (Secondary veg: Aquatic bed and algal) was changed from N to y
Q13_CC (Secondary veg: Aquatic bed and rooted vascular) was changed from N to y
Q13_DB (Secondary veg: Emergent and non-persistent) was changed from N to y
Q15_1_A (Vegetation<-->Water = solid form) was changed from Y to n
Q15_1_C (Vegetation<-->Water = checkerboard) was changed from N to y
Q16_A (Vegetation class = solid) was changed from Y to n
Q16_C (Vegetation class = mosaic) was changed from N to y
Q17 (Plant form richness) was changed from N to y
Q18 (Upland<-->Wetland edge irregular?) was changed from N to y
Q22_1_2 (AA contains a Sinuous channel?) was changed from N to y
Q32_A (Spatial Dominant Hydroperiod = perm flooded nontidal?) was changed from N to y
Q32_D (Spatial Dominant Hydroperiod = seasonally flooded nontidal?) was changed from Y to n
Q33_A (Permanent Hydroperiod = perm flooded nontidal?) was changed from Y to n
Q33_B (Permanent Hydroperiod = intermit exposed nontidal?) was changed from N to y
Q39 (Special habitat features?) was changed from N to y
Q46_B (Physical Habitat Interspersion = intermediate) was changed from Y to n
Q46_C (Physical Habitat Interspersion = mosaic) was changed from N to y
Q49_1_2 (Riffles?) was changed from N to y
Q61 (DO limiting to fish?) was changed from Y to n

3 1_b

I23 (Education opportunity?) was changed from N to y
I24 (Research resource?) was changed from N to y
Q8_4 (Intermittent outlet?) was changed from N to y
Q9_2 (Sheet flooding?) was changed from N to y
Q12_CC (Dominant veg: Aquatic bed and rooted vascular) was changed from N to y
Q12_DA (Dominant veg: Emergent and persistent) was changed from Y to n
Q13_CA (Secondary veg: Aquatic bed and algal) was changed from N to y
Q13_CC (Secondary veg: Aquatic bed and rooted vascular) was changed from N to y
Q13_DB (Secondary veg: Emergent and non-persistent) was changed from N to y
Q14_1 (AA on 25 square foot island?) was changed from n to y
Q15_1_A (Vegetation<-->Water = solid form) was changed from Y to n
Q15_1_C (Vegetation<-->Water = checkerboard) was changed from N to y
Q16_A (Vegetation class = solid) was changed from Y to n
Q16_C (Vegetation class = mosaic) was changed from N to y
Q17 (Plant form richness) was changed from N to y
Q18 (Upland<-->Wetland edge irregular?) was changed from N to y
Q22_1_2 (AA contains a Sinuous channel?) was changed from N to y
Q32_A (Spatial Dominant Hydroperiod = perm flooded nontidal?) was changed from N to y
Q32_D (Spatial Dominant Hydroperiod = seasonally flooded nontidal?) was changed from Y to n
Q33_B (Permanent Hydroperiod = intermit exposed nontidal?) was changed from N to y
Q33_D (Permanent Hydroperiod = seasonally flooded nontidal?) was changed from y to n
Q34_1 (Local dams?) was changed from n to y
Q39 (Special habitat features?) was changed from N to y
Q46_B (Physical Habitat Interspersion = intermediate) was changed from Y to n
Q46_C (Physical Habitat Interspersion = mosaic) was changed from N to y
Q49_1_2 (Riffles?) was changed from N to y
Q61 (DO limiting to fish?) was changed from Y to n

3 2

I23 (Education opportunity?) was changed from N to y
Q9_2 (Sheet flooding?) was changed from N to y
Q14_2 (AA on 2 acre island?) was changed from N to y
Q17 (Plant form richness) was changed from N to y
Q18 (Upland<-->Wetland edge irregular?) was changed from N to y
Q29_2 (Buffer zone slopes < 5%?) was changed from N to y
Q39 (Special habitat features?) was changed from N to y
Q49_1_1 (20%-80% Pools?) was changed from N to y

3 3

- I23 (Education opportunity?) was changed from N to y
- Q13_CA (Secondary veg: Aquatic bed and algal) was changed from N to y
- Q14_1 (AA on 25 square foot island?) was changed from N to y
- Q14_2 (AA on 2 acre island?) was changed from N to y
- Q17 (Plant form richness) was changed from N to y
- Q18 (Upland<-->Wetland edge irregular?) was changed from N to y
- Q22_1_2 (AA contains a Sinuous channel?) was changed from N to y
- Q29_2 (Buffer zone slopes < 5%?) was changed from N to y
- Q32_I (Spatial Dominant Hydroperiod = regularly flooded tidal?) was changed from N to y
- Q32_J (Spatial Dominant Hydroperiod = irregularly exposed tidal?) was changed from Y to n
- Q39 (Special habitat features?) was changed from N to y
- Q61 (DO limiting to fish?) was changed from Y to n

3 4

- I23 (Education opportunity?) was changed from N to y
- I24 (Research resource?) was changed from N to y
- Q9_2 (Sheet flooding?) was changed from N to y
- Q13_CA (Secondary veg: Aquatic bed and algal) was changed from N to y
- Q13_CC (Secondary veg: Aquatic bed and rooted vascular) was changed from N to y
- Q14_1 (AA on 25 square foot island?) was changed from N to y
- Q14_2 (AA on 2 acre island?) was changed from N to y
- Q15_1_B (Vegetation<-->Water = intermediate) was changed from Y to n
- Q15_1_C (Vegetation<-->Water = checkerboard) was changed from N to y
- Q16_A (Vegetation class = solid) was changed from Y to n
- Q16_C (Vegetation class = mosaic) was changed from N to y
- Q17 (Plant form richness) was changed from N to y
- Q18 (Upland<-->Wetland edge irregular?) was changed from N to y
- Q22_1_2 (AA contains a Sinuous channel?) was changed from N to y
- Q29_2 (Buffer zone slopes < 5%?) was changed from N to y
- Q33_I (Permanent Hydroperiod = regularly flooded tidal?) was changed from Y to n
- Q33_J (Permanent Hydroperiod = irregularly exposed tidal?) was changed from N to y
- Q39 (Special habitat features?) was changed from N to y
- Q44_A (Secondary Water Depth < 1 inch) was changed from N to y
- Q44_B (1 in < secondary water depth < 4 inches) was changed from N to y
- Q44_C (5 in < secondary water depth < 8 inches) was changed from N to y
- Q44_D (9 in < secondary water depth < 20 inches) was changed from N to y
- Q44_E (21 in < secondary water depth < 39 inches) was changed from N to y
- Q44_F (40 in < secondary water depth < 59 inches) was changed from N to y
- Q44_H (6.5 feet < secondary water depth < 26 feet) was changed from N to y
- Q46_B (Physical Habitat Interspersion = intermediate) was changed from Y to n
- Q46_C (Physical Habitat Interspersion = mosaic) was changed from N to y
- Q49_1_2 (Riffles?) was changed from N to y
- Q49_2 (Fish cover?) was changed from N to y
- Q50 (Plants: waterfowl value?) was changed from N to y
- Q61 (DO limiting to fish?) was changed from Y to n

3 5

- I23 (Education opportunity?) was changed from N to y
- I24 (Research resource?) was changed from N to y
- Q14_1 (AA on 25 square foot island?) was changed from N to y
- Q14_2 (AA on 2 acre island?) was changed from N to y
- Q17 (Plant form richness) was changed from N to y
- Q18 (Upland<-->Wetland edge irregular?) was changed from N to y
- Q22_1_2 (AA contains a Sinuous channel?) was changed from N to y
- Q29_2 (Buffer zone slopes < 5%?) was changed from N to y
- Q39 (Special habitat features?) was changed from N to y
- Q61 (DO limiting to fish?) was changed from Y to n

3 6

- I23 (Education opportunity?) was changed from N to y
- I24 (Research resource?) was changed from N to y
- Q14_1 (AA on 25 square foot island?) was changed from N to y
- Q14_2 (AA on 2 acre island?) was changed from N to y
- Q17 (Plant form richness) was changed from N to y
- Q18 (Upland<-->Wetland edge irregular?) was changed from N to y
- Q22_1_2 (AA contains a Sinuous channel?) was changed from N to y
- Q29_2 (Buffer zone slopes < 5%?) was changed from N to y
- Q39 (Special habitat features?) was changed from N to y
- Q46_B (Physical Habitat Interspersion = intermediate) was changed from Y to n
- Q46_C (Physical Habitat Interspersion = mosaic) was changed from N to y

Q61 (DO limiting to fish?) was changed from Y to n

3 7

I1 (Threatened/Endangered Species?) was changed from to Y
I2 (Designated/Controlled Area?) was changed from to N
I3 (State Listed Cultural Resource?) was changed from to N
I4 (Unusual or rare local type?) was changed from to N
I5 (Only wetland in locality?) was changed from to N
I6 (Substantial previous $ expenditure?) was changed from to N
I7 (Unnaturally high salinities?) was changed from to N
I10 (Dredging - spawning - ss) was changed from to Y
I11 (WWTP Priority Areas?) was changed from to Y
I12 (Drinking water supplies?) was changed from to N
I13 (Nutrient sensitive waters?) was changed from to Y
I14 (Bathing areas?) was changed from to N
I15 (Sole source aquifer, groundwater discharge ?) was changed from to Y
I16 (Actively used wells?) was changed from to N
I17 (Wildlife critically flow limited?) was changed from to N
I18 (Features in erosion prone areas?) was changed from to Y
I19 (USFWS/IRP fishery?) was changed from to N
I20 (USFWS/IRP wildlife?) was changed from to Y
I21 (USFWS Waterfowl Use Region?) was changed from to Y
I22 (Limited dependent species?) was changed from to Y
I23 (Education opportunity?) was changed from to y
I24 (Research resource?) was changed from to y
I25 (Pristine?) was changed from to N
I26 (Recreation in deficient area?) was changed from to N
I27 (Recreation access point?) was changed from to N
I28 (Urban area?) was changed from to Y
I29 (Only or closest to named feature?) was changed from to N
I30 (Region losing this type?) was changed from to Y
I31 (Acreage > than % annual loss rate?) was changed from to N
Q1_1 (Evaporation > precipitation?) was changed from to N
Q1_2 (Rainfall-erosivity > 300?) was changed from to N
Q1_3 (Freeze-over > one month?) was changed from to N
Q2_1_1 (Area < 5 acres?) was changed from to N
Q2_1_2 (Area > 40 acres?) was changed from to y
Q2_1_3 (Area > 200 acres?) was changed from to N
Q3_1 (Another Wet Depression within 1 mile?) was changed from to Y
Q3_2 (Cluster wetland?) was changed from to Y
Q3_3 (Oasis wetland?) was changed from to N
Q4_1 (< 5 miles to major water?) was changed from to Y
Q5_1_1 (AA < 5% of watershed?) was changed from to Y
Q5_1_2 (AA > 20% of watershed?) was changed from to N
Q5_2 (Upslope wet depressions > 5% of watershed?) was changed from to Y
Q6_1 (Downslope drop > upslope rise?) was changed from to Y
Q7 (v < 10 cm/s?) was changed from to I
Q8_1 (Permanent inlet?) was changed from to Y
Q8_2 (Intermittent inlet?) was changed from to N
Q8_3 (Permanent outlet?) was changed from to Y
Q8_4 (Intermittent outlet?) was changed from to N
Q9_1 (Outlet < one third average width?) was changed from to Y
Q9_2 (Sheet flooding?) was changed from to Y
Q10_A (Lacustrine?) was changed from to N
Q10_B (Palustrine?) was changed from to N
Q10_C (Riverine nontidal?) was changed from to N
Q10_D (Riverine tidal?) was changed from to N
Q10_E (Estuarine?) was changed from to Y
Q10_F (Marine?) was changed from to N
Q11 (Fringe or island wetland?) was changed from to N
Q12_A (Dominant veg: forested) was changed from to N
Q12_AA (Dominant veg: forested and dead) was changed from to N
Q12_AB (Dominant veg: forested and needle-leaved evergreen) was changed from to N
Q12_AC (Dominant veg: forested and broad-leaved evergreen) was changed from to N
Q12_AD (Dominant veg: forested and needle-leaved deciduous) was changed from to N
Q12_AE (Dominant veg: forested and broad-leaved deciduous) was changed from to N
Q12_B (Dominant veg: Scrub-shrub) was changed from to N
Q12_BA (Dominant veg: Scrub-shrub and dead) was changed from to N
Q12_BB (Dominant veg: Scrub-shrub and needle-leaved evergreen) was changed from to N

Q12_BC (Dominant veg: Scrub-shrub and broad-leaved evergreen) was changed from to N
Q12_BD (Dominant veg: Scrub-shrub and needle-leaved deciduous) was changed from to N
Q12_BE (Dominant veg: Scrub-shrub and broad-leaved deciduous) was changed from to N
Q12_C (Dominant veg: Aquatic bed) was changed from to Y
Q12_CA (Dominant veg: Aquatic bed and algal) was changed from to N
Q12_CB (Dominant veg: Aquatic bed and floating vascular) was changed from to N
Q12_CC (Dominant veg: Aquatic bed and rooted vascular) was changed from to Y
Q12_CD (Dominant veg: Aquatic bed and aquatic moss) was changed from to N
Q12_D (Dominant veg: Emergent) was changed from to N
Q12_DA (Dominant veg: Emergent and persistent) was changed from to N
Q12_DB (Dominant veg: Emergent and non-persistent) was changed from to N
Q12_E (Dominant veg: Moss lichen) was changed from to N
Q13_A (Secondary veg: forested) was changed from to N
Q13_AA (Secondary veg: forested and dead) was changed from to N
Q13_AB (Secondary veg: forested and needle-leaved evergreen) was changed from to N
Q13_AC (Secondary veg: forested and broad-leaved evergreen) was changed from to N
Q13_AD (Secondary veg: forested and needle-leaved deciduous) was changed from to N
Q13_AE (Secondary veg: forested and broad-leaved deciduous) was changed from to N
Q13_B (Secondary veg: Scrub-shrub) was changed from to N
Q13_BA (Secondary veg: Scrub-shrub and dead) was changed from to N
Q13_BB (Secondary veg: Scrub-shrub and needle-leaved evergreen) was changed from to N
Q13_BC (Secondary veg: Scrub-shrub and broad-leaved evergreen) was changed from to N
Q13_BD (Secondary veg: Scrub-shrub and needle-leaved deciduous) was changed from to N
Q13_BE (Secondary veg: Scrub-shrub and broad-leaved deciduous) was changed from to N
Q13_C (Secondary veg: Aquatic bed) was changed from to Y
Q13_CA (Secondary veg: Aquatic bed and algal) was changed from to N
Q13_CB (Secondary veg: Aquatic bed and floating vascular) was changed from to N
Q13_CC (Secondary veg: Aquatic bed and rooted vascular) was changed from to Y
Q13_CD (Secondary veg: Aquatic bed and aquatic moss) was changed from to N
Q13_D (Secondary veg: Emergent) was changed from to Y
Q13_DA (Secondary veg: Emergent and persistent) was changed from to Y
Q13_DB (Secondary veg: Emergent and non-persistent) was changed from to N
Q13_E (Secondary veg: Moss lichen) was changed from to N
Q14_1 (AA on 25 square foot island?) was changed from to y
Q14_2 (AA on 2 acre island?) was changed from to y
Q15_1_A (Vegetation<-->Water = solid form) was changed from to N
Q15_1_B (Vegetation<-->Water = intermediate) was changed from to N
Q15_1_C (Vegetation<-->Water = checkerboard) was changed from to Y
Q15_2 (Channel flow spreading?) was changed from to Y
Q16_A (Vegetation class = solid) was changed from to N
Q16_B (Vegetation class = intermediate) was changed from to N
Q16_C (Vegetation class = mosaic) was changed from to Y
Q17 (Plant form richness) was changed from to y
Q18 (Upland<-->Wetland edge irregular?) was changed from to y
Q19_1_A (Wind shelter?) was changed from to N
Q19_1_B (Wind shelter + fetch?) was changed from to N
Q19_2 (Wave protection?) was changed from to N

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I1 (Threatened/Endangered Species?) was changed from to Y
I2 (Designated/Controlled Area?) was changed from to N
I3 (State Listed Cultural Resource?) was changed from to N
I4 (Unusual or rare local type?) was changed from to N
I5 (Only wetland in locality?) was changed from to N
I6 (Substantial previous $ expenditure?) was changed from to N
I7 (Unnaturally high salinities?) was changed from to N
I10 (Dredging - spawning - ss) was changed from to Y
I11 (WWTP Priority Areas?) was changed from to Y
I12 (Drinking water supplies?) was changed from to N
I13 (Nutrient sensitive waters?) was changed from to Y
I14 (Bathing areas?) was changed from to N
I15 (Sole source aquifer, groundwater discharge ?) was changed from to Y
I16 (Actively used wells?) was changed from to N
I17 (Wildlife critically flow limited?) was changed from to N
I18 (Features in erosion prone areas?) was changed from to Y
I19 (USFWS/IRP fishery?) was changed from to N
I20 (USFWS/IRP wildlife?) was changed from to Y
I21 (USFWS Waterfowl Use Region?) was changed from to Y
I22 (Limited dependent species?) was changed from to Y

I23 (Education opportunity?) was changed from to y
I24 (Research resource?) was changed from to y
I25 (Pristine?) was changed from to N
I26 (Recreation in deficient area?) was changed from to N
I27 (Recreation access point?) was changed from to N
I28 (Urban area?) was changed from to Y
I29 (Only or closest to named feature?) was changed from to N
I30 (Region losing this type?) was changed from to Y
I31 (Acreage > than % annual loss rate?) was changed from to N
Q1_1 (Evaporation > precipitation?) was changed from to N
Q1_2 (Rainfall-erosivity > 300?) was changed from to N
Q1_3 (Freeze-over > one month?) was changed from to N
Q2_1_1 (Area < 5 acres?) was changed from to N
Q2_1_2 (Area > 40 acres?) was changed from to y
Q2_1_3 (Area > 200 acres?) was changed from to N
Q3_1 (Another Wet Depression within 1 mile?) was changed from to Y
Q3_2 (Cluster wetland?) was changed from to Y
Q3_3 (Oasis wetland?) was changed from to N
Q4_1 (< 5 miles to major water?) was changed from to Y
Q5_1_1 (AA < 5% of watershed?) was changed from to Y
Q5_1_2 (AA > 20% of watershed?) was changed from to N
Q5_2 (Upslope wet depressions > 5% of watershed?) was changed from to Y
Q6_1 (Downslope drop > upslope rise?) was changed from to Y
Q7 (v < 10 cm/s?) was changed from to I
Q8_1 (Permanent inlet?) was changed from to Y
Q8_2 (Intermittent inlet?) was changed from to N
Q8_3 (Permanent outlet?) was changed from to Y
Q8_4 (Intermittent outlet?) was changed from to N
Q9_1 (Outlet < one third average width?) was changed from to Y
Q9_2 (Sheet flooding?) was changed from to Y
Q10_A (Lacustrine?) was changed from to N
Q10_B (Palustrine?) was changed from to N
Q10_C (Riverine nontidal?) was changed from to N
Q10_D (Riverine tidal?) was changed from to N
Q10_E (Estuarine?) was changed from to Y
Q10_F (Marine?) was changed from to N
Q11 (Fringe or island wetland?) was changed from to N
Q12_A (Dominant veg: forested) was changed from to N
Q12_AA (Dominant veg: forested and dead) was changed from to N
Q12_AB (Dominant veg: forested and needle-leaved evergreen) was changed from to N
Q12_AC (Dominant veg: forested and broad-leaved evergreen) was changed from to N
Q12_AD (Dominant veg: forested and needle-leaved deciduous) was changed from to N
Q12_AE (Dominant veg: forested and broad-leaved deciduous) was changed from to N
Q12_B (Dominant veg: Scrub-shrub) was changed from to N
Q12_BA (Dominant veg: Scrub-shrub and dead) was changed from to N
Q12_BB (Dominant veg: Scrub-shrub and needle-leaved evergreen) was changed from to N
Q12_BC (Dominant veg: Scrub-shrub and broad-leaved evergreen) was changed from to N
Q12_BD (Dominant veg: Scrub-shrub and needle-leaved deciduous) was changed from to N
Q12_BE (Dominant veg: Scrub-shrub and broad-leaved deciduous) was changed from to N
Q12_C (Dominant veg: Aquatic bed) was changed from to N
Q12_CA (Dominant veg: Aquatic bed and algal) was changed from to N
Q12_CB (Dominant veg: Aquatic bed and floating vascular) was changed from to N
Q12_CC (Dominant veg: Aquatic bed and rooted vascular) was changed from to N
Q12_CD (Dominant veg: Aquatic bed and aquatic moss) was changed from to N
Q12_D (Dominant veg: Emergent) was changed from to Y
Q12_DA (Dominant veg: Emergent and persistent) was changed from to Y
Q12_DB (Dominant veg: Emergent and non-persistent) was changed from to N
Q12_E (Dominant veg: Moss lichen) was changed from to N
Q13_A (Secondary veg: forested) was changed from to N
Q13_AA (Secondary veg: forested and dead) was changed from to N
Q13_AB (Secondary veg: forested and needle-leaved evergreen) was changed from to N
Q13_AC (Secondary veg: forested and broad-leaved evergreen) was changed from to N
Q13_AD (Secondary veg: forested and needle-leaved deciduous) was changed from to N
Q13_AE (Secondary veg: forested and broad-leaved deciduous) was changed from to N
Q13_B (Secondary veg: Scrub-shrub) was changed from to N
Q13_BA (Secondary veg: Scrub-shrub and dead) was changed from to N
Q13_BB (Secondary veg: Scrub-shrub and needle-leaved evergreen) was changed from to N
Q13_BC (Secondary veg: Scrub-shrub and broad-leaved evergreen) was changed from to N

Q13_BD (Secondary veg: Scrub-shrub and needle-leaved deciduous) was changed from to N
Q13_BE (Secondary veg: Scrub-shrub and broad-leaved deciduous) was changed from to N
Q13_C (Secondary veg: Aquatic bed) was changed from to Y
Q13_CA (Secondary veg: Aquatic bed and algal) was changed from to N
Q13_CB (Secondary veg: Aquatic bed and floating vascular) was changed from to N
Q13_CC (Secondary veg: Aquatic bed and rooted vascular) was changed from to Y
Q13_CD (Secondary veg: Aquatic bed and aquatic moss) was changed from to N
Q13_D (Secondary veg: Emergent) was changed from to Y
Q13_DA (Secondary veg: Emergent and persistent) was changed from to Y
Q13_DB (Secondary veg: Emergent and non-persistent) was changed from to N
Q13_E (Secondary veg: Moss lichen) was changed from to N
Q14_1 (AA on 25 square foot island?) was changed from to y
Q14_2 (AA on 2 acre island?) was changed from to y
Q15_1_A (Vegetation<-->Water = solid form) was changed from to N
Q15_1_B (Vegetation<-->Water = intermediate) was changed from to N
Q15_1_C (Vegetation<-->Water = checkerboard) was changed from to Y
Q15_2 (Channel flow spreading?) was changed from to Y
Q16_A (Vegetation class = solid) was changed from to N
Q16_B (Vegetation class = intermediate) was changed from to N
Q16_C (Vegetation class = mosaic) was changed from to Y
Q17 (Plant form richness) was changed from to y
Q18 (Upland<-->Wetland edge irregular?) was changed from to y
Q19_1_A (Wind shelter?) was changed from to N
Q19_1_B (Wind shelter + fetch?) was changed from to N
Q19_2 (Wave protection?) was changed from to N

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I1 (Threatened/Endangered Species?) was changed from to Y
I2 (Designated/Controlled Area?) was changed from to Y
I3 (State Listed Cultural Resource?) was changed from to Y
I4 (Unusual or rare local type?) was changed from to N
I5 (Only wetland in locality?) was changed from to N
I6 (Substantial previous $ expenditure?) was changed from to Y
I7 (Unnaturally high salinities?) was changed from to N
I10 (Dredging - spawning - ss) was changed from to Y
I11 (WWTP Priority Areas?) was changed from to Y
I12 (Drinking water supplies?) was changed from to N
I13 (Nutrient sensitive waters?) was changed from to Y
I14 (Bathing areas?) was changed from to N
I15 (Sole source aquifer, groundwater discharge ?) was changed from to Y
I16 (Actively used wells?) was changed from to N
I17 (Wildlife critically flow limited?) was changed from to N
I18 (Features in erosion prone areas?) was changed from to N
I19 (USFWS/IRP fishery?) was changed from to Y
I20 (USFWS/IRP wildlife?) was changed from to Y
I21 (USFWS Waterfowl Use Region?) was changed from to Y
I22 (Limited dependent species?) was changed from to N
I23 (Education opportunity?) was changed from to N
I24 (Research resource?) was changed from to Y
I25 (Pristine?) was changed from to N
I26 (Recreation in deficient area?) was changed from to N
I27 (Recreation access point?) was changed from to N
I28 (Urban area?) was changed from to Y
I29 (Only or closest to named feature?) was changed from to Y
I30 (Region losing this type?) was changed from to Y
I31 (Acreage > than % annual loss rate?) was changed from to Y
Q1_1 (Evaporation > precipitation?) was changed from to N
Q1_2 (Rainfall-erosivity > 300?) was changed from to N
Q1_3 (Freeze-over > one month?) was changed from to N
Q2_1_1 (Area < 5 acres?) was changed from to N
Q2_1_2 (Area > 40 acres?) was changed from to Y
Q2_1_3 (Area > 200 acres?) was changed from to N
Q3_1 (Another Wet Depression within 1 mile?) was changed from to Y
Q3_2 (Cluster wetland?) was changed from to Y
Q3_3 (Oasis wetland?) was changed from to N
Q4_1 (< 5 miles to major water?) was changed from to Y
Q5_1_1 (AA < 5% of watershed?) was changed from to N
Q5_1_2 (AA > 20% of watershed?) was changed from to N
Q5_2 (Upslope wet depressions > 5% of watershed?) was changed from to Y

Q6_1 (Downslope drop > upslope rise?) was changed from to Y
Q7 (v < 10 cm/s?) was changed from to I
Q8_1 (Permanent inlet?) was changed from to Y
Q8_2 (Intermittent inlet?) was changed from to N
Q8_3 (Permanent outlet?) was changed from to Y
Q8_4 (Intermittent outlet?) was changed from to N
Q9_1 (Outlet < one third average width?) was changed from to Y
Q9_2 (Sheet flooding?) was changed from to N
Q10_A (Lacustrine?) was changed from to N
Q10_B (Palustrine?) was changed from to N
Q10_C (Riverine nontidal?) was changed from to N
Q10_D (Riverine tidal?) was changed from to N
Q10_E (Estuarine?) was changed from to Y
Q10_F (Marine?) was changed from to N
Q11 (Fringe or island wetland?) was changed from to N
Q12_A (Dominant veg: forested) was changed from to N
Q12_AA (Dominant veg: forested and dead) was changed from to N
Q12_AB (Dominant veg: forested and needle-leaved evergreen) was changed from to N
Q12_AC (Dominant veg: forested and broad-leaved evergreen) was changed from to N
Q12_AD (Dominant veg: forested and needle-leaved deciduous) was changed from to N
Q12_AE (Dominant veg: forested and broad-leaved deciduous) was changed from to N
Q12_B (Dominant veg: Scrub-shrub) was changed from to N
Q12_BA (Dominant veg: Scrub-shrub and dead) was changed from to N
Q12_BB (Dominant veg: Scrub-shrub and needle-leaved evergreen) was changed from to N
Q12_BC (Dominant veg: Scrub-shrub and broad-leaved evergreen) was changed from to N
Q12_BD (Dominant veg: Scrub-shrub and needle-leaved deciduous) was changed from to N
Q12_BE (Dominant veg: Scrub-shrub and broad-leaved deciduous) was changed from to N
Q12_C (Dominant veg: Aquatic bed) was changed from to N
Q12_CA (Dominant veg: Aquatic bed and algal) was changed from to N
Q12_CB (Dominant veg: Aquatic bed and floating vascular) was changed from to N
Q12_CC (Dominant veg: Aquatic bed and rooted vascular) was changed from to N
Q12_CD (Dominant veg: Aquatic bed and aquatic moss) was changed from to N
Q12_D (Dominant veg: Emergent) was changed from to Y
Q12_DA (Dominant veg: Emergent and persistent) was changed from to Y
Q12_DB (Dominant veg: Emergent and non-persistent) was changed from to N
Q12_E (Dominant veg: Moss lichen) was changed from to N
Q13_A (Secondary veg: forested) was changed from to N
Q13_AA (Secondary veg: forested and dead) was changed from to N
Q13_AB (Secondary veg: forested and needle-leaved evergreen) was changed from to N
Q13_AC (Secondary veg: forested and broad-leaved evergreen) was changed from to N
Q13_AD (Secondary veg: forested and needle-leaved deciduous) was changed from to N
Q13_AE (Secondary veg: forested and broad-leaved deciduous) was changed from to N
Q13_B (Secondary veg: Scrub-shrub) was changed from to N
Q13_BA (Secondary veg: Scrub-shrub and dead) was changed from to N
Q13_BB (Secondary veg: Scrub-shrub and needle-leaved evergreen) was changed from to N
Q13_BC (Secondary veg: Scrub-shrub and broad-leaved evergreen) was changed from to N
Q13_BD (Secondary veg: Scrub-shrub and needle-leaved deciduous) was changed from to N
Q13_BE (Secondary veg: Scrub-shrub and broad-leaved deciduous) was changed from to N
Q13_C (Secondary veg: Aquatic bed) was changed from to N
Q13_CA (Secondary veg: Aquatic bed and algal) was changed from to N
Q13_CB (Secondary veg: Aquatic bed and floating vascular) was changed from to N
Q13_CC (Secondary veg: Aquatic bed and rooted vascular) was changed from to N
Q13_CD (Secondary veg: Aquatic bed and aquatic moss) was changed from to N
Q13_D (Secondary veg: Emergent) was changed from to Y
Q13_DA (Secondary veg: Emergent and persistent) was changed from to Y
Q13_DB (Secondary veg: Emergent and non-persistent) was changed from to N
Q13_E (Secondary veg: Moss lichen) was changed from to N
Q14_1 (AA on 25 square foot island?) was changed from to Y
Q14_2 (AA on 2 acre island?) was changed from to N
Q15_1_A (Vegetation<-->Water = solid form) was changed from to N
Q15_1_B (Vegetation<-->Water = intermediate) was changed from to N
Q15_1_C (Vegetation<-->Water = checkerboard) was changed from to Y
Q15_2 (Channel flow spreading?) was changed from to Y
Q16_A (Vegetation class = solid) was changed from to N
Q16_B (Vegetation class = intermediate) was changed from to N
Q16_C (Vegetation class = mosaic) was changed from to Y
Q17 (Plant form richness) was changed from to N
Q18 (Upland<-->Wetland edge irregular?) was changed from to N

Q19_1_A (Wind shelter?) was changed from to N
Q19_1_B (Wind shelter + fetch?) was changed from to N
Q19_2 (Wave protection?) was changed from to N
303
I1 (Threatened/Endangered Species?) was changed from to Y
I2 (Designated/Controlled Area?) was changed from to N
I3 (State Listed Cultural Resource?) was changed from to N
I4 (Unusual or rare local type?) was changed from to N
I5 (Only wetland in locality?) was changed from to N
I6 (Substantial previous $ expenditure?) was changed from to N
I7 (Unnaturally high salinities?) was changed from to N
I10 (Dredging - spawning - ss) was changed from to Y
I11 (WWTP Priority Areas?) was changed from to Y
I12 (Drinking water supplies?) was changed from to N
I13 (Nutrient sensitive waters?) was changed from to Y
I14 (Bathing areas?) was changed from to N
I15 (Sole source aquifer, groundwater discharge ?) was changed from to Y
I16 (Actively used wells?) was changed from to N
I17 (Wildlife critically flow limited?) was changed from to N
I18 (Features in erosion prone areas?) was changed from to N
I19 (USFWS/IRP fishery?) was changed from to N
I20 (USFWS/IRP wildlife?) was changed from to Y
I21 (USFWS Waterfowl Use Region?) was changed from to Y
I22 (Limited dependent species?) was changed from to N
I23 (Education opportunity?) was changed from to y
I24 (Research resource?) was changed from to y
I25 (Pristine?) was changed from to N
I26 (Recreation in deficient area?) was changed from to N
I27 (Recreation access point?) was changed from to N
I28 (Urban area?) was changed from to Y
I29 (Only or closest to named feature?) was changed from to N
I30 (Region losing this type?) was changed from to Y
I31 (Acreage > than % annual loss rate?) was changed from to N
Q1_1 (Evaporation > precipitation?) was changed from to N
Q1_2 (Rainfall-erosivity > 300?) was changed from to N
Q1_3 (Freeze-over > one month?) was changed from to N
Q2_1_1 (Area < 5 acres?) was changed from to N
Q2_1_2 (Area > 40 acres?) was changed from to Y
Q2_1_3 (Area > 200 acres?) was changed from to y
Q3_1 (Another Wet Depression within 1 mile?) was changed from to Y
Q3_2 (Cluster wetland?) was changed from to Y
Q3_3 (Oasis wetland?) was changed from to N
Q4_1 (< 5 miles to major water?) was changed from to Y
Q4_2A (< 1 square mile watershed?) was changed from to N
Q4_2B (1 -100 square mile watershed?) was changed from to Y
Q4_2C (100-2500 square mile watershed?) was changed from to N
Q4_2D (> 2500 square mile watershed?) was changed from to N
Q5_1_1 (AA < 5% of watershed?) was changed from to N
Q5_1_2 (AA > 20% of watershed?) was changed from to Y
Q5_2 (Upslope wet depressions > 5% of watershed?) was changed from to Y
Q6_1 (Downslope drop > upslope rise?) was changed from to Y
Q7 (v < 10 cm/s?) was changed from to I
Q8_1 (Permanent inlet?) was changed from to Y
Q8_2 (Intermittent inlet?) was changed from to N
Q8_3 (Permanent outlet?) was changed from to Y
Q8_4 (Intermittent outlet?) was changed from to N
Q9_1 (Outlet < one third average width?) was changed from to Y
Q9_2 (Sheet flooding?) was changed from to N
Q10_A (Lacustrine?) was changed from to N
Q10_B (Palustrine?) was changed from to N
Q10_C (Riverine nontidal?) was changed from to N
Q10_D (Riverine tidal?) was changed from to N
Q10_E (Estuarine?) was changed from to Y
Q10_F (Marine?) was changed from to N
Q11 (Fringe or island wetland?) was changed from to N
Q12_A (Dominant veg: forested) was changed from to N
Q12_AA (Dominant veg: forested and dead) was changed from to N
Q12_AB (Dominant veg: forested and needle-leaved evergreen) was changed from to N

Q12_AC (Dominant veg: forested and broad-leaved evergreen) was changed from to N
Q12_AD (Dominant veg: forested and needle-leaved deciduous) was changed from to N
Q12_AE (Dominant veg: forested and broad-leaved deciduous) was changed from to N
Q12_B (Dominant veg: Scrub-shrub) was changed from to N
Q12_BA (Dominant veg: Scrub-shrub and dead) was changed from to N
Q12_BB (Dominant veg: Scrub-shrub and needle-leaved evergreen) was changed from to N
Q12_BC (Dominant veg: Scrub-shrub and broad-leaved evergreen) was changed from to N
Q12_BD (Dominant veg: Scrub-shrub and needle-leaved deciduous) was changed from to N
Q12_BE (Dominant veg: Scrub-shrub and broad-leaved deciduous) was changed from to N
Q12_C (Dominant veg: Aquatic bed) was changed from to N
Q12_CA (Dominant veg: Aquatic bed and algal) was changed from to N
Q12_CB (Dominant veg: Aquatic bed and floating vascular) was changed from to N
Q12_CC (Dominant veg: Aquatic bed and rooted vascular) was changed from to N
Q12_CD (Dominant veg: Aquatic bed and aquatic moss) was changed from to N
Q12_D (Dominant veg: Emergent) was changed from to Y
Q12_DA (Dominant veg: Emergent and persistent) was changed from to Y
Q12_DB (Dominant veg: Emergent and non-persistent) was changed from to N
Q12_E (Dominant veg: Moss lichen) was changed from to N
Q13_A (Secondary veg: forested) was changed from to N
Q13_AA (Secondary veg: forested and dead) was changed from to N
Q13_AB (Secondary veg: forested and needle-leaved evergreen) was changed from to N
Q13_AC (Secondary veg: forested and broad-leaved evergreen) was changed from to N
Q13_AD (Secondary veg: forested and needle-leaved deciduous) was changed from to N
Q13_AE (Secondary veg: forested and broad-leaved deciduous) was changed from to N
Q13_B (Secondary veg: Scrub-shrub) was changed from to N
Q13_BA (Secondary veg: Scrub-shrub and dead) was changed from to N
Q13_BB (Secondary veg: Scrub-shrub and needle-leaved evergreen) was changed from to N
Q13_BC (Secondary veg: Scrub-shrub and broad-leaved evergreen) was changed from to N
Q13_BD (Secondary veg: Scrub-shrub and needle-leaved deciduous) was changed from to N
Q13_BE (Secondary veg: Scrub-shrub and broad-leaved deciduous) was changed from to N
Q13_C (Secondary veg: Aquatic bed) was changed from to Y
Q13_CA (Secondary veg: Aquatic bed and algal) was changed from to Y
Q13_CB (Secondary veg: Aquatic bed and floating vascular) was changed from to N
Q13_CC (Secondary veg: Aquatic bed and rooted vascular) was changed from to y
Q13_CD (Secondary veg: Aquatic bed and aquatic moss) was changed from to N
Q13_D (Secondary veg: Emergent) was changed from to Y
Q13_DA (Secondary veg: Emergent and persistent) was changed from to Y
Q13_DB (Secondary veg: Emergent and non-persistent) was changed from to N
Q13_E (Secondary veg: Moss lichen) was changed from to N
Q14_1 (AA on 25 square foot island?) was changed from to y
Q14_2 (AA on 2 acre island?) was changed from to y
Q15_1_A (Vegetation<-->Water = solid form) was changed from to N
Q15_1_B (Vegetation<-->Water = intermediate) was changed from to N
Q15_1_C (Vegetation<-->Water = checkerboard) was changed from to Y
Q15_2 (Channel flow spreading?) was changed from to Y
Q16_A (Vegetation class = solid) was changed from to n
Q16_B (Vegetation class = intermediate) was changed from to N
Q16_C (Vegetation class = mosaic) was changed from to y
Q17 (Plant form richness) was changed from to y
Q18 (Upland<-->Wetland edge irregular?) was changed from to y
Q19_1_A (Wind shelter?) was changed from to N
Q19_1_B (Wind shelter + fetch?) was changed from to N
Q19_2 (Wave protection?) was changed from to N

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Q2_1_3 (Area > 200 acres?) was changed from N to y
Q13_CA (Secondary veg: Aquatic bed and algal) was changed from N to y
Q13_CC (Secondary veg: Aquatic bed and rooted vascular) was changed from N to y
Q14_1 (AA on 25 square foot island?) was changed from N to y
Q14_2 (AA on 2 acre island?) was changed from N to y
Q16_A (Vegetation class = solid) was changed from Y to n
Q16_C (Vegetation class = mosaic) was changed from N to y
Q17 (Plant form richness) was changed from N to y
Q18 (Upland<-->Wetland edge irregular?) was changed from N to y
Q29_2 (Buffer zone slopes < 5%?) was changed from N to y
Q39 (Special habitat features?) was changed from N to y
Q46_B (Physical Habitat Interspersion = intermediate) was changed from Y to n
Q46_C (Physical Habitat Interspersion = mosaic) was changed from N to y
Q50 (Plants: waterfowl value?) was changed from N to y

I1 (Threatened/Endangered Species?) was changed from to N
I2 (Designated/Controlled Area?) was changed from to Y
I3 (State Listed Cultural Resource?) was changed from to N
I4 (Unusual or rare local type?) was changed from to N
I5 (Only wetland in locality?) was changed from to N
I6 (Substantial previous $ expenditure?) was changed from to N
I7 (Unnaturally high salinities?) was changed from to N
I10 (Dredging - spawning - ss) was changed from to N
I11 (WWTP Priority Areas?) was changed from to N
I12 (Drinking water supplies?) was changed from to N
I13 (Nutrient sensitive waters?) was changed from to N
I14 (Bathing areas?) was changed from to N
I15 (Sole source aquifer, groundwater discharge ?) was changed from to Y
I16 (Actively used wells?) was changed from to N
I17 (Wildlife critically flow limited?) was changed from to N
I18 (Features in erosion prone areas?) was changed from to N
I19 (USFWS/IRP fishery?) was changed from to N
I20 (USFWS/IRP wildlife?) was changed from to Y
I21 (USFWS Waterfowl Use Region?) was changed from to Y
I22 (Limited dependent species?) was changed from to N
I23 (Education opportunity?) was changed from to y
I24 (Research resource?) was changed from to y
I25 (Pristine?) was changed from to N
I26 (Recreation in deficient area?) was changed from to N
I27 (Recreation access point?) was changed from to N
I28 (Urban area?) was changed from to Y
I29 (Only or closest to named feature?) was changed from to N
I30 (Region losing this type?) was changed from to Y
I31 (Acreage > than % annual loss rate?) was changed from to N
Q1_1 (Evaporation > precipitation?) was changed from to N
Q1_2 (Rainfall-erosivity > 300?) was changed from to N
Q1_3 (Freeze-over > one month?) was changed from to N
Q2_1_1 (Area < 5 acres?) was changed from to n
Q2_1_2 (Area > 40 acres?) was changed from to y
Q2_1_3 (Area > 200 acres?) was changed from to N
Q3_1 (Another Wet Depression within 1 mile?) was changed from to Y
Q3_2 (Cluster wetland?) was changed from to Y
Q3_3 (Oasis wetland?) was changed from to N
Q4_1 (< 5 miles to major water?) was changed from to Y
Q4_2A (< 1 square mile watershed?) was changed from to Y
Q4_2B (1 -100 square mile watershed?) was changed from to N
Q4_2C (100-2500 square mile watershed?) was changed from to N
Q4_2D (> 2500 square mile watershed?) was changed from to N
Q5_1_1 (AA < 5% of watershed?) was changed from to N
Q5_1_2 (AA > 20% of watershed?) was changed from to Y
Q5_2 (Upslope wet depressions > 5% of watershed?) was changed from to N
Q6_1 (Downslope drop > upslope rise?) was changed from to Y
Q7 (v < 10 cm/s?) was changed from to I
Q8_1 (Permanent inlet?) was changed from to N
Q8_2 (Intermittent inlet?) was changed from to N
Q8_3 (Permanent outlet?) was changed from to y
Q8_4 (Intermittent outlet?) was changed from to N
Q10_A (Lacustrine?) was changed from to N
Q10_B (Palustrine?) was changed from to N
Q10_C (Riverine nontidal?) was changed from to N
Q10_D (Riverine tidal?) was changed from to N
Q10_E (Estuarine?) was changed from to Y
Q10_F (Marine?) was changed from to N
Q11 (Fringe or island wetland?) was changed from to N
Q12_A (Dominant veg: forested) was changed from to N
Q12_AA (Dominant veg: forested and dead) was changed from to N
Q12_AB (Dominant veg: forested and needle-leaved evergreen) was changed from to N
Q12_AC (Dominant veg: forested and broad-leaved evergreen) was changed from to N
Q12_AD (Dominant veg: forested and needle-leaved deciduous) was changed from to N
Q12_AE (Dominant veg: forested and broad-leaved deciduous) was changed from to N
Q12_B (Dominant veg: Scrub-shrub) was changed from to N
Q12_BA (Dominant veg: Scrub-shrub and dead) was changed from to N

Q12_BB (Dominant veg: Scrub-shrub and needle-leaved evergreen) was changed from to N
Q12_BC (Dominant veg: Scrub-shrub and broad-leaved evergreen) was changed from to N
Q12_BD (Dominant veg: Scrub-shrub and needle-leaved deciduous) was changed from to N
Q12_BE (Dominant veg: Scrub-shrub and broad-leaved deciduous) was changed from to N
Q12_C (Dominant veg: Aquatic bed) was changed from to N
Q12_CA (Dominant veg: Aquatic bed and algal) was changed from to N
Q12_CB (Dominant veg: Aquatic bed and floating vascular) was changed from to N
Q12_CC (Dominant veg: Aquatic bed and rooted vascular) was changed from to N
Q12_CD (Dominant veg: Aquatic bed and aquatic moss) was changed from to N
Q12_D (Dominant veg: Emergent) was changed from to Y
Q12_DA (Dominant veg: Emergent and persistent) was changed from to Y
Q12_DB (Dominant veg: Emergent and non-persistent) was changed from to N
Q12_E (Dominant veg: Moss lichen) was changed from to N
Q13_A (Secondary veg: forested) was changed from to N
Q13_AA (Secondary veg: forested and dead) was changed from to N
Q13_AB (Secondary veg: forested and needle-leaved evergreen) was changed from to N
Q13_AC (Secondary veg: forested and broad-leaved evergreen) was changed from to N
Q13_AD (Secondary veg: forested and needle-leaved deciduous) was changed from to N
Q13_AE (Secondary veg: forested and broad-leaved deciduous) was changed from to N
Q13_B (Secondary veg: Scrub-shrub) was changed from to N
Q13_BA (Secondary veg: Scrub-shrub and dead) was changed from to N
Q13_BB (Secondary veg: Scrub-shrub and needle-leaved evergreen) was changed from to N
Q13_BC (Secondary veg: Scrub-shrub and broad-leaved evergreen) was changed from to N
Q13_BD (Secondary veg: Scrub-shrub and needle-leaved deciduous) was changed from to N
Q13_BE (Secondary veg: Scrub-shrub and broad-leaved deciduous) was changed from to N
Q13_C (Secondary veg: Aquatic bed) was changed from to N
Q13_CA (Secondary veg: Aquatic bed and algal) was changed from to y
Q13_CB (Secondary veg: Aquatic bed and floating vascular) was changed from to N
Q13_CC (Secondary veg: Aquatic bed and rooted vascular) was changed from to N
Q13_CD (Secondary veg: Aquatic bed and aquatic moss) was changed from to N
Q13_D (Secondary veg: Emergent) was changed from to Y
Q13_DA (Secondary veg: Emergent and persistent) was changed from to Y
Q13_DB (Secondary veg: Emergent and non-persistent) was changed from to N
Q13_E (Secondary veg: Moss lichen) was changed from to N
Q14_1 (AA on 25 square foot island?) was changed from to y
Q14_2 (AA on 2 acre island?) was changed from to y
Q15_1_A (Vegetation<-->Water = solid form) was changed from to Y
Q15_1_B (Vegetation<-->Water = intermediate) was changed from to N
Q15_1_C (Vegetation<-->Water = checkerboard) was changed from to N
Q16_A (Vegetation class = solid) was changed from to n
Q16_B (Vegetation class = intermediate) was changed from to N
Q16_C (Vegetation class = mosaic) was changed from to y
Q17 (Plant form richness) was changed from to y
Q18 (Upland<-->Wetland edge irregular?) was changed from to y
Q19_1_A (Wind shelter?) was changed from to N
Q19_1_B (Wind shelter + fetch?) was changed from to N
Q19_2 (Wave protection?) was changed from to N

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I1 (Threatened/Endangered Species?) was changed from to Y
I2 (Designated/Controlled Area?) was changed from to N
I3 (State Listed Cultural Resource?) was changed from to N
I4 (Unusual or rare local type?) was changed from to Y
I5 (Only wetland in locality?) was changed from to N
I6 (Substantial previous $ expenditure?) was changed from to N
I7 (Unnaturally high salinities?) was changed from to N
I10 (Dredging - spawning - ss) was changed from to Y
I11 (WWTP Priority Areas?) was changed from to Y
I12 (Drinking water supplies?) was changed from to N
I13 (Nutrient sensitive waters?) was changed from to Y
I14 (Bathing areas?) was changed from to N
I15 (Sole source aquifer, groundwater discharge ?) was changed from to Y
I16 (Actively used wells?) was changed from to N
I17 (Wildlife critically flow limited?) was changed from to N
I18 (Features in erosion prone areas?) was changed from to N
I20 (USFWS/IRP wildlife?) was changed from to Y
I21 (USFWS Waterfowl Use Region?) was changed from to Y
I22 (Limited dependent species?) was changed from to N
I23 (Education opportunity?) was changed from to y

I24 (Research resource?) was changed from to y
I25 (Pristine?) was changed from to N
I26 (Recreation in deficient area?) was changed from to N
I27 (Recreation access point?) was changed from to N
I28 (Urban area?) was changed from to Y
I29 (Only or closest to named feature?) was changed from to N
I30 (Region losing this type?) was changed from to Y
I31 (Acreage > than % annual loss rate?) was changed from to N
Q1_1 (Evaporation > precipitation?) was changed from to N
Q1_2 (Rainfall-erosivity > 300?) was changed from to N
Q1_3 (Freeze-over > one month?) was changed from to N
Q2_1_1 (Area < 5 acres?) was changed from to N
Q2_1_2 (Area > 40 acres?) was changed from to Y
Q2_1_3 (Area > 200 acres?) was changed from to y
Q3_1 (Another Wet Depression within 1 mile?) was changed from to Y
Q3_2 (Cluster wetland?) was changed from to N
Q3_3 (Oasis wetland?) was changed from to N
Q4_1 (< 5 miles to major water?) was changed from to Y
Q5_1_1 (AA < 5% of watershed?) was changed from to N
Q5_1_2 (AA > 20% of watershed?) was changed from to Y
Q5_2 (Upslope wet depressions > 5% of watershed?) was changed from to N
Q6_1 (Downslope drop > upslope rise?) was changed from to Y
Q7 (v < 10 cm/s?) was changed from to I
Q8_1 (Permanent inlet?) was changed from to N
Q8_2 (Intermittent inlet?) was changed from to Y
Q8_3 (Permanent outlet?) was changed from to y
Q8_4 (Intermittent outlet?) was changed from to Y
Q9_1 (Outlet < one third average width?) was changed from to Y
Q9_2 (Sheet flooding?) was changed from to y
Q10_A (Lacustrine?) was changed from to N
Q10_B (Palustrine?) was changed from to N
Q10_C (Riverine nontidal?) was changed from to N
Q10_D (Riverine tidal?) was changed from to N
Q10_E (Estuarine?) was changed from to Y
Q10_F (Marine?) was changed from to N
Q11 (Fringe or island wetland?) was changed from to N
Q12_A (Dominant veg: forested) was changed from to N
Q12_AA (Dominant veg: forested and dead) was changed from to N
Q12_AB (Dominant veg: forested and needle-leaved evergreen) was changed from to N
Q12_AC (Dominant veg: forested and broad-leaved evergreen) was changed from to N
Q12_AD (Dominant veg: forested and needle-leaved deciduous) was changed from to N
Q12_AE (Dominant veg: forested and broad-leaved deciduous) was changed from to N
Q12_B (Dominant veg: Scrub-shrub) was changed from to N
Q12_BA (Dominant veg: Scrub-shrub and dead) was changed from to N
Q12_BB (Dominant veg: Scrub-shrub and needle-leaved evergreen) was changed from to N
Q12_BC (Dominant veg: Scrub-shrub and broad-leaved evergreen) was changed from to N
Q12_BD (Dominant veg: Scrub-shrub and needle-leaved deciduous) was changed from to N
Q12_BE (Dominant veg: Scrub-shrub and broad-leaved deciduous) was changed from to N
Q12_C (Dominant veg: Aquatic bed) was changed from to N
Q12_CA (Dominant veg: Aquatic bed and algal) was changed from to N
Q12_CB (Dominant veg: Aquatic bed and floating vascular) was changed from to N
Q12_CC (Dominant veg: Aquatic bed and rooted vascular) was changed from to N
Q12_CD (Dominant veg: Aquatic bed and aquatic moss) was changed from to N
Q12_D (Dominant veg: Emergent) was changed from to Y
Q12_DA (Dominant veg: Emergent and persistent) was changed from to Y
Q12_DB (Dominant veg: Emergent and non-persistent) was changed from to N
Q12_E (Dominant veg: Moss lichen) was changed from to N
Q13_A (Secondary veg: forested) was changed from to N
Q13_AA (Secondary veg: forested and dead) was changed from to N
Q13_AB (Secondary veg: forested and needle-leaved evergreen) was changed from to N
Q13_AC (Secondary veg: forested and broad-leaved evergreen) was changed from to N
Q13_AD (Secondary veg: forested and needle-leaved deciduous) was changed from to N
Q13_AE (Secondary veg: forested and broad-leaved deciduous) was changed from to N
Q13_B (Secondary veg: Scrub-shrub) was changed from to N
Q13_BA (Secondary veg: Scrub-shrub and dead) was changed from to N
Q13_BB (Secondary veg: Scrub-shrub and needle-leaved evergreen) was changed from to N
Q13_BC (Secondary veg: Scrub-shrub and broad-leaved evergreen) was changed from to N
Q13_BD (Secondary veg: Scrub-shrub and needle-leaved deciduous) was changed from to N

Q13_BE (Secondary veg: Scrub-shrub and broad-leaved deciduous) was changed from to N
Q13_C (Secondary veg: Aquatic bed) was changed from to Y
Q13_CA (Secondary veg: Aquatic bed and algal) was changed from to Y
Q13_CB (Secondary veg: Aquatic bed and floating vascular) was changed from to N
Q13_CC (Secondary veg: Aquatic bed and rooted vascular) was changed from to y
Q13_CD (Secondary veg: Aquatic bed and aquatic moss) was changed from to N
Q13_D (Secondary veg: Emergent) was changed from to Y
Q13_DA (Secondary veg: Emergent and persistent) was changed from to Y
Q13_DB (Secondary veg: Emergent and non-persistent) was changed from to N
Q13_E (Secondary veg: Moss lichen) was changed from to N
Q14_1 (AA on 25 square foot island?) was changed from to y
Q14_2 (AA on 2 acre island?) was changed from to y
Q15_1_A (Vegetation<-->Water = solid form) was changed from to N
Q15_1_B (Vegetation<-->Water = intermediate) was changed from to n
Q15_1_C (Vegetation<-->Water = checkerboard) was changed from to y
Q15_2 (Channel flow spreading?) was changed from to Y
Q16_A (Vegetation class = solid) was changed from to n
Q16_B (Vegetation class = intermediate) was changed from to N
Q16_C (Vegetation class = mosaic) was changed from to y
Q17 (Plant form richness) was changed from to y
Q18 (Upland<-->Wetland edge irregular?) was changed from to y
Q19_1_A (Wind shelter?) was changed from to Y
Q19_1_B (Wind shelter + fetch?) was changed from to N
Q19_2 (Wave protection?) was changed from to Y
Q19_3 (Upland habitat wind shelter?) was changed from to N

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I23 (Education opportunity?) was changed from N to y
I24 (Research resource?) was changed from N to y
Q2_1_2 (Area > 40 acres?) was changed from N to y
Q9_2 (Sheet flooding?) was changed from N to y
Q13_CC (Secondary veg: Aquatic bed and rooted vascular) was changed from N to y
Q14_1 (AA on 25 square foot island?) was changed from N to y
Q14_2 (AA on 2 acre island?) was changed from N to y
Q15_1_B (Vegetation<-->Water = intermediate) was changed from Y to n
Q15_1_C (Vegetation<-->Water = checkerboard) was changed from N to y
Q16_A (Vegetation class = solid) was changed from Y to n
Q16_C (Vegetation class = mosaic) was changed from N to y
Q17 (Plant form richness) was changed from N to y
Q18 (Upland<-->Wetland edge irregular?) was changed from N to y
Q39 (Special habitat features?) was changed from N to y
Q50 (Plants: waterfowl value?) was changed from N to y
Q61 (DO limiting to fish?) was changed from Y to n
Q99 (Proximity to public transportation) was changed from N to y

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I23 (Education opportunity?) was changed from N to y
I24 (Research resource?) was changed from N to y
Q2_1_2 (Area > 40 acres?) was changed from N to y
Q9_2 (Sheet flooding?) was changed from N to y
Q13_CC (Secondary veg: Aquatic bed and rooted vascular) was changed from N to y
Q14_1 (AA on 25 square foot island?) was changed from N to y
Q14_2 (AA on 2 acre island?) was changed from N to y
Q15_1_B (Vegetation<-->Water = intermediate) was changed from Y to n
Q15_1_C (Vegetation<-->Water = checkerboard) was changed from N to y
Q16_A (Vegetation class = solid) was changed from Y to n
Q16_C (Vegetation class = mosaic) was changed from N to y
Q17 (Plant form richness) was changed from N to y
Q18 (Upland<-->Wetland edge irregular?) was changed from N to y
Q22_1_2 (AA contains a Sinuous channel?) was changed from N to y
Q39 (Special habitat features?) was changed from N to y
Q46_B (Physical Habitat Interspersion = intermediate) was changed from Y to n
Q46_C (Physical Habitat Interspersion = mosaic) was changed from N to y
Q50 (Plants: waterfowl value?) was changed from N to y
Q61 (DO limiting to fish?) was changed from Y to n
Q99 (Proximity to public transportation) was changed from N to y

33 B

I23 (Education opportunity?) was changed from N to y
I24 (Research resource?) was changed from N to y
Q2_1_2 (Area > 40 acres?) was changed from N to y

Q9_2 (Sheet flooding?) was changed from N to y
Q13_CC (Secondary veg: Aquatic bed and rooted vascular) was changed from N to y
Q14_1 (AA on 25 square foot island?) was changed from N to y
Q14_2 (AA on 2 acre island?) was changed from N to y
Q15_1_B (Vegetation<-->Water = intermediate) was changed from Y to n
Q15_1_C (Vegetation<-->Water = checkerboard) was changed from N to y
Q16_A (Vegetation class = solid) was changed from Y to n
Q16_C (Vegetation class = mosaic) was changed from N to y
Q17 (Plant form richness) was changed from N to y
Q18 (Upland<-->Wetland edge irregular?) was changed from N to y
Q39 (Special habitat features?) was changed from N to y
Q50 (Plants: waterfowl value?) was changed from N to y
Q61 (DO limiting to fish?) was changed from Y to n
Q99 (Proximity to public transportation) was changed from N to y

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I1 (Threatened/Endangered Species?) was changed from to N
I2 (Designated/Controlled Area?) was changed from to N
I3 (State Listed Cultural Resource?) was changed from to N
I4 (Unusual or rare local type?) was changed from to N
I5 (Only wetland in locality?) was changed from to N
I6 (Substantial previous $ expenditure?) was changed from to N
I7 (Unnaturally high salinities?) was changed from to N
I10 (Dredging - spawning - ss) was changed from to Y
I11 (WWTP Priority Areas?) was changed from to Y
I12 (Drinking water supplies?) was changed from to N
I13 (Nutrient sensitive waters?) was changed from to Y
I14 (Bathing areas?) was changed from to N
I15 (Sole source aquifer, groundwater discharge ?) was changed from to Y
I16 (Actively used wells?) was changed from to N
I17 (Wildlife critically flow limited?) was changed from to N
I18 (Features in erosion prone areas?) was changed from to N
I19 (USFWS/IRP fishery?) was changed from to N
I20 (USFWS/IRP wildlife?) was changed from to Y
I21 (USFWS Waterfowl Use Region?) was changed from to Y
I22 (Limited dependent species?) was changed from to N
I23 (Education opportunity?) was changed from to y
I24 (Research resource?) was changed from to y
I25 (Pristine?) was changed from to N
I26 (Recreation in deficient area?) was changed from to N
I27 (Recreation access point?) was changed from to N
I28 (Urban area?) was changed from to Y
I29 (Only or closest to named feature?) was changed from to N
I30 (Region losing this type?) was changed from to Y
I31 (Acreage > than % annual loss rate?) was changed from to Y
Q1_1 (Evaporation > precipitation?) was changed from to N
Q1_2 (Rainfall-erosivity > 300?) was changed from to N
Q1_3 (Freeze-over > one month?) was changed from to N
Q2_1_1 (Area < 5 acres?) was changed from to N
Q2_1_2 (Area > 40 acres?) was changed from to y
Q2_1_3 (Area > 200 acres?) was changed from to N
Q3_1 (Another Wet Depression within 1 mile?) was changed from to Y
Q3_2 (Cluster wetland?) was changed from to N
Q3_3 (Oasis wetland?) was changed from to N
Q4_1 (< 5 miles to major water?) was changed from to Y
Q5_1_1 (AA < 5% of watershed?) was changed from to Y
Q5_1_2 (AA > 20% of watershed?) was changed from to N
Q5_2 (Upslope wet depressions > 5% of watershed?) was changed from to N
Q6_1 (Downslope drop > upslope rise?) was changed from to Y
Q7 (v < 10 cm/s?) was changed from to I
Q8_1 (Permanent inlet?) was changed from to Y
Q8_2 (Intermittent inlet?) was changed from to Y
Q8_3 (Permanent outlet?) was changed from to Y
Q8_4 (Intermittent outlet?) was changed from to N
Q9_1 (Outlet < one third average width?) was changed from to N
Q9_2 (Sheet flooding?) was changed from to y
Q10_A (Lacustrine?) was changed from to N
Q10_B (Palustrine?) was changed from to N
Q10_C (Riverine nontidal?) was changed from to N

Q10_D (Riverine tidal?) was changed from to N
Q10_E (Estuarine?) was changed from to Y
Q10_F (Marine?) was changed from to N
Q11 (Fringe or island wetland?) was changed from to N
Q12_A (Dominant veg: forested) was changed from to N
Q12_AA (Dominant veg: forested and dead) was changed from to N
Q12_AB (Dominant veg: forested and needle-leaved evergreen) was changed from to N
Q12_AC (Dominant veg: forested and broad-leaved evergreen) was changed from to N
Q12_AD (Dominant veg: forested and needle-leaved deciduous) was changed from to N
Q12_AE (Dominant veg: forested and broad-leaved deciduous) was changed from to N
Q12_B (Dominant veg: Scrub-shrub) was changed from to N
Q12_BA (Dominant veg: Scrub-shrub and dead) was changed from to N
Q12_BB (Dominant veg: Scrub-shrub and needle-leaved evergreen) was changed from to N
Q12_BC (Dominant veg: Scrub-shrub and broad-leaved evergreen) was changed from to N
Q12_BD (Dominant veg: Scrub-shrub and needle-leaved deciduous) was changed from to N
Q12_BE (Dominant veg: Scrub-shrub and broad-leaved deciduous) was changed from to N
Q12_C (Dominant veg: Aquatic bed) was changed from to N
Q12_CA (Dominant veg: Aquatic bed and algal) was changed from to N
Q12_CB (Dominant veg: Aquatic bed and floating vascular) was changed from to N
Q12_CC (Dominant veg: Aquatic bed and rooted vascular) was changed from to N
Q12_CD (Dominant veg: Aquatic bed and aquatic moss) was changed from to N
Q12_D (Dominant veg: Emergent) was changed from to Y
Q12_DA (Dominant veg: Emergent and persistent) was changed from to Y
Q12_DB (Dominant veg: Emergent and non-persistent) was changed from to N
Q12_E (Dominant veg: Moss lichen) was changed from to N
Q13_A (Secondary veg: forested) was changed from to N
Q13_AA (Secondary veg: forested and dead) was changed from to N
Q13_AB (Secondary veg: forested and needle-leaved evergreen) was changed from to N
Q13_AC (Secondary veg: forested and broad-leaved evergreen) was changed from to N
Q13_AD (Secondary veg: forested and needle-leaved deciduous) was changed from to N
Q13_AE (Secondary veg: forested and broad-leaved deciduous) was changed from to N
Q13_B (Secondary veg: Scrub-shrub) was changed from to N
Q13_BA (Secondary veg: Scrub-shrub and dead) was changed from to N
Q13_BB (Secondary veg: Scrub-shrub and needle-leaved evergreen) was changed from to N
Q13_BC (Secondary veg: Scrub-shrub and broad-leaved evergreen) was changed from to N
Q13_BD (Secondary veg: Scrub-shrub and needle-leaved deciduous) was changed from to N
Q13_BE (Secondary veg: Scrub-shrub and broad-leaved deciduous) was changed from to N
Q13_C (Secondary veg: Aquatic bed) was changed from to Y
Q13_CA (Secondary veg: Aquatic bed and algal) was changed from to Y
Q13_CB (Secondary veg: Aquatic bed and floating vascular) was changed from to N
Q13_CC (Secondary veg: Aquatic bed and rooted vascular) was changed from to y
Q13_CD (Secondary veg: Aquatic bed and aquatic moss) was changed from to N
Q13_D (Secondary veg: Emergent) was changed from to Y
Q13_DA (Secondary veg: Emergent and persistent) was changed from to Y
Q13_DB (Secondary veg: Emergent and non-persistent) was changed from to N
Q13_E (Secondary veg: Moss lichen) was changed from to N
Q14_1 (AA on 25 square foot island?) was changed from to y
Q14_2 (AA on 2 acre island?) was changed from to y
Q15_1_A (Vegetation<-->Water = solid form) was changed from to n
Q15_1_B (Vegetation<-->Water = intermediate) was changed from to N
Q15_1_C (Vegetation<-->Water = checkerboard) was changed from to y
Q15_2 (Channel flow spreading?) was changed from to Y
Q16_A (Vegetation class = solid) was changed from to n
Q16_B (Vegetation class = intermediate) was changed from to N
Q16_C (Vegetation class = mosaic) was changed from to y
Q17 (Plant form richness) was changed from to y
Q18 (Upland<-->Wetland edge irregular?) was changed from to y
Q19_1_A (Wind shelter?) was changed from to N
Q19_1_B (Wind shelter + fetch?) was changed from to N
Q19_2 (Wave protection?) was changed from to N
Q19_3 (Upland habitat wind shelter?) was changed from to N

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I23 (Education opportunity?) was changed from N to y
I24 (Research resource?) was changed from N to y
Q9_2 (Sheet flooding?) was changed from N to y
Q13_CA (Secondary veg: Aquatic bed and algal) was changed from N to y
Q16_A (Vegetation class = solid) was changed from Y to n
Q16_C (Vegetation class = mosaic) was changed from N to y

Q17 (Plant form richness) was changed from N to y
Q33_I (Permanent Hydroperiod = regularly flooded tidal?) was changed from Y to n
Q33_J (Permanent Hydroperiod = irregularly exposed tidal?) was changed from N to y
Q39 (Special habitat features?) was changed from N to y

4 B

I23 (Education opportunity?) was changed from N to y
I24 (Research resource?) was changed from n to y
Q9_2 (Sheet flooding?) was changed from N to y
Q13_CC (Secondary veg: Aquatic bed and rooted vascular) was changed from N to y
Q14_1 (AA on 25 square foot island?) was changed from N to y
Q14_2 (AA on 2 acre island?) was changed from N to y
Q15_1_B (Vegetation<-->Water = intermediate) was changed from Y to n
Q15_1_C (Vegetation<-->Water = checkerboard) was changed from N to y
Q16_A (Vegetation class = solid) was changed from Y to n
Q16_C (Vegetation class = mosaic) was changed from N to y
Q17 (Plant form richness) was changed from N to y
Q39 (Special habitat features?) was changed from N to y
Q46_B (Physical Habitat Interspersion = intermediate) was changed from Y to n
Q46_C (Physical Habitat Interspersion = mosaic) was changed from N to y
Q50 (Plants: waterfowl value?) was changed from N to y
Q61 (DO limiting to fish?) was changed from Y to n
Q99 (Proximity to public transportation) was changed from N to y

4 C

I23 (Education opportunity?) was changed from N to y
Q9_2 (Sheet flooding?) was changed from N to y
Q13_CC (Secondary veg: Aquatic bed and rooted vascular) was changed from N to y
Q14_1 (AA on 25 square foot island?) was changed from N to y
Q14_2 (AA on 2 acre island?) was changed from N to y
Q15_1_B (Vegetation<-->Water = intermediate) was changed from Y to n
Q15_1_C (Vegetation<-->Water = checkerboard) was changed from N to y
Q16_A (Vegetation class = solid) was changed from Y to n
Q16_C (Vegetation class = mosaic) was changed from N to y
Q17 (Plant form richness) was changed from N to y
Q39 (Special habitat features?) was changed from N to y
Q46_B (Physical Habitat Interspersion = intermediate) was changed from Y to n
Q46_C (Physical Habitat Interspersion = mosaic) was changed from N to y
Q50 (Plants: waterfowl value?) was changed from N to y
Q61 (DO limiting to fish?) was changed from Y to n

4 D_a

Q9_2 (Sheet flooding?) was changed from N to y
Q13_CA (Secondary veg: Aquatic bed and algal) was changed from N to y
Q13_CC (Secondary veg: Aquatic bed and rooted vascular) was changed from N to y
Q13_DA (Secondary veg: Emergent and persistent) was changed from N to y
Q15_1_B (Vegetation<-->Water = intermediate) was changed from Y to n
Q15_1_C (Vegetation<-->Water = checkerboard) was changed from N to y
Q15_2 (Channel flow spreading?) was changed from N to y
Q16_A (Vegetation class = solid) was changed from Y to n
Q16_C (Vegetation class = mosaic) was changed from N to y
Q17 (Plant form richness) was changed from N to y
Q18 (Upland<-->Wetland edge irregular?) was changed from N to y
Q39 (Special habitat features?) was changed from N to y
Q46_A (Physical Habitat Interspersion = uniform) was changed from Y to n
Q46_B (Physical Habitat Interspersion = intermediate) was changed from Y to n
Q46_C (Physical Habitat Interspersion = mosaic) was changed from N to y
Q50 (Plants: waterfowl value?) was changed from N to y
Q61 (DO limiting to fish?) was changed from Y to n

4 D_b

Q9_2 (Sheet flooding?) was changed from N to y
Q13_CA (Secondary veg: Aquatic bed and algal) was changed from N to y
Q13_CC (Secondary veg: Aquatic bed and rooted vascular) was changed from N to y
Q13_DA (Secondary veg: Emergent and persistent) was changed from N to y
Q14_1 (AA on 25 square foot island?) was changed from n to y
Q15_1_B (Vegetation<-->Water = intermediate) was changed from Y to n
Q15_1_C (Vegetation<-->Water = checkerboard) was changed from N to y
Q15_2 (Channel flow spreading?) was changed from N to y
Q16_A (Vegetation class = solid) was changed from Y to n
Q16_C (Vegetation class = mosaic) was changed from N to y
Q17 (Plant form richness) was changed from N to y

Q31_6_C (emergent in Zone B = 31% - 60% of Zones B and C?) was changed from N to y
Q31_6_D (emergent in Zone B = 61% - 99% of Zones B and C?) was changed from Y to n
Q39 (Special habitat features?) was changed from N to y
Q44_E (21 in < secondary water depth < 39 inches) was changed from n to y
Q44_F (40 in < secondary water depth < 59 inches) was changed from n to y
Q44_G (5 feet < secondary water depth < 6.5 feet) was changed from n to y
Q44_H (6.5 feet < secondary water depth < 26 feet) was changed from n to y
Q46_A (Physical Habitat Interspersion = uniform) was changed from Y to n
Q46_B (Physical Habitat Interspersion = intermediate) was changed from Y to n
Q46_C (Physical Habitat Interspersion = mosaic) was changed from N to y
Q50 (Plants: waterfowl value?) was changed from N to y
Q61 (DO limiting to fish?) was changed from Y to n

4 E

I1 (Threatened/Endangered Species?) was changed from to N
I2 (Designated/Controlled Area?) was changed from to N
I3 (State Listed Cultural Resource?) was changed from to N
I4 (Unusual or rare local type?) was changed from to N
I5 (Only wetland in locality?) was changed from to N
I6 (Substantial previous $ expenditure?) was changed from to N
I7 (Unnaturally high salinities?) was changed from to N
I10 (Dredging - spawning - ss) was changed from to Y
I11 (WWTP Priority Areas?) was changed from to Y
I12 (Drinking water supplies?) was changed from to N
I13 (Nutrient sensitive waters?) was changed from to Y
I14 (Bathing areas?) was changed from to N
I15 (Sole source aquifer, groundwater discharge ?) was changed from to Y
I16 (Actively used wells?) was changed from to N
I17 (Wildlife critically flow limited?) was changed from to N
I18 (Features in erosion prone areas?) was changed from to N
I19 (USFWS/IRP fishery?) was changed from to N
I21 (USFWS Waterfowl Use Region?) was changed from to Y
I22 (Limited dependent species?) was changed from to N
I23 (Education opportunity?) was changed from to y
I24 (Research resource?) was changed from to y
I25 (Pristine?) was changed from to N
I26 (Recreation in deficient area?) was changed from to N
I27 (Recreation access point?) was changed from to N
I28 (Urban area?) was changed from to Y
I29 (Only or closest to named feature?) was changed from to Y
I30 (Region losing this type?) was changed from to Y
I31 (Acreage > than % annual loss rate?) was changed from to Y
Q1_1 (Evaporation > precipitation?) was changed from to N
Q1_2 (Rainfall-erosivity > 300?) was changed from to N
Q1_3 (Freeze-over > one month?) was changed from to N
Q2_1_1 (Area < 5 acres?) was changed from to Y
Q2_1_2 (Area > 40 acres?) was changed from to N
Q2_1_3 (Area > 200 acres?) was changed from to N
Q3_1 (Another Wet Depression within 1 mile?) was changed from to Y
Q3_2 (Cluster wetland?) was changed from to Y
Q3_3 (Oasis wetland?) was changed from to N
Q4_1 (< 5 miles to major water?) was changed from to Y
Q5_1_1 (AA < 5% of watershed?) was changed from to Y
Q5_1_2 (AA > 20% of watershed?) was changed from to N
Q5_2 (Upslope wet depressions > 5% of watershed?) was changed from to Y
Q6_1 (Downslope drop > upslope rise?) was changed from to Y
Q7 (v < 10 cm/s?) was changed from to I
Q8_1 (Permanent inlet?) was changed from to Y
Q8_2 (Intermittent inlet?) was changed from to N
Q8_3 (Permanent outlet?) was changed from to Y
Q8_4 (Intermittent outlet?) was changed from to N
Q9_1 (Outlet < one third average width?) was changed from to Y
Q9_2 (Sheet flooding?) was changed from to y
Q10_A (Lacustrine?) was changed from to N
Q10_B (Palustrine?) was changed from to N
Q10_C (Riverine nontidal?) was changed from to N
Q10_D (Riverine tidal?) was changed from to N
Q10_E (Estuarine?) was changed from to Y
Q10_F (Marine?) was changed from to N

Q11 (Fringe or island wetland?) was changed from to Y
Q12_A (Dominant veg: forested) was changed from to N
Q12_AA (Dominant veg: forested and dead) was changed from to N
Q12_AB (Dominant veg: forested and needle-leaved evergreen) was changed from to N
Q12_AC (Dominant veg: forested and broad-leaved evergreen) was changed from to N
Q12_AD (Dominant veg: forested and needle-leaved deciduous) was changed from to N
Q12_AE (Dominant veg: forested and broad-leaved deciduous) was changed from to N
Q12_B (Dominant veg: Scrub-shrub) was changed from to N
Q12_BA (Dominant veg: Scrub-shrub and dead) was changed from to N
Q12_BB (Dominant veg: Scrub-shrub and needle-leaved evergreen) was changed from to N
Q12_BC (Dominant veg: Scrub-shrub and broad-leaved evergreen) was changed from to N
Q12_BD (Dominant veg: Scrub-shrub and needle-leaved deciduous) was changed from to N
Q12_BE (Dominant veg: Scrub-shrub and broad-leaved deciduous) was changed from to N
Q12_C (Dominant veg: Aquatic bed) was changed from to N
Q12_CA (Dominant veg: Aquatic bed and algal) was changed from to N
Q12_CB (Dominant veg: Aquatic bed and floating vascular) was changed from to N
Q12_CC (Dominant veg: Aquatic bed and rooted vascular) was changed from to N
Q12_CD (Dominant veg: Aquatic bed and aquatic moss) was changed from to N
Q12_D (Dominant veg: Emergent) was changed from to Y
Q12_DA (Dominant veg: Emergent and persistent) was changed from to Y
Q12_DB (Dominant veg: Emergent and non-persistent) was changed from to N
Q12_E (Dominant veg: Moss lichen) was changed from to N
Q13_A (Secondary veg: forested) was changed from to N
Q13_AA (Secondary veg: forested and dead) was changed from to N
Q13_AB (Secondary veg: forested and needle-leaved evergreen) was changed from to N
Q13_AC (Secondary veg: forested and broad-leaved evergreen) was changed from to N
Q13_AD (Secondary veg: forested and needle-leaved deciduous) was changed from to N
Q13_AE (Secondary veg: forested and broad-leaved deciduous) was changed from to N
Q13_B (Secondary veg: Scrub-shrub) was changed from to N
Q13_BA (Secondary veg: Scrub-shrub and dead) was changed from to N
Q13_BB (Secondary veg: Scrub-shrub and needle-leaved evergreen) was changed from to N
Q13_BC (Secondary veg: Scrub-shrub and broad-leaved evergreen) was changed from to N
Q13_BD (Secondary veg: Scrub-shrub and needle-leaved deciduous) was changed from to N
Q13_BE (Secondary veg: Scrub-shrub and broad-leaved deciduous) was changed from to N
Q13_C (Secondary veg: Aquatic bed) was changed from to N
Q13_CA (Secondary veg: Aquatic bed and algal) was changed from to N
Q13_CB (Secondary veg: Aquatic bed and floating vascular) was changed from to N
Q13_CC (Secondary veg: Aquatic bed and rooted vascular) was changed from to y
Q13_CD (Secondary veg: Aquatic bed and aquatic moss) was changed from to N
Q13_D (Secondary veg: Emergent) was changed from to Y
Q13_DA (Secondary veg: Emergent and persistent) was changed from to Y
Q13_DB (Secondary veg: Emergent and non-persistent) was changed from to N
Q13_E (Secondary veg: Moss lichen) was changed from to N
Q14_1 (AA on 25 square foot island?) was changed from to N
Q14_2 (AA on 2 acre island?) was changed from to N
Q15_1_A (Vegetation<-->Water = solid form) was changed from to n
Q15_1_B (Vegetation<-->Water = intermediate) was changed from to N
Q15_1_C (Vegetation<-->Water = checkerboard) was changed from to y
Q15_2 (Channel flow spreading?) was changed from to N
Q16_A (Vegetation class = solid) was changed from to n
Q16_B (Vegetation class = intermediate) was changed from to N
Q16_C (Vegetation class = mosaic) was changed from to y
Q17 (Plant form richness) was changed from to y
Q18 (Upland<-->Wetland edge irregular?) was changed from to N
Q19_2 (Wave protection?) was changed from to N

4 E2

Q9_2 (Sheet flooding?) was changed from N to y
Q13_CA (Secondary veg: Aquatic bed and algal) was changed from N to y
Q13_CC (Secondary veg: Aquatic bed and rooted vascular) was changed from N to y
Q15_1_A (Vegetation<-->Water = solid form) was changed from Y to n
Q15_1_C (Vegetation<-->Water = checkerboard) was changed from N to y
Q15_2 (Channel flow spreading?) was changed from N to y
Q16_A (Vegetation class = solid) was changed from Y to n
Q16_C (Vegetation class = mosaic) was changed from N to y
Q17 (Plant form richness) was changed from N to y
Q32_I (Spatial Dominant Hydroperiod = regularly flooded tidal?) was changed from N to y
Q32_J (Spatial Dominant Hydroperiod = irregularly exposed tidal?) was changed from Y to n
Q39 (Special habitat features?) was changed from N to y

Q50 (Plants: waterfowl value?) was changed from N to y
Q61 (DO limiting to fish?) was changed from Y to n

4 F

I23 (Education opportunity?) was changed from N to y
I24 (Research resource?) was changed from N to y
Q2_1_2 (Area > 40 acres?) was changed from N to y
Q9_2 (Sheet flooding?) was changed from N to y
Q13_CC (Secondary veg: Aquatic bed and rooted vascular) was changed from N to y
Q14_1 (AA on 25 square foot island?) was changed from N to y
Q14_2 (AA on 2 acre island?) was changed from N to y
Q15_1_A (Vegetation<-->Water = solid form) was changed from Y to n
Q15_1_C (Vegetation<-->Water = checkerboard) was changed from N to y
Q16_A (Vegetation class = solid) was changed from Y to n
Q16_C (Vegetation class = mosaic) was changed from N to y
Q17 (Plant form richness) was changed from N to y
Q18 (Upland<-->Wetland edge irregular?) was changed from N to y
Q22_1_2 (AA contains a Sinuous channel?) was changed from N to y
Q39 (Special habitat features?) was changed from N to y
Q46_A (Physical Habitat Interspersion = uniform) was changed from Y to n
Q46_C (Physical Habitat Interspersion = mosaic) was changed from N to y
Q49_1_1 (20%-80% Pools?) was changed from N to y
Q49_1_2 (Riffles?) was changed from N to y
Q49_2 (Fish cover?) was changed from N to y
Q50 (Plants: waterfowl value?) was changed from N to y
Q61 (DO limiting to fish?) was changed from Y to n

4 G

I23 (Education opportunity?) was changed from N to y
I24 (Research resource?) was changed from N to y
Q2_1_2 (Area > 40 acres?) was changed from N to y
Q9_2 (Sheet flooding?) was changed from N to y
Q13_CC (Secondary veg: Aquatic bed and rooted vascular) was changed from N to y
Q14_1 (AA on 25 square foot island?) was changed from N to y
Q14_2 (AA on 2 acre island?) was changed from N to y
Q15_1_A (Vegetation<-->Water = solid form) was changed from Y to n
Q15_1_C (Vegetation<-->Water = checkerboard) was changed from N to y
Q16_A (Vegetation class = solid) was changed from Y to n
Q16_C (Vegetation class = mosaic) was changed from N to y
Q17 (Plant form richness) was changed from N to y
Q18 (Upland<-->Wetland edge irregular?) was changed from N to y
Q22_1_2 (AA contains a Sinuous channel?) was changed from N to y
Q31_2 (Area of Zone B > 10% of AA?) was changed from N to y
Q39 (Special habitat features?) was changed from N to y
Q46_A (Physical Habitat Interspersion = uniform) was changed from Y to n
Q46_C (Physical Habitat Interspersion = mosaic) was changed from N to y
Q49_1_1 (20%-80% Pools?) was changed from N to y
Q49_1_2 (Riffles?) was changed from N to y
Q49_2 (Fish cover?) was changed from N to y
Q50 (Plants: waterfowl value?) was changed from N to y
Q61 (DO limiting to fish?) was changed from Y to n

48

Q9_2 (Sheet flooding?) was changed from N to y
Q15_1_B (Vegetation<-->Water = intermediate) was changed from Y to n
Q15_1_C (Vegetation<-->Water = checkerboard) was changed from N to y
Q16_A (Vegetation class = solid) was changed from Y to n
Q16_C (Vegetation class = mosaic) was changed from N to y
Q17 (Plant form richness) was changed from N to y
Q31_2 (Area of Zone B > 10% of AA?) was changed from N to y
Q39 (Special habitat features?) was changed from N to y
Q44_A (Secondary Water Depth < 1 inch) was changed from N to y
Q44_B (1 in < secondary water depth < 4 inches) was changed from N to y
Q44_C (5 in < secondary water depth < 8 inches) was changed from N to y
Q44_D (9 in < secondary water depth < 20 inches) was changed from N to y
Q44_E (21 in < secondary water depth < 39 inches) was changed from N to y
Q44_F (40 in < secondary water depth < 59 inches) was changed from n to y
Q44_G (5 feet < secondary water depth < 6.5 feet) was changed from N to y
Q44_H (6.5 feet < secondary water depth < 26 feet) was changed from N to y
Q49_1_1 (20%-80% Pools?) was changed from N to y
Q49_2 (Fish cover?) was changed from N to y

Q50 (Plants: waterfowl value?) was changed from N to y
54_a
I23 (Education opportunity?) was changed from N to y
I24 (Research resource?) was changed from N to y
Q9_2 (Sheet flooding?) was changed from N to y
Q13_CC (Secondary veg: Aquatic bed and rooted vascular) was changed from N to y
Q14_1 (AA on 25 square foot island?) was changed from N to y
Q15_1_B (Vegetation<-->Water = intermediate) was changed from Y to n
Q15_1_C (Vegetation<-->Water = checkerboard) was changed from N to y
Q16_A (Vegetation class = solid) was changed from Y to n
Q16_C (Vegetation class = mosaic) was changed from N to y
Q17 (Plant form richness) was changed from N to y
Q18 (Upland<-->Wetland edge irregular?) was changed from N to y
Q39 (Special habitat features?) was changed from N to y
Q44_A (Secondary Water Depth < 1 inch) was changed from N to y
Q46_B (Physical Habitat Interspersion = intermediate) was changed from Y to n
Q46_C (Physical Habitat Interspersion = mosaic) was changed from N to y
Q50 (Plants: waterfowl value?) was changed from N to y
Q61 (DO limiting to fish?) was changed from Y to n
54_b
I23 (Education opportunity?) was changed from N to y
I24 (Research resource?) was changed from N to y
Q9_2 (Sheet flooding?) was changed from N to y
Q13_CC (Secondary veg: Aquatic bed and rooted vascular) was changed from N to y
Q14_1 (AA on 25 square foot island?) was changed from N to y
Q15_1_B (Vegetation<-->Water = intermediate) was changed from Y to n
Q15_1_C (Vegetation<-->Water = checkerboard) was changed from N to y
Q16_A (Vegetation class = solid) was changed from Y to n
Q16_C (Vegetation class = mosaic) was changed from N to y
Q17 (Plant form richness) was changed from N to y
Q18 (Upland<-->Wetland edge irregular?) was changed from N to y
Q39 (Special habitat features?) was changed from N to y
Q44_A (Secondary Water Depth < 1 inch) was changed from N to y
Q46_B (Physical Habitat Interspersion = intermediate) was changed from Y to n
Q46_C (Physical Habitat Interspersion = mosaic) was changed from N to y
Q50 (Plants: waterfowl value?) was changed from N to y
Q61 (DO limiting to fish?) was changed from Y to n
6
I1 (Threatened/Endangered Species?) was changed from to N
I2 (Designated/Controlled Area?) was changed from to Y
I3 (State Listed Cultural Resource?) was changed from to N
I4 (Unusual or rare local type?) was changed from to Y
I5 (Only wetland in locality?) was changed from to N
I6 (Substantial previous $ expenditure?) was changed from to N
I7 (Unnaturally high salinities?) was changed from to N
I8 (Features sensitive to flooding?) was changed from to Y
I9 (Downslope sensitive features in floodplain?) was changed from to Y
I10 (Dredging - spawning - ss) was changed from to Y
I11 (WWTP Priority Areas?) was changed from to Y
I12 (Drinking water supplies?) was changed from to N
I13 (Nutrient sensitive waters?) was changed from to Y
I14 (Bathing areas?) was changed from to N
I15 (Sole source aquifer, groundwater discharge ?) was changed from to Y
I16 (Actively used wells?) was changed from to N
I17 (Wildlife critically flow limited?) was changed from to N
I18 (Features in erosion prone areas?) was changed from to N
I19 (USFWS/IRP fishery?) was changed from to N
I20 (USFWS/IRP wildlife?) was changed from to Y
I21 (USFWS Waterfowl Use Region?) was changed from to Y
I22 (Limited dependent species?) was changed from to N
I23 (Education opportunity?) was changed from to y
I24 (Research resource?) was changed from to y
I25 (Pristine?) was changed from to N
I26 (Recreation in deficient area?) was changed from to N
I27 (Recreation access point?) was changed from to N
I28 (Urban area?) was changed from to Y
I29 (Only or closest to named feature?) was changed from to N
I30 (Region losing this type?) was changed from to Y

I31 (Acreage > than % annual loss rate?) was changed from to N
Q1_1 (Evaporation > precipitation?) was changed from to N
Q1_2 (Rainfall-erosivity > 300?) was changed from to N
Q1_3 (Freeze-over > one month?) was changed from to N
Q2_1_1 (Area < 5 acres?) was changed from to N
Q2_1_2 (Area > 40 acres?) was changed from to Y
Q2_1_3 (Area > 200 acres?) was changed from to N
Q3_1 (Another Wet Depression within 1 mile?) was changed from to Y
Q3_2 (Cluster wetland?) was changed from to Y
Q3_3 (Oasis wetland?) was changed from to N
Q4_1 (< 5 miles to major water?) was changed from to Y
Q4_2A (< 1 square mile watershed?) was changed from to N
Q4_2B (1 -100 square mile watershed?) was changed from to Y
Q4_2C (100-2500 square mile watershed?) was changed from to N
Q4_2D (> 2500 square mile watershed?) was changed from to N
Q5_1_1 (AA < 5% of watershed?) was changed from to N
Q5_1_2 (AA > 20% of watershed?) was changed from to N
Q5_2 (Upslope wet depressions > 5% of watershed?) was changed from to N
Q6_1 (Downslope drop > upslope rise?) was changed from to Y
Q7 (v < 10 cm/s?) was changed from to I
Q8_1 (Permanent inlet?) was changed from to Y
Q8_2 (Intermittent inlet?) was changed from to Y
Q8_3 (Permanent outlet?) was changed from to Y
Q8_4 (Intermittent outlet?) was changed from to N
Q9_1 (Outlet < one third average width?) was changed from to Y
Q9_2 (Sheet flooding?) was changed from to y
Q10_A (Lacustrine?) was changed from to N
Q10_B (Palustrine?) was changed from to Y
Q10_C (Riverine nontidal?) was changed from to N
Q10_D (Riverine tidal?) was changed from to N
Q10_E (Estuarine?) was changed from to N
Q10_F (Marine?) was changed from to N
Q11 (Fringe or island wetland?) was changed from to N
Q12_A (Dominant veg: forested) was changed from to N
Q12_AA (Dominant veg: forested and dead) was changed from to N
Q12_AB (Dominant veg: forested and needle-leaved evergreen) was changed from to N
Q12_AC (Dominant veg: forested and broad-leaved evergreen) was changed from to N
Q12_AD (Dominant veg: forested and needle-leaved deciduous) was changed from to N
Q12_AE (Dominant veg: forested and broad-leaved deciduous) was changed from to N
Q12_B (Dominant veg: Scrub-shrub) was changed from to Y
Q12_BA (Dominant veg: Scrub-shrub and dead) was changed from to N
Q12_BB (Dominant veg: Scrub-shrub and needle-leaved evergreen) was changed from to N
Q12_BC (Dominant veg: Scrub-shrub and broad-leaved evergreen) was changed from to N
Q12_BD (Dominant veg: Scrub-shrub and needle-leaved deciduous) was changed from to N
Q12_BE (Dominant veg: Scrub-shrub and broad-leaved deciduous) was changed from to Y
Q12_C (Dominant veg: Aquatic bed) was changed from to N
Q12_CA (Dominant veg: Aquatic bed and algal) was changed from to N
Q12_CB (Dominant veg: Aquatic bed and floating vascular) was changed from to N
Q12_CC (Dominant veg: Aquatic bed and rooted vascular) was changed from to N
Q12_CD (Dominant veg: Aquatic bed and aquatic moss) was changed from to N
Q12_D (Dominant veg: Emergent) was changed from to N
Q12_DA (Dominant veg: Emergent and persistent) was changed from to N
Q12_DB (Dominant veg: Emergent and non-persistent) was changed from to N
Q12_E (Dominant veg: Moss lichen) was changed from to N
Q13_A (Secondary veg: forested) was changed from to Y
Q13_AA (Secondary veg: forested and dead) was changed from to N
Q13_AB (Secondary veg: forested and needle-leaved evergreen) was changed from to N
Q13_AC (Secondary veg: forested and broad-leaved evergreen) was changed from to N
Q13_AD (Secondary veg: forested and needle-leaved deciduous) was changed from to N
Q13_AE (Secondary veg: forested and broad-leaved deciduous) was changed from to Y
Q13_B (Secondary veg: Scrub-shrub) was changed from to Y
Q13_BA (Secondary veg: Scrub-shrub and dead) was changed from to N
Q13_BB (Secondary veg: Scrub-shrub and needle-leaved evergreen) was changed from to N
Q13_BC (Secondary veg: Scrub-shrub and broad-leaved evergreen) was changed from to N
Q13_BD (Secondary veg: Scrub-shrub and needle-leaved deciduous) was changed from to N
Q13_BE (Secondary veg: Scrub-shrub and broad-leaved deciduous) was changed from to Y
Q13_C (Secondary veg: Aquatic bed) was changed from to N
Q13_CA (Secondary veg: Aquatic bed and algal) was changed from to N

Q13_CB (Secondary veg: Aquatic bed and floating vascular) was changed from to N
Q13_CC (Secondary veg: Aquatic bed and rooted vascular) was changed from to N
Q13_CD (Secondary veg: Aquatic bed and aquatic moss) was changed from to N
Q13_D (Secondary veg: Emergent) was changed from to Y
Q13_DA (Secondary veg: Emergent and persistent) was changed from to Y
Q13_DB (Secondary veg: Emergent and non-persistent) was changed from to N
Q13_E (Secondary veg: Moss lichen) was changed from to N
Q14_1 (AA on 25 square foot island?) was changed from to y
Q14_2 (AA on 2 acre island?) was changed from to y
Q15_1_A (Vegetation<-->Water = solid form) was changed from to Y
Q15_1_B (Vegetation<-->Water = intermediate) was changed from to N
Q15_1_C (Vegetation<-->Water = checkerboard) was changed from to N
Q15_2 (Channel flow spreading?) was changed from to N
Q16_A (Vegetation class = solid) was changed from to n
Q16_B (Vegetation class = intermediate) was changed from to N
Q16_C (Vegetation class = mosaic) was changed from to y
Q17 (Plant form richness) was changed from to y
Q18 (Upland<-->Wetland edge irregular?) was changed from to Y
Q19_1_A (Wind shelter?) was changed from to N
Q19_1_B (Wind shelter + fetch?) was changed from to N
Q19_2 (Wave protection?) was changed from to N
Q19_3 (Upland habitat wind shelter?) was changed from to Y
61
I1 (Threatened/Endangered Species?) was changed from to N
I2 (Designated/Controlled Area?) was changed from to Y
I3 (State Listed Cultural Resource?) was changed from to N
I4 (Unusual or rare local type?) was changed from to N
I5 (Only wetland in locality?) was changed from to N
I6 (Substantial previous $ expenditure?) was changed from to N
I7 (Unnaturally high salinities?) was changed from to N
I10 (Dredging - spawning - ss) was changed from to Y
I11 (WWTP Priority Areas?) was changed from to Y
I12 (Drinking water supplies?) was changed from to N
I13 (Nutrient sensitive waters?) was changed from to Y
I14 (Bathing areas?) was changed from to N
I15 (Sole source aquifer, groundwater discharge ?) was changed from to Y
I16 (Actively used wells?) was changed from to N
I17 (Wildlife critically flow limited?) was changed from to N
I18 (Features in erosion prone areas?) was changed from to Y
I19 (USFWS/IRP fishery?) was changed from to N
I20 (USFWS/IRP wildlife?) was changed from to Y
I21 (USFWS Waterfowl Use Region?) was changed from to Y
I22 (Limited dependent species?) was changed from to N
I23 (Education opportunity?) was changed from to N
I25 (Pristine?) was changed from to N
I26 (Recreation in deficient area?) was changed from to N
I27 (Recreation access point?) was changed from to N
I28 (Urban area?) was changed from to Y
I29 (Only or closest to named feature?) was changed from to N
I30 (Region losing this type?) was changed from to Y
I31 (Acreage > than % annual loss rate?) was changed from to N
Q1_1 (Evaporation > precipitation?) was changed from to N
Q1_2 (Rainfall-erosivity > 300?) was changed from to N
Q1_3 (Freeze-over > one month?) was changed from to N
Q2_1_1 (Area < 5 acres?) was changed from to N
Q2_1_2 (Area > 40 acres?) was changed from to Y
Q2_1_3 (Area > 200 acres?) was changed from to y
Q3_1 (Another Wet Depression within 1 mile?) was changed from to Y
Q3_2 (Cluster wetland?) was changed from to Y
Q3_3 (Oasis wetland?) was changed from to N
Q4_1 (< 5 miles to major water?) was changed from to Y
Q5_1_1 (AA < 5% of watershed?) was changed from to N
Q5_1_2 (AA > 20% of watershed?) was changed from to Y
Q5_2 (Upslope wet depressions > 5% of watershed?) was changed from to Y
Q6_1 (Downslope drop > upslope rise?) was changed from to Y
Q7 (v < 10 cm/s?) was changed from to I
Q8_1 (Permanent inlet?) was changed from to Y
Q8_2 (Intermittent inlet?) was changed from to N

Q8_3 (Permanent outlet?) was changed from to Y
Q8_4 (Intermittent outlet?) was changed from to N
Q9_1 (Outlet < one third average width?) was changed from to N
Q9_2 (Sheet flooding?) was changed from to Y
Q10_A (Lacustrine?) was changed from to N
Q10_B (Palustrine?) was changed from to N
Q10_C (Riverine nontidal?) was changed from to N
Q10_D (Riverine tidal?) was changed from to N
Q10_E (Estuarine?) was changed from to Y
Q10_F (Marine?) was changed from to N
Q11 (Fringe or island wetland?) was changed from to N
Q12_AB (Dominant veg: forested and needle-leaved evergreen) was changed from to N
Q12_AC (Dominant veg: forested and broad-leaved evergreen) was changed from to N
Q12_AD (Dominant veg: forested and needle-leaved deciduous) was changed from to N
Q12_BB (Dominant veg: Scrub-shrub and needle-leaved evergreen) was changed from to N
Q12_BC (Dominant veg: Scrub-shrub and broad-leaved evergreen) was changed from to N
Q12_BD (Dominant veg: Scrub-shrub and needle-leaved deciduous) was changed from to N
Q12_BE (Dominant veg: Scrub-shrub and broad-leaved deciduous) was changed from to N
Q12_C (Dominant veg: Aquatic bed) was changed from to Y
Q12_CA (Dominant veg: Aquatic bed and algal) was changed from to N
Q12_CB (Dominant veg: Aquatic bed and floating vascular) was changed from to N
Q12_CC (Dominant veg: Aquatic bed and rooted vascular) was changed from to Y
Q12_CD (Dominant veg: Aquatic bed and aquatic moss) was changed from to N
Q12_D (Dominant veg: Emergent) was changed from to N
Q12_DA (Dominant veg: Emergent and persistent) was changed from to N
Q12_DB (Dominant veg: Emergent and non-persistent) was changed from to N
Q12_E (Dominant veg: Moss lichen) was changed from to N
Q13_A (Secondary veg: forested) was changed from to N
Q13_AA (Secondary veg: forested and dead) was changed from to N
Q13_AB (Secondary veg: forested and needle-leaved evergreen) was changed from to N
Q13_AC (Secondary veg: forested and broad-leaved evergreen) was changed from to N
Q13_AD (Secondary veg: forested and needle-leaved deciduous) was changed from to N
Q13_AE (Secondary veg: forested and broad-leaved deciduous) was changed from to N
Q13_B (Secondary veg: Scrub-shrub) was changed from to N
Q13_BA (Secondary veg: Scrub-shrub and dead) was changed from to N
Q13_BB (Secondary veg: Scrub-shrub and needle-leaved evergreen) was changed from to N
Q13_BC (Secondary veg: Scrub-shrub and broad-leaved evergreen) was changed from to N
Q13_BD (Secondary veg: Scrub-shrub and needle-leaved deciduous) was changed from to N
Q13_BE (Secondary veg: Scrub-shrub and broad-leaved deciduous) was changed from to N
Q13_C (Secondary veg: Aquatic bed) was changed from to N
Q13_CA (Secondary veg: Aquatic bed and algal) was changed from to N
Q13_CB (Secondary veg: Aquatic bed and floating vascular) was changed from to N
Q13_CC (Secondary veg: Aquatic bed and rooted vascular) was changed from to N
Q13_CD (Secondary veg: Aquatic bed and aquatic moss) was changed from to N
Q13_D (Secondary veg: Emergent) was changed from to Y
Q13_DA (Secondary veg: Emergent and persistent) was changed from to Y
Q13_DB (Secondary veg: Emergent and non-persistent) was changed from to N
Q13_E (Secondary veg: Moss lichen) was changed from to N
Q14_1 (AA on 25 square foot island?) was changed from to Y
Q14_2 (AA on 2 acre island?) was changed from to y
Q15_1_A (Vegetation<-->Water = solid form) was changed from to Y
Q15_1_B (Vegetation<-->Water = intermediate) was changed from to N
Q15_1_C (Vegetation<-->Water = checkerboard) was changed from to N
Q15_2 (Channel flow spreading?) was changed from to N
Q16_A (Vegetation class = solid) was changed from to N
Q16_B (Vegetation class = intermediate) was changed from to Y
Q16_C (Vegetation class = mosaic) was changed from to N
Q17 (Plant form richness) was changed from to N
Q18 (Upland<-->Wetland edge irregular?) was changed from to N
Q19_1_A (Wind shelter?) was changed from to N
Q19_1_B (Wind shelter + fetch?) was changed from to N
Q19_2 (Wave protection?) was changed from to N

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I1 (Threatened/Endangered Species?) was changed from to N
I2 (Designated/Controlled Area?) was changed from to Y
I3 (State Listed Cultural Resource?) was changed from to N
I4 (Unusual or rare local type?) was changed from to N
I5 (Only wetland in locality?) was changed from to N

I6 (Substantial previous $ expenditure?) was changed from to N
I7 (Unnaturally high salinities?) was changed from to N
I10 (Dredging - spawning - ss) was changed from to Y
I11 (WWTP Priority Areas?) was changed from to Y
I12 (Drinking water supplies?) was changed from to N
I13 (Nutrient sensitive waters?) was changed from to Y
I14 (Bathing areas?) was changed from to N
I15 (Sole source aquifer, groundwater discharge ?) was changed from to Y
I16 (Actively used wells?) was changed from to N
I17 (Wildlife critically flow limited?) was changed from to N
I18 (Features in erosion prone areas?) was changed from to Y
I19 (USFWS/IRP fishery?) was changed from to N
I20 (USFWS/IRP wildlife?) was changed from to Y
I21 (USFWS Waterfowl Use Region?) was changed from to Y
I22 (Limited dependent species?) was changed from to N
I23 (Education opportunity?) was changed from to N
I25 (Pristine?) was changed from to N
I26 (Recreation in deficient area?) was changed from to N
I27 (Recreation access point?) was changed from to N
I28 (Urban area?) was changed from to Y
I29 (Only or closest to named feature?) was changed from to N
I30 (Region losing this type?) was changed from to Y
I31 (Acreage > than % annual loss rate?) was changed from to N
Q1_1 (Evaporation > precipitation?) was changed from to N
Q1_2 (Rainfall-erosivity > 300?) was changed from to N
Q1_3 (Freeze-over > one month?) was changed from to N
Q2_1_1 (Area < 5 acres?) was changed from to N
Q2_1_2 (Area > 40 acres?) was changed from to y
Q2_1_3 (Area > 200 acres?) was changed from to y
Q3_1 (Another Wet Depression within 1 mile?) was changed from to Y
Q3_2 (Cluster wetland?) was changed from to Y
Q3_3 (Oasis wetland?) was changed from to N
Q4_1 (< 5 miles to major water?) was changed from to Y
Q5_1_1 (AA < 5% of watershed?) was changed from to N
Q5_1_2 (AA > 20% of watershed?) was changed from to N
Q5_2 (Upslope wet depressions > 5% of watershed?) was changed from to N
Q6_1 (Downslope drop > upslope rise?) was changed from to Y
Q7 (v < 10 cm/s?) was changed from to I
Q8_1 (Permanent inlet?) was changed from to Y
Q8_2 (Intermittent inlet?) was changed from to N
Q8_3 (Permanent outlet?) was changed from to Y
Q8_4 (Intermittent outlet?) was changed from to N
Q9_1 (Outlet < one third average width?) was changed from to Y
Q9_2 (Sheet flooding?) was changed from to N
Q10_A (Lacustrine?) was changed from to N
Q10_B (Palustrine?) was changed from to N
Q10_C (Riverine nontidal?) was changed from to N
Q10_D (Riverine tidal?) was changed from to N
Q10_E (Estuarine?) was changed from to Y
Q10_F (Marine?) was changed from to N
Q11 (Fringe or island wetland?) was changed from to N
Q12_AB (Dominant veg: forested and needle-leaved evergreen) was changed from to N
Q12_AC (Dominant veg: forested and broad-leaved evergreen) was changed from to N
Q12_AD (Dominant veg: forested and needle-leaved deciduous) was changed from to N
Q12_BB (Dominant veg: Scrub-shrub and needle-leaved evergreen) was changed from to N
Q12_BC (Dominant veg: Scrub-shrub and broad-leaved evergreen) was changed from to N
Q12_BD (Dominant veg: Scrub-shrub and needle-leaved deciduous) was changed from to N
Q12_BE (Dominant veg: Scrub-shrub and broad-leaved deciduous) was changed from to N
Q12_C (Dominant veg: Aquatic bed) was changed from to Y
Q12_CA (Dominant veg: Aquatic bed and algal) was changed from to N
Q12_CB (Dominant veg: Aquatic bed and floating vascular) was changed from to N
Q12_CC (Dominant veg: Aquatic bed and rooted vascular) was changed from to Y
Q12_CD (Dominant veg: Aquatic bed and aquatic moss) was changed from to N
Q12_D (Dominant veg: Emergent) was changed from to N
Q12_DA (Dominant veg: Emergent and persistent) was changed from to N
Q12_DB (Dominant veg: Emergent and non-persistent) was changed from to N
Q12_E (Dominant veg: Moss lichen) was changed from to N
Q13_A (Secondary veg: forested) was changed from to N

Q13_AA (Secondary veg: forested and dead) was changed from to N
Q13_AB (Secondary veg: forested and needle-leaved evergreen) was changed from to N
Q13_AC (Secondary veg: forested and broad-leaved evergreen) was changed from to N
Q13_AD (Secondary veg: forested and needle-leaved deciduous) was changed from to N
Q13_AE (Secondary veg: forested and broad-leaved deciduous) was changed from to N
Q13_B (Secondary veg: Scrub-shrub) was changed from to N
Q13_BA (Secondary veg: Scrub-shrub and dead) was changed from to N
Q13_BB (Secondary veg: Scrub-shrub and needle-leaved evergreen) was changed from to N
Q13_BC (Secondary veg: Scrub-shrub and broad-leaved evergreen) was changed from to N
Q13_BD (Secondary veg: Scrub-shrub and needle-leaved deciduous) was changed from to N
Q13_BE (Secondary veg: Scrub-shrub and broad-leaved deciduous) was changed from to N
Q13_C (Secondary veg: Aquatic bed) was changed from to N
Q13_CA (Secondary veg: Aquatic bed and algal) was changed from to N
Q13_CB (Secondary veg: Aquatic bed and floating vascular) was changed from to N
Q13_CC (Secondary veg: Aquatic bed and rooted vascular) was changed from to N
Q13_CD (Secondary veg: Aquatic bed and aquatic moss) was changed from to N
Q13_D (Secondary veg: Emergent) was changed from to Y
Q13_DA (Secondary veg: Emergent and persistent) was changed from to Y
Q13_DB (Secondary veg: Emergent and non-persistent) was changed from to N
Q13_E (Secondary veg: Moss lichen) was changed from to N
Q14_1 (AA on 25 square foot island?) was changed from to y
Q14_2 (AA on 2 acre island?) was changed from to y
Q15_1_A (Vegetation<-->Water = solid form) was changed from to Y
Q15_1_B (Vegetation<-->Water = intermediate) was changed from to N
Q15_1_C (Vegetation<-->Water = checkerboard) was changed from to N
Q15_2 (Channel flow spreading?) was changed from to N
Q16_A (Vegetation class = solid) was changed from to N
Q16_B (Vegetation class = intermediate) was changed from to Y
Q16_C (Vegetation class = mosaic) was changed from to N
Q17 (Plant form richness) was changed from to N
Q18 (Upland<-->Wetland edge irregular?) was changed from to N
Q19_1_A (Wind shelter?) was changed from to N
Q19_1_B (Wind shelter + fetch?) was changed from to N
Q19_2 (Wave protection?) was changed from to N

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I1 (Threatened/Endangered Species?) was changed from to N
I2 (Designated/Controlled Area?) was changed from to Y
I3 (State Listed Cultural Resource?) was changed from to N
I4 (Unusual or rare local type?) was changed from to N
I5 (Only wetland in locality?) was changed from to N
I6 (Substantial previous $ expenditure?) was changed from to N
I7 (Unnaturally high salinities?) was changed from to N
I10 (Dredging - spawning - ss) was changed from to Y
I11 (WWTP Priority Areas?) was changed from to Y
I12 (Drinking water supplies?) was changed from to N
I13 (Nutrient sensitive waters?) was changed from to Y
I14 (Bathing areas?) was changed from to N
I15 (Sole source aquifer, groundwater discharge ?) was changed from to Y
I16 (Actively used wells?) was changed from to N
I17 (Wildlife critically flow limited?) was changed from to N
I18 (Features in erosion prone areas?) was changed from to Y
I19 (USFWS/IRP fishery?) was changed from to N
I20 (USFWS/IRP wildlife?) was changed from to Y
I21 (USFWS Waterfowl Use Region?) was changed from to Y
I22 (Limited dependent species?) was changed from to N
I23 (Education opportunity?) was changed from to Y
I25 (Pristine?) was changed from to N
I26 (Recreation in deficient area?) was changed from to N
I27 (Recreation access point?) was changed from to N
I28 (Urban area?) was changed from to Y
I29 (Only or closest to named feature?) was changed from to N
I30 (Region losing this type?) was changed from to Y
I31 (Acreage > than % annual loss rate?) was changed from to N
Q1_1 (Evaporation > precipitation?) was changed from to N
Q1_2 (Rainfall-erosivity > 300?) was changed from to N
Q1_3 (Freeze-over > one month?) was changed from to N
Q2_1_1 (Area < 5 acres?) was changed from to N
Q2_1_2 (Area > 40 acres?) was changed from to Y

Q2_1_3 (Area > 200 acres?) was changed from to y
Q3_1 (Another Wet Depression within 1 mile?) was changed from to Y
Q3_2 (Cluster wetland?) was changed from to Y
Q3_3 (Oasis wetland?) was changed from to N
Q4_1 (< 5 miles to major water?) was changed from to Y
Q5_1_1 (AA < 5% of watershed?) was changed from to N
Q5_1_2 (AA > 20% of watershed?) was changed from to N
Q5_2 (Upslope wet depressions > 5% of watershed?) was changed from to N
Q6_1 (Downslope drop > upslope rise?) was changed from to Y
Q7 (v < 10 cm/s?) was changed from to I
Q8_1 (Permanent inlet?) was changed from to Y
Q8_2 (Intermittent inlet?) was changed from to N
Q8_3 (Permanent outlet?) was changed from to Y
Q8_4 (Intermittent outlet?) was changed from to N
Q9_1 (Outlet < one third average width?) was changed from to N
Q9_2 (Sheet flooding?) was changed from to Y
Q10_A (Lacustrine?) was changed from to N
Q10_B (Palustrine?) was changed from to N
Q10_C (Riverine nontidal?) was changed from to N
Q10_D (Riverine tidal?) was changed from to N
Q10_E (Estuarine?) was changed from to Y
Q10_F (Marine?) was changed from to N
Q11 (Fringe or island wetland?) was changed from to N
Q12_AB (Dominant veg: forested and needle-leaved evergreen) was changed from to N
Q12_AC (Dominant veg: forested and broad-leaved evergreen) was changed from to N
Q12_AD (Dominant veg: forested and needle-leaved deciduous) was changed from to N
Q12_BB (Dominant veg: Scrub-shrub and needle-leaved evergreen) was changed from to N
Q12_BC (Dominant veg: Scrub-shrub and broad-leaved evergreen) was changed from to N
Q12_BD (Dominant veg: Scrub-shrub and needle-leaved deciduous) was changed from to N
Q12_BE (Dominant veg: Scrub-shrub and broad-leaved deciduous) was changed from to N
Q12_C (Dominant veg: Aquatic bed) was changed from to Y
Q12_CA (Dominant veg: Aquatic bed and algal) was changed from to N
Q12_CB (Dominant veg: Aquatic bed and floating vascular) was changed from to N
Q12_CC (Dominant veg: Aquatic bed and rooted vascular) was changed from to Y
Q12_CD (Dominant veg: Aquatic bed and aquatic moss) was changed from to N
Q12_D (Dominant veg: Emergent) was changed from to N
Q12_DA (Dominant veg: Emergent and persistent) was changed from to N
Q12_DB (Dominant veg: Emergent and non-persistent) was changed from to N
Q12_E (Dominant veg: Moss lichen) was changed from to N
Q13_A (Secondary veg: forested) was changed from to N
Q13_AA (Secondary veg: forested and dead) was changed from to N
Q13_AB (Secondary veg: forested and needle-leaved evergreen) was changed from to N
Q13_AC (Secondary veg: forested and broad-leaved evergreen) was changed from to N
Q13_AD (Secondary veg: forested and needle-leaved deciduous) was changed from to N
Q13_AE (Secondary veg: forested and broad-leaved deciduous) was changed from to N
Q13_B (Secondary veg: Scrub-shrub) was changed from to N
Q13_BA (Secondary veg: Scrub-shrub and dead) was changed from to N
Q13_BB (Secondary veg: Scrub-shrub and needle-leaved evergreen) was changed from to N
Q13_BC (Secondary veg: Scrub-shrub and broad-leaved evergreen) was changed from to N
Q13_BD (Secondary veg: Scrub-shrub and needle-leaved deciduous) was changed from to N
Q13_BE (Secondary veg: Scrub-shrub and broad-leaved deciduous) was changed from to N
Q13_C (Secondary veg: Aquatic bed) was changed from to N
Q13_CA (Secondary veg: Aquatic bed and algal) was changed from to N
Q13_CB (Secondary veg: Aquatic bed and floating vascular) was changed from to N
Q13_CC (Secondary veg: Aquatic bed and rooted vascular) was changed from to N
Q13_CD (Secondary veg: Aquatic bed and aquatic moss) was changed from to N
Q13_D (Secondary veg: Emergent) was changed from to Y
Q13_DA (Secondary veg: Emergent and persistent) was changed from to Y
Q13_DB (Secondary veg: Emergent and non-persistent) was changed from to N
Q13_E (Secondary veg: Moss lichen) was changed from to N
Q14_1 (AA on 25 square foot island?) was changed from to y
Q14_2 (AA on 2 acre island?) was changed from to y
Q15_1_A (Vegetation<-->Water = solid form) was changed from to Y
Q15_1_B (Vegetation<-->Water = intermediate) was changed from to N
Q15_1_C (Vegetation<-->Water = checkerboard) was changed from to N
Q15_2 (Channel flow spreading?) was changed from to N
Q16_A (Vegetation class = solid) was changed from to N
Q16_B (Vegetation class = intermediate) was changed from to Y

Q16_C (Vegetation class = mosaic) was changed from to N
Q17 (Plant form richness) was changed from to N
Q18 (Upland<-->Wetland edge irregular?) was changed from to N
Q19_1_A (Wind shelter?) was changed from to N
Q19_1_B (Wind shelter + fetch?) was changed from to N
Q19_2 (Wave protection?) was changed from to N
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I1 (Threatened/Endangered Species?) was changed from to N
I2 (Designated/Controlled Area?) was changed from to Y
I3 (State Listed Cultural Resource?) was changed from to N
I4 (Unusual or rare local type?) was changed from to N
I5 (Only wetland in locality?) was changed from to N
I6 (Substantial previous $ expenditure?) was changed from to N
I7 (Unnaturally high salinities?) was changed from to N
I10 (Dredging - spawning - ss) was changed from to Y
I11 (WWTP Priority Areas?) was changed from to Y
I12 (Drinking water supplies?) was changed from to N
I13 (Nutrient sensitive waters?) was changed from to Y
I14 (Bathing areas?) was changed from to N
I15 (Sole source aquifer, groundwater discharge ?) was changed from to Y
I16 (Actively used wells?) was changed from to N
I17 (Wildlife critically flow limited?) was changed from to N
I18 (Features in erosion prone areas?) was changed from to Y
I19 (USFWS/IRP fishery?) was changed from to N
I20 (USFWS/IRP wildlife?) was changed from to Y
I21 (USFWS Waterfowl Use Region?) was changed from to Y
I22 (Limited dependent species?) was changed from to N
I23 (Education opportunity?) was changed from to N
I25 (Pristine?) was changed from to N
I26 (Recreation in deficient area?) was changed from to N
I27 (Recreation access point?) was changed from to N
I28 (Urban area?) was changed from to Y
I29 (Only or closest to named feature?) was changed from to N
I30 (Region losing this type?) was changed from to Y
I31 (Acreage > than % annual loss rate?) was changed from to N
Q1_1 (Evaporation > precipitation?) was changed from to N
Q1_2 (Rainfall-erosivity > 300?) was changed from to N
Q1_3 (Freeze-over > one month?) was changed from to N
Q2_1_1 (Area < 5 acres?) was changed from to n
Q2_1_2 (Area > 40 acres?) was changed from to y
Q2_1_3 (Area > 200 acres?) was changed from to y
Q3_1 (Another Wet Depression within 1 mile?) was changed from to Y
Q3_2 (Cluster wetland?) was changed from to Y
Q3_3 (Oasis wetland?) was changed from to N
Q4_1 (< 5 miles to major water?) was changed from to Y
Q5_1_1 (AA < 5% of watershed?) was changed from to N
Q5_1_2 (AA > 20% of watershed?) was changed from to N
Q5_2 (Upslope wet depressions > 5% of watershed?) was changed from to N
Q6_1 (Downslope drop > upslope rise?) was changed from to Y
Q7 (v < 10 cm/s?) was changed from to I
Q8_1 (Permanent inlet?) was changed from to Y
Q8_2 (Intermittent inlet?) was changed from to N
Q8_3 (Permanent outlet?) was changed from to Y
Q8_4 (Intermittent outlet?) was changed from to N
Q9_1 (Outlet < one third average width?) was changed from to N
Q9_2 (Sheet flooding?) was changed from to Y
Q10_A (Lacustrine?) was changed from to N
Q10_B (Palustrine?) was changed from to N
Q10_C (Riverine nontidal?) was changed from to N
Q10_D (Riverine tidal?) was changed from to N
Q10_E (Estuarine?) was changed from to Y
Q10_F (Marine?) was changed from to N
Q11 (Fringe or island wetland?) was changed from to N
Q12_AB (Dominant veg: forested and needle-leaved evergreen) was changed from to N
Q12_AC (Dominant veg: forested and broad-leaved evergreen) was changed from to N
Q12_AD (Dominant veg: forested and needle-leaved deciduous) was changed from to N
Q12_BB (Dominant veg: Scrub-shrub and needle-leaved evergreen) was changed from to N
Q12_BC (Dominant veg: Scrub-shrub and broad-leaved evergreen) was changed from to N

Q12_BD (Dominant veg: Scrub-shrub and needle-leaved deciduous) was changed from to N
Q12_BE (Dominant veg: Scrub-shrub and broad-leaved deciduous) was changed from to N
Q12_C (Dominant veg: Aquatic bed) was changed from to Y
Q12_CA (Dominant veg: Aquatic bed and algal) was changed from to N
Q12_CB (Dominant veg: Aquatic bed and floating vascular) was changed from to N
Q12_CC (Dominant veg: Aquatic bed and rooted vascular) was changed from to Y
Q12_CD (Dominant veg: Aquatic bed and aquatic moss) was changed from to N
Q12_D (Dominant veg: Emergent) was changed from to N
Q12_DA (Dominant veg: Emergent and persistent) was changed from to N
Q12_DB (Dominant veg: Emergent and non-persistent) was changed from to N
Q12_E (Dominant veg: Moss lichen) was changed from to N
Q13_A (Secondary veg: forested) was changed from to N
Q13_AA (Secondary veg: forested and dead) was changed from to N
Q13_AB (Secondary veg: forested and needle-leaved evergreen) was changed from to N
Q13_AC (Secondary veg: forested and broad-leaved evergreen) was changed from to N
Q13_AD (Secondary veg: forested and needle-leaved deciduous) was changed from to N
Q13_AE (Secondary veg: forested and broad-leaved deciduous) was changed from to N
Q13_B (Secondary veg: Scrub-shrub) was changed from to N
Q13_BA (Secondary veg: Scrub-shrub and dead) was changed from to N
Q13_BB (Secondary veg: Scrub-shrub and needle-leaved evergreen) was changed from to N
Q13_BC (Secondary veg: Scrub-shrub and broad-leaved evergreen) was changed from to N
Q13_BD (Secondary veg: Scrub-shrub and needle-leaved deciduous) was changed from to N
Q13_BE (Secondary veg: Scrub-shrub and broad-leaved deciduous) was changed from to N
Q13_C (Secondary veg: Aquatic bed) was changed from to N
Q13_CA (Secondary veg: Aquatic bed and algal) was changed from to N
Q13_CB (Secondary veg: Aquatic bed and floating vascular) was changed from to N
Q13_CC (Secondary veg: Aquatic bed and rooted vascular) was changed from to N
Q13_CD (Secondary veg: Aquatic bed and aquatic moss) was changed from to N
Q13_D (Secondary veg: Emergent) was changed from to Y
Q13_DA (Secondary veg: Emergent and persistent) was changed from to Y
Q13_DB (Secondary veg: Emergent and non-persistent) was changed from to N
Q13_E (Secondary veg: Moss lichen) was changed from to N
Q14_1 (AA on 25 square foot island?) was changed from to y
Q14_2 (AA on 2 acre island?) was changed from to N
Q15_1_A (Vegetation<-->Water = solid form) was changed from to N
Q15_1_B (Vegetation<-->Water = intermediate) was changed from to Y
Q15_1_C (Vegetation<-->Water = checkerboard) was changed from to N
Q15_2 (Channel flow spreading?) was changed from to N
Q16_A (Vegetation class = solid) was changed from to Y
Q16_B (Vegetation class = intermediate) was changed from to N
Q16_C (Vegetation class = mosaic) was changed from to N
Q17 (Plant form richness) was changed from to N
Q18 (Upland<-->Wetland edge irregular?) was changed from to N
Q19_1_A (Wind shelter?) was changed from to N
Q19_1_B (Wind shelter + fetch?) was changed from to N
Q19_2 (Wave protection?) was changed from to N

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I1 (Threatened/Endangered Species?) was changed from to Y
I2 (Designated/Controlled Area?) was changed from to Y
I3 (State Listed Cultural Resource?) was changed from to N
I4 (Unusual or rare local type?) was changed from to N
I5 (Only wetland in locality?) was changed from to N
I6 (Substantial previous $ expenditure?) was changed from to N
I7 (Unnaturally high salinities?) was changed from to N
I10 (Dredging - spawning - ss) was changed from to Y
I11 (WWTP Priority Areas?) was changed from to Y
I12 (Drinking water supplies?) was changed from to N
I13 (Nutrient sensitive waters?) was changed from to Y
I14 (Bathing areas?) was changed from to N
I15 (Sole source aquifer, groundwater discharge ?) was changed from to Y
I16 (Actively used wells?) was changed from to N
I17 (Wildlife critically flow limited?) was changed from to N
I18 (Features in erosion prone areas?) was changed from to Y
I19 (USFWS/IRP fishery?) was changed from to N
I20 (USFWS/IRP wildlife?) was changed from to Y
I21 (USFWS Waterfowl Use Region?) was changed from to Y
I22 (Limited dependent species?) was changed from to N
I23 (Education opportunity?) was changed from to Y

I25 (Pristine?) was changed from to N
I26 (Recreation in deficient area?) was changed from to N
I27 (Recreation access point?) was changed from to N
I28 (Urban area?) was changed from to Y
I29 (Only or closest to named feature?) was changed from to N
I30 (Region losing this type?) was changed from to Y
I31 (Acreage > than % annual loss rate?) was changed from to N
Q1_1 (Evaporation > precipitation?) was changed from to N
Q1_2 (Rainfall-erosivity > 300?) was changed from to N
Q1_3 (Freeze-over > one month?) was changed from to N
Q2_1_1 (Area < 5 acres?) was changed from to N
Q2_1_2 (Area > 40 acres?) was changed from to Y
Q2_1_3 (Area > 200 acres?) was changed from to Y
Q3_1 (Another Wet Depression within 1 mile?) was changed from to Y
Q3_2 (Cluster wetland?) was changed from to Y
Q3_3 (Oasis wetland?) was changed from to N
Q4_1 (< 5 miles to major water?) was changed from to Y
Q5_1_1 (AA < 5% of watershed?) was changed from to Y
Q5_1_2 (AA > 20% of watershed?) was changed from to Y
Q5_2 (Upslope wet depressions > 5% of watershed?) was changed from to Y
Q6_1 (Downslope drop > upslope rise?) was changed from to Y
Q7 (v < 10 cm/s?) was changed from to I
Q8_1 (Permanent inlet?) was changed from to Y
Q8_2 (Intermittent inlet?) was changed from to N
Q8_3 (Permanent outlet?) was changed from to Y
Q8_4 (Intermittent outlet?) was changed from to N
Q10_A (Lacustrine?) was changed from to N
Q10_B (Palustrine?) was changed from to N
Q10_C (Riverine nontidal?) was changed from to N
Q10_D (Riverine tidal?) was changed from to N
Q10_E (Estuarine?) was changed from to Y
Q10_F (Marine?) was changed from to N
Q11 (Fringe or island wetland?) was changed from to N
Q12_AB (Dominant veg: forested and needle-leaved evergreen) was changed from to N
Q12_AC (Dominant veg: forested and broad-leaved evergreen) was changed from to N
Q12_AD (Dominant veg: forested and needle-leaved deciduous) was changed from to N
Q12_BB (Dominant veg: Scrub-shrub and needle-leaved evergreen) was changed from to N
Q12_BC (Dominant veg: Scrub-shrub and broad-leaved evergreen) was changed from to N
Q12_BD (Dominant veg: Scrub-shrub and needle-leaved deciduous) was changed from to N
Q12_BE (Dominant veg: Scrub-shrub and broad-leaved deciduous) was changed from to N
Q12_C (Dominant veg: Aquatic bed) was changed from to Y
Q12_CA (Dominant veg: Aquatic bed and algal) was changed from to N
Q12_CB (Dominant veg: Aquatic bed and floating vascular) was changed from to N
Q12_CC (Dominant veg: Aquatic bed and rooted vascular) was changed from to Y
Q12_CD (Dominant veg: Aquatic bed and aquatic moss) was changed from to N
Q12_D (Dominant veg: Emergent) was changed from to N
Q12_DA (Dominant veg: Emergent and persistent) was changed from to N
Q12_DB (Dominant veg: Emergent and non-persistent) was changed from to N
Q12_E (Dominant veg: Moss lichen) was changed from to N
Q13_A (Secondary veg: forested) was changed from to N
Q13_AA (Secondary veg: forested and dead) was changed from to N
Q13_AB (Secondary veg: forested and needle-leaved evergreen) was changed from to N
Q13_AC (Secondary veg: forested and broad-leaved evergreen) was changed from to N
Q13_AD (Secondary veg: forested and needle-leaved deciduous) was changed from to N
Q13_AE (Secondary veg: forested and broad-leaved deciduous) was changed from to N
Q13_B (Secondary veg: Scrub-shrub) was changed from to N
Q13_BA (Secondary veg: Scrub-shrub and dead) was changed from to N
Q13_BB (Secondary veg: Scrub-shrub and needle-leaved evergreen) was changed from to N
Q13_BC (Secondary veg: Scrub-shrub and broad-leaved evergreen) was changed from to N
Q13_BD (Secondary veg: Scrub-shrub and needle-leaved deciduous) was changed from to N
Q13_BE (Secondary veg: Scrub-shrub and broad-leaved deciduous) was changed from to N
Q13_C (Secondary veg: Aquatic bed) was changed from to N
Q13_CA (Secondary veg: Aquatic bed and algal) was changed from to N
Q13_CB (Secondary veg: Aquatic bed and floating vascular) was changed from to N
Q13_CC (Secondary veg: Aquatic bed and rooted vascular) was changed from to N
Q13_CD (Secondary veg: Aquatic bed and aquatic moss) was changed from to N
Q13_D (Secondary veg: Emergent) was changed from to Y
Q13_DA (Secondary veg: Emergent and persistent) was changed from to Y

Q13_DB (Secondary veg: Emergent and non-persistent) was changed from   to N
Q13_E (Secondary veg: Moss lichen) was changed from   to N
Q14_1 (AA on 25 square foot island?) was changed from   to Y
Q14_2 (AA on 2 acre island?) was changed from   to y
Q15_1_A (Vegetation<-->Water = solid form) was changed from   to Y
Q15_1_B (Vegetation<-->Water = intermediate) was changed from   to N
Q15_1_C (Vegetation<-->Water = checkerboard) was changed from   to N
Q15_2 (Channel flow spreading?) was changed from   to N
Q16_A (Vegetation class = solid) was changed from   to N
Q16_B (Vegetation class = intermediate) was changed from   to Y
Q16_C (Vegetation class = mosaic) was changed from   to N
Q17 (Plant form richness) was changed from   to N
Q18 (Upland<-->Wetland edge irregular?) was changed from   to N
Q19_1_A (Wind shelter?) was changed from   to N
Q19_1_B (Wind shelter + fetch?) was changed from   to N
Q19_2 (Wave protection?) was changed from   to N

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I1 (Threatened/Endangered Species?) was changed from   to N
I2 (Designated/Controlled Area?) was changed from   to Y
I3 (State Listed Cultural Resource?) was changed from   to N
I4 (Unusual or rare local type?) was changed from   to N
I5 (Only wetland in locality?) was changed from   to N
I6 (Substantial previous $ expenditure?) was changed from   to N
I7 (Unnaturally high salinities?) was changed from   to N
I8 (Features sensitive to flooding?) was changed from   to N
I9 (Downslope sensitive features in floodplain?) was changed from   to N
I10 (Dredging - spawning - ss) was changed from   to N
I11 (WWTP Priority Areas?) was changed from   to N
I12 (Drinking water supplies?) was changed from   to N
I13 (Nutrient sensitive waters?) was changed from   to N
I14 (Bathing areas?) was changed from   to N
I15 (Sole source aquifer, groundwater discharge ?) was changed from   to Y
I16 (Actively used wells?) was changed from   to N
I17 (Wildlife critically flow limited?) was changed from   to N
I18 (Features in erosion prone areas?) was changed from   to N
I19 (USFWS/IRP fishery?) was changed from   to N
I20 (USFWS/IRP wildlife?) was changed from   to Y
I21 (USFWS Waterfowl Use Region?) was changed from   to Y
I22 (Limited dependent species?) was changed from   to N
I23 (Education opportunity?) was changed from   to y
I24 (Research resource?) was changed from   to y
I25 (Pristine?) was changed from   to N
I26 (Recreation in deficient area?) was changed from   to N
I27 (Recreation access point?) was changed from   to N
I28 (Urban area?) was changed from   to Y
I29 (Only or closest to named feature?) was changed from   to N
I30 (Region losing this type?) was changed from   to Y
I31 (Acreage > than % annual loss rate?) was changed from   to N
Q1_1 (Evaporation > precipitation?) was changed from   to N
Q1_2 (Rainfall-erosivity > 300?) was changed from   to N
Q1_3 (Freeze-over > one month?) was changed from   to N
Q2_1_1 (Area < 5 acres?) was changed from   to N
Q2_1_2 (Area > 40 acres?) was changed from   to N
Q2_1_3 (Area > 200 acres?) was changed from   to N
Q3_1 (Another Wet Depression within 1 mile?) was changed from   to Y
Q3_2 (Cluster wetland?) was changed from   to N
Q3_3 (Oasis wetland?) was changed from   to N
Q4_1 (< 5 miles to major water?) was changed from   to Y
Q4_2A (< 1 square mile watershed?) was changed from   to Y
Q4_2B (1 -100 square mile watershed?) was changed from   to N
Q4_2C (100-2500 square mile watershed?) was changed from   to N
Q4_2D (> 2500 square mile watershed?) was changed from   to N
Q5_1_1 (AA < 5% of watershed?) was changed from   to N
Q5_1_2 (AA > 20% of watershed?) was changed from   to Y
Q5_2 (Upslope wet depressions > 5% of watershed?) was changed from   to N
Q6_1 (Downslope drop > upslope rise?) was changed from   to Y
Q7 (v < 10 cm/s?) was changed from   to I
Q8_1 (Permanent inlet?) was changed from   to N

Q8_2 (Intermittent inlet?) was changed from to N
Q8_3 (Permanent outlet?) was changed from to y
Q8_4 (Intermittent outlet?) was changed from to N
Q10_A (Lacustrine?) was changed from to N
Q10_B (Palustrine?) was changed from to N
Q10_C (Riverine nontidal?) was changed from to N
Q10_D (Riverine tidal?) was changed from to N
Q10_E (Estuarine?) was changed from to Y
Q10_F (Marine?) was changed from to N
Q11 (Fringe or island wetland?) was changed from to N
Q12_A (Dominant veg: forested) was changed from to N
Q12_AA (Dominant veg: forested and dead) was changed from to N
Q12_AB (Dominant veg: forested and needle-leaved evergreen) was changed from to N
Q12_AC (Dominant veg: forested and broad-leaved evergreen) was changed from to N
Q12_AD (Dominant veg: forested and needle-leaved deciduous) was changed from to N
Q12_AE (Dominant veg: forested and broad-leaved deciduous) was changed from to N
Q12_B (Dominant veg: Scrub-shrub) was changed from to N
Q12_BA (Dominant veg: Scrub-shrub and dead) was changed from to N
Q12_BB (Dominant veg: Scrub-shrub and needle-leaved evergreen) was changed from to N
Q12_BC (Dominant veg: Scrub-shrub and broad-leaved evergreen) was changed from to N
Q12_BD (Dominant veg: Scrub-shrub and needle-leaved deciduous) was changed from to N
Q12_BE (Dominant veg: Scrub-shrub and broad-leaved deciduous) was changed from to N
Q12_C (Dominant veg: Aquatic bed) was changed from to N
Q12_CA (Dominant veg: Aquatic bed and algal) was changed from to N
Q12_CB (Dominant veg: Aquatic bed and floating vascular) was changed from to N
Q12_CC (Dominant veg: Aquatic bed and rooted vascular) was changed from to N
Q12_CD (Dominant veg: Aquatic bed and aquatic moss) was changed from to N
Q12_D (Dominant veg: Emergent) was changed from to Y
Q12_DA (Dominant veg: Emergent and persistent) was changed from to Y
Q12_DB (Dominant veg: Emergent and non-persistent) was changed from to N
Q12_E (Dominant veg: Moss lichen) was changed from to N
Q13_A (Secondary veg: forested) was changed from to N
Q13_AA (Secondary veg: forested and dead) was changed from to N
Q13_AB (Secondary veg: forested and needle-leaved evergreen) was changed from to N
Q13_AC (Secondary veg: forested and broad-leaved evergreen) was changed from to N
Q13_AD (Secondary veg: forested and needle-leaved deciduous) was changed from to N
Q13_AE (Secondary veg: forested and broad-leaved deciduous) was changed from to N
Q13_B (Secondary veg: Scrub-shrub) was changed from to N
Q13_BA (Secondary veg: Scrub-shrub and dead) was changed from to N
Q13_BB (Secondary veg: Scrub-shrub and needle-leaved evergreen) was changed from to N
Q13_BC (Secondary veg: Scrub-shrub and broad-leaved evergreen) was changed from to N
Q13_BD (Secondary veg: Scrub-shrub and needle-leaved deciduous) was changed from to N
Q13_BE (Secondary veg: Scrub-shrub and broad-leaved deciduous) was changed from to N
Q13_C (Secondary veg: Aquatic bed) was changed from to N
Q13_CA (Secondary veg: Aquatic bed and algal) was changed from to N
Q13_CB (Secondary veg: Aquatic bed and floating vascular) was changed from to N
Q13_CC (Secondary veg: Aquatic bed and rooted vascular) was changed from to N
Q13_CD (Secondary veg: Aquatic bed and aquatic moss) was changed from to N
Q13_D (Secondary veg: Emergent) was changed from to N
Q13_DA (Secondary veg: Emergent and persistent) was changed from to N
Q13_DB (Secondary veg: Emergent and non-persistent) was changed from to N
Q13_E (Secondary veg: Moss lichen) was changed from to N
Q14_1 (AA on 25 square foot island?) was changed from to y
Q14_2 (AA on 2 acre island?) was changed from to y
Q15_1_A (Vegetation<-->Water = solid form) was changed from to Y
Q15_1_B (Vegetation<-->Water = intermediate) was changed from to N
Q15_1_C (Vegetation<-->Water = checkerboard) was changed from to N
Q16_A (Vegetation class = solid) was changed from to Y
Q16_B (Vegetation class = intermediate) was changed from to N
Q16_C (Vegetation class = mosaic) was changed from to N
Q17 (Plant form richness) was changed from to N
Q18 (Upland<-->Wetland edge irregular?) was changed from to y
Q19_1_A (Wind shelter?) was changed from to Y
Q19_1_B (Wind shelter + fetch?) was changed from to N
Q19_2 (Wave protection?) was changed from to N

I1 (Threatened/Endangered Species?) was changed from to Y
I2 (Designated/Controlled Area?) was changed from to Y

I3 (State Listed Cultural Resource?) was changed from to N
I4 (Unusual or rare local type?) was changed from to N
I5 (Only wetland in locality?) was changed from to N
I6 (Substantial previous $ expenditure?) was changed from to Y
I7 (Unnaturally high salinities?) was changed from to N
I10 (Dredging - spawning - ss) was changed from to Y
I11 (WWTP Priority Areas?) was changed from to Y
I12 (Drinking water supplies?) was changed from to N
I13 (Nutrient sensitive waters?) was changed from to Y
I14 (Bathing areas?) was changed from to N
I15 (Sole source aquifer, groundwater discharge ?) was changed from to Y
I16 (Actively used wells?) was changed from to N
I17 (Wildlife critically flow limited?) was changed from to N
I18 (Features in erosion prone areas?) was changed from to N
I19 (USFWS/IRP fishery?) was changed from to N
I20 (USFWS/IRP wildlife?) was changed from to Y
I21 (USFWS Waterfowl Use Region?) was changed from to Y
I22 (Limited dependent species?) was changed from to N
I23 (Education opportunity?) was changed from to Y
I25 (Pristine?) was changed from to N
I26 (Recreation in deficient area?) was changed from to N
I27 (Recreation access point?) was changed from to N
I28 (Urban area?) was changed from to Y
I29 (Only or closest to named feature?) was changed from to N
I30 (Region losing this type?) was changed from to Y
I31 (Acreage > than % annual loss rate?) was changed from to N
Q1_1 (Evaporation > precipitation?) was changed from to N
Q1_2 (Rainfall-erosivity > 300?) was changed from to N
Q1_3 (Freeze-over > one month?) was changed from to N
Q2_1_1 (Area < 5 acres?) was changed from to N
Q2_1_2 (Area > 40 acres?) was changed from to Y
Q2_1_3 (Area > 200 acres?) was changed from to N
Q3_1 (Another Wet Depression within 1 mile?) was changed from to Y
Q3_2 (Cluster wetland?) was changed from to Y
Q3_3 (Oasis wetland?) was changed from to N
Q4_1 (< 5 miles to major water?) was changed from to Y
Q5_1_1 (AA < 5% of watershed?) was changed from to Y
Q5_1_2 (AA > 20% of watershed?) was changed from to N
Q5_2 (Upslope wet depressions > 5% of watershed?) was changed from to N
Q6_1 (Downslope drop > upslope rise?) was changed from to Y
Q7 (v < 10 cm/s?) was changed from to I
Q8_1 (Permanent inlet?) was changed from to Y
Q8_2 (Intermittent inlet?) was changed from to N
Q8_3 (Permanent outlet?) was changed from to Y
Q8_4 (Intermittent outlet?) was changed from to N
Q9_1 (Outlet < one third average width?) was changed from to N
Q9_2 (Sheet flooding?) was changed from to y
Q10_A (Lacustrine?) was changed from to N
Q10_B (Palustrine?) was changed from to N
Q10_C (Riverine nontidal?) was changed from to N
Q10_D (Riverine tidal?) was changed from to N
Q10_E (Estuarine?) was changed from to Y
Q10_F (Marine?) was changed from to N
Q11 (Fringe or island wetland?) was changed from to N
Q12_A (Dominant veg: forested) was changed from to N
Q12_AA (Dominant veg: forested and dead) was changed from to N
Q12_AB (Dominant veg: forested and needle-leaved evergreen) was changed from to N
Q12_AC (Dominant veg: forested and broad-leaved evergreen) was changed from to N
Q12_AD (Dominant veg: forested and needle-leaved deciduous) was changed from to N
Q12_AE (Dominant veg: forested and broad-leaved deciduous) was changed from to N
Q12_B (Dominant veg: Scrub-shrub) was changed from to N
Q12_BA (Dominant veg: Scrub-shrub and dead) was changed from to N
Q12_BB (Dominant veg: Scrub-shrub and needle-leaved evergreen) was changed from to N
Q12_BC (Dominant veg: Scrub-shrub and broad-leaved evergreen) was changed from to N
Q12_BD (Dominant veg: Scrub-shrub and needle-leaved deciduous) was changed from to N
Q12_BE (Dominant veg: Scrub-shrub and broad-leaved deciduous) was changed from to N
Q12_C (Dominant veg: Aquatic bed) was changed from to Y
Q12_CA (Dominant veg: Aquatic bed and algal) was changed from to N

Q12_CB (Dominant veg: Aquatic bed and floating vascular) was changed from to N
Q12_CC (Dominant veg: Aquatic bed and rooted vascular) was changed from to Y
Q12_CD (Dominant veg: Aquatic bed and aquatic moss) was changed from to N
Q12_D (Dominant veg: Emergent) was changed from to N
Q12_DA (Dominant veg: Emergent and persistent) was changed from to N
Q12_DB (Dominant veg: Emergent and non-persistent) was changed from to N
Q12_E (Dominant veg: Moss lichen) was changed from to N
Q13_A (Secondary veg: forested) was changed from to N
Q13_AA (Secondary veg: forested and dead) was changed from to N
Q13_AB (Secondary veg: forested and needle-leaved evergreen) was changed from to N
Q13_AC (Secondary veg: forested and broad-leaved evergreen) was changed from to N
Q13_AD (Secondary veg: forested and needle-leaved deciduous) was changed from to N
Q13_AE (Secondary veg: forested and broad-leaved deciduous) was changed from to N
Q13_B (Secondary veg: Scrub-shrub) was changed from to N
Q13_BA (Secondary veg: Scrub-shrub and dead) was changed from to N
Q13_BB (Secondary veg: Scrub-shrub and needle-leaved evergreen) was changed from to N
Q13_BC (Secondary veg: Scrub-shrub and broad-leaved evergreen) was changed from to N
Q13_BD (Secondary veg: Scrub-shrub and needle-leaved deciduous) was changed from to N
Q13_BE (Secondary veg: Scrub-shrub and broad-leaved deciduous) was changed from to N
Q13_C (Secondary veg: Aquatic bed) was changed from to Y
Q13_CA (Secondary veg: Aquatic bed and algal) was changed from to Y
Q13_CB (Secondary veg: Aquatic bed and floating vascular) was changed from to N
Q13_CC (Secondary veg: Aquatic bed and rooted vascular) was changed from to N
Q13_CD (Secondary veg: Aquatic bed and aquatic moss) was changed from to N
Q13_D (Secondary veg: Emergent) was changed from to Y
Q13_DA (Secondary veg: Emergent and persistent) was changed from to Y
Q13_DB (Secondary veg: Emergent and non-persistent) was changed from to N
Q13_E (Secondary veg: Moss lichen) was changed from to N
Q14_1 (AA on 25 square foot island?) was changed from to N
Q14_2 (AA on 2 acre island?) was changed from to N
Q15_1_A (Vegetation<-->Water = solid form) was changed from to N
Q15_1_B (Vegetation<-->Water = intermediate) was changed from to Y
Q15_1_C (Vegetation<-->Water = checkerboard) was changed from to N
Q15_2 (Channel flow spreading?) was changed from to N
Q16_A (Vegetation class = solid) was changed from to N
Q16_B (Vegetation class = intermediate) was changed from to N
Q16_C (Vegetation class = mosaic) was changed from to Y
Q17 (Plant form richness) was changed from to y
Q18 (Upland<-->Wetland edge irregular?) was changed from to y
Q19_1_A (Wind shelter?) was changed from to N
Q19_1_B (Wind shelter + fetch?) was changed from to N
Q19_2 (Wave protection?) was changed from to N

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I1 (Threatened/Endangered Species?) was changed from to N
I2 (Designated/Controlled Area?) was changed from to Y
I3 (State Listed Cultural Resource?) was changed from to N
I4 (Unusual or rare local type?) was changed from to N
I5 (Only wetland in locality?) was changed from to N
I6 (Substantial previous $ expenditure?) was changed from to N
I7 (Unnaturally high salinities?) was changed from to N
I10 (Dredging - spawning - ss) was changed from to Y
I11 (WWTP Priority Areas?) was changed from to Y
I12 (Drinking water supplies?) was changed from to N
I13 (Nutrient sensitive waters?) was changed from to Y
I14 (Bathing areas?) was changed from to N
I15 (Sole source aquifer, groundwater discharge ?) was changed from to Y
I16 (Actively used wells?) was changed from to N
I17 (Wildlife critically flow limited?) was changed from to N
I18 (Features in erosion prone areas?) was changed from to Y
I19 (USFWS/IRP fishery?) was changed from to N
I20 (USFWS/IRP wildlife?) was changed from to Y
I21 (USFWS Waterfowl Use Region?) was changed from to Y
I22 (Limited dependent species?) was changed from to N
I23 (Education opportunity?) was changed from to N
I25 (Pristine?) was changed from to N
I26 (Recreation in deficient area?) was changed from to N
I27 (Recreation access point?) was changed from to N
I28 (Urban area?) was changed from to Y

I29 (Only or closest to named feature?) was changed from to N
I30 (Region losing this type?) was changed from to Y
I31 (Acreage > than % annual loss rate?) was changed from to N
Q1_1 (Evaporation > precipitation?) was changed from to N
Q1_2 (Rainfall-erosivity > 300?) was changed from to N
Q1_3 (Freeze-over > one month?) was changed from to N
Q2_1_1 (Area < 5 acres?) was changed from to Y
Q2_1_2 (Area > 40 acres?) was changed from to N
Q2_1_3 (Area > 200 acres?) was changed from to N
Q3_1 (Another Wet Depression within 1 mile?) was changed from to Y
Q3_2 (Cluster wetland?) was changed from to Y
Q3_3 (Oasis wetland?) was changed from to N
Q4_1 (< 5 miles to major water?) was changed from to Y
Q5_1_1 (AA < 5% of watershed?) was changed from to N
Q5_1_2 (AA > 20% of watershed?) was changed from to N
Q5_2 (Upslope wet depressions > 5% of watershed?) was changed from to Y
Q6_1 (Downslope drop > upslope rise?) was changed from to Y
Q7 (v < 10 cm/s?) was changed from to I
Q8_1 (Permanent inlet?) was changed from to Y
Q8_2 (Intermittent inlet?) was changed from to N
Q8_3 (Permanent outlet?) was changed from to Y
Q8_4 (Intermittent outlet?) was changed from to N
Q9_1 (Outlet < one third average width?) was changed from to N
Q9_2 (Sheet flooding?) was changed from to y
Q10_A (Lacustrine?) was changed from to N
Q10_B (Palustrine?) was changed from to N
Q10_C (Riverine nontidal?) was changed from to N
Q10_D (Riverine tidal?) was changed from to N
Q10_E (Estuarine?) was changed from to Y
Q10_F (Marine?) was changed from to N
Q11 (Fringe or island wetland?) was changed from to N
Q12_AB (Dominant veg: forested and needle-leaved evergreen) was changed from to N
Q12_AC (Dominant veg: forested and broad-leaved evergreen) was changed from to N
Q12_AD (Dominant veg: forested and needle-leaved deciduous) was changed from to N
Q12_BB (Dominant veg: Scrub-shrub and needle-leaved evergreen) was changed from to N
Q12_BC (Dominant veg: Scrub-shrub and broad-leaved evergreen) was changed from to N
Q12_BD (Dominant veg: Scrub-shrub and needle-leaved deciduous) was changed from to N
Q12_BE (Dominant veg: Scrub-shrub and broad-leaved deciduous) was changed from to N
Q12_C (Dominant veg: Aquatic bed) was changed from to N
Q12_CA (Dominant veg: Aquatic bed and algal) was changed from to N
Q12_CB (Dominant veg: Aquatic bed and floating vascular) was changed from to N
Q12_CC (Dominant veg: Aquatic bed and rooted vascular) was changed from to N
Q12_CD (Dominant veg: Aquatic bed and aquatic moss) was changed from to N
Q12_D (Dominant veg: Emergent) was changed from to Y
Q12_DA (Dominant veg: Emergent and persistent) was changed from to Y
Q12_DB (Dominant veg: Emergent and non-persistent) was changed from to N
Q12_E (Dominant veg: Moss lichen) was changed from to N
Q13_A (Secondary veg: forested) was changed from to N
Q13_AA (Secondary veg: forested and dead) was changed from to N
Q13_AB (Secondary veg: forested and needle-leaved evergreen) was changed from to N
Q13_AC (Secondary veg: forested and broad-leaved evergreen) was changed from to N
Q13_AD (Secondary veg: forested and needle-leaved deciduous) was changed from to N
Q13_AE (Secondary veg: forested and broad-leaved deciduous) was changed from to N
Q13_B (Secondary veg: Scrub-shrub) was changed from to N
Q13_BA (Secondary veg: Scrub-shrub and dead) was changed from to N
Q13_BB (Secondary veg: Scrub-shrub and needle-leaved evergreen) was changed from to N
Q13_BC (Secondary veg: Scrub-shrub and broad-leaved evergreen) was changed from to N
Q13_BD (Secondary veg: Scrub-shrub and needle-leaved deciduous) was changed from to N
Q13_BE (Secondary veg: Scrub-shrub and broad-leaved deciduous) was changed from to N
Q13_C (Secondary veg: Aquatic bed) was changed from to N
Q13_CA (Secondary veg: Aquatic bed and algal) was changed from to y
Q13_CB (Secondary veg: Aquatic bed and floating vascular) was changed from to N
Q13_CC (Secondary veg: Aquatic bed and rooted vascular) was changed from to N
Q13_CD (Secondary veg: Aquatic bed and aquatic moss) was changed from to N
Q13_D (Secondary veg: Emergent) was changed from to Y
Q13_DA (Secondary veg: Emergent and persistent) was changed from to Y
Q13_DB (Secondary veg: Emergent and non-persistent) was changed from to N
Q13_E (Secondary veg: Moss lichen) was changed from to N

Q14_1 (AA on 25 square foot island?) was changed from to N
Q14_2 (AA on 2 acre island?) was changed from to N
Q15_1_A (Vegetation<-->Water = solid form) was changed from to N
Q15_1_B (Vegetation<-->Water = intermediate) was changed from to Y
Q15_1_C (Vegetation<-->Water = checkerboard) was changed from to N
Q15_2 (Channel flow spreading?) was changed from to y
Q16_A (Vegetation class = solid) was changed from to Y
Q16_B (Vegetation class = intermediate) was changed from to N
Q16_C (Vegetation class = mosaic) was changed from to N
Q17 (Plant form richness) was changed from to N
Q18 (Upland<-->Wetland edge irregular?) was changed from to N
Q19_1_A (Wind shelter?) was changed from to N
Q19_1_B (Wind shelter + fetch?) was changed from to N
Q19_2 (Wave protection?) was changed from to N
72
I1 (Threatened/Endangered Species?) was changed from to N
I2 (Designated/Controlled Area?) was changed from to Y
I3 (State Listed Cultural Resource?) was changed from to N
I4 (Unusual or rare local type?) was changed from to N
I5 (Only wetland in locality?) was changed from to N
I6 (Substantial previous $ expenditure?) was changed from to N
I7 (Unnaturally high salinities?) was changed from to N
I10 (Dredging - spawning - ss) was changed from to Y
I11 (WWTP Priority Areas?) was changed from to Y
I12 (Drinking water supplies?) was changed from to N
I13 (Nutrient sensitive waters?) was changed from to Y
I14 (Bathing areas?) was changed from to N
I15 (Sole source aquifer, groundwater discharge ?) was changed from to Y
I16 (Actively used wells?) was changed from to N
I17 (Wildlife critically flow limited?) was changed from to N
I18 (Features in erosion prone areas?) was changed from to Y
I19 (USFWS/IRP fishery?) was changed from to N
I20 (USFWS/IRP wildlife?) was changed from to Y
I21 (USFWS Waterfowl Use Region?) was changed from to Y
I22 (Limited dependent species?) was changed from to N
I23 (Education opportunity?) was changed from to N
I25 (Pristine?) was changed from to N
I26 (Recreation in deficient area?) was changed from to N
I27 (Recreation access point?) was changed from to N
I28 (Urban area?) was changed from to Y
I29 (Only or closest to named feature?) was changed from to N
I30 (Region losing this type?) was changed from to Y
I31 (Acreage > than % annual loss rate?) was changed from to N
Q1_1 (Evaporation > precipitation?) was changed from to N
Q1_2 (Rainfall-erosivity > 300?) was changed from to N
Q1_3 (Freeze-over > one month?) was changed from to N
Q2_1_1 (Area < 5 acres?) was changed from to Y
Q2_1_2 (Area > 40 acres?) was changed from to N
Q2_1_3 (Area > 200 acres?) was changed from to N
Q3_1 (Another Wet Depression within 1 mile?) was changed from to Y
Q3_2 (Cluster wetland?) was changed from to Y
Q3_3 (Oasis wetland?) was changed from to N
Q4_1 (< 5 miles to major water?) was changed from to Y
Q5_1_1 (AA < 5% of watershed?) was changed from to N
Q5_1_2 (AA > 20% of watershed?) was changed from to N
Q5_2 (Upslope wet depressions > 5% of watershed?) was changed from to Y
Q6_1 (Downslope drop > upslope rise?) was changed from to Y
Q7 (v < 10 cm/s?) was changed from to I
Q8_1 (Permanent inlet?) was changed from to Y
Q8_2 (Intermittent inlet?) was changed from to N
Q8_3 (Permanent outlet?) was changed from to Y
Q8_4 (Intermittent outlet?) was changed from to N
Q9_1 (Outlet < one third average width?) was changed from to N
Q9_2 (Sheet flooding?) was changed from to y
Q10_A (Lacustrine?) was changed from to N
Q10_B (Palustrine?) was changed from to N
Q10_C (Riverine nontidal?) was changed from to N
Q10_D (Riverine tidal?) was changed from to N

Q10_E (Estuarine?) was changed from to Y
Q10_F (Marine?) was changed from to N
Q11 (Fringe or island wetland?) was changed from to N
Q12_AB (Dominant veg: forested and needle-leaved evergreen) was changed from to N
Q12_AC (Dominant veg: forested and broad-leaved evergreen) was changed from to N
Q12_AD (Dominant veg: forested and needle-leaved deciduous) was changed from to N
Q12_BB (Dominant veg: Scrub-shrub and needle-leaved evergreen) was changed from to N
Q12_BC (Dominant veg: Scrub-shrub and broad-leaved evergreen) was changed from to N
Q12_BD (Dominant veg: Scrub-shrub and needle-leaved deciduous) was changed from to N
Q12_BE (Dominant veg: Scrub-shrub and broad-leaved deciduous) was changed from to N
Q12_C (Dominant veg: Aquatic bed) was changed from to N
Q12_CA (Dominant veg: Aquatic bed and algal) was changed from to N
Q12_CB (Dominant veg: Aquatic bed and floating vascular) was changed from to N
Q12_CC (Dominant veg: Aquatic bed and rooted vascular) was changed from to N
Q12_CD (Dominant veg: Aquatic bed and aquatic moss) was changed from to N
Q12_D (Dominant veg: Emergent) was changed from to Y
Q12_DA (Dominant veg: Emergent and persistent) was changed from to Y
Q12_DB (Dominant veg: Emergent and non-persistent) was changed from to N
Q12_E (Dominant veg: Moss lichen) was changed from to N
Q13_A (Secondary veg: forested) was changed from to N
Q13_AA (Secondary veg: forested and dead) was changed from to N
Q13_AB (Secondary veg: forested and needle-leaved evergreen) was changed from to N
Q13_AC (Secondary veg: forested and broad-leaved evergreen) was changed from to N
Q13_AD (Secondary veg: forested and needle-leaved deciduous) was changed from to N
Q13_AE (Secondary veg: forested and broad-leaved deciduous) was changed from to N
Q13_B (Secondary veg: Scrub-shrub) was changed from to N
Q13_BA (Secondary veg: Scrub-shrub and dead) was changed from to N
Q13_BB (Secondary veg: Scrub-shrub and needle-leaved evergreen) was changed from to N
Q13_BC (Secondary veg: Scrub-shrub and broad-leaved evergreen) was changed from to N
Q13_BD (Secondary veg: Scrub-shrub and needle-leaved deciduous) was changed from to N
Q13_BE (Secondary veg: Scrub-shrub and broad-leaved deciduous) was changed from to N
Q13_C (Secondary veg: Aquatic bed) was changed from to N
Q13_CA (Secondary veg: Aquatic bed and algal) was changed from to y
Q13_CB (Secondary veg: Aquatic bed and floating vascular) was changed from to N
Q13_CC (Secondary veg: Aquatic bed and rooted vascular) was changed from to N
Q13_CD (Secondary veg: Aquatic bed and aquatic moss) was changed from to N
Q13_D (Secondary veg: Emergent) was changed from to Y
Q13_DA (Secondary veg: Emergent and persistent) was changed from to Y
Q13_DB (Secondary veg: Emergent and non-persistent) was changed from to N
Q13_E (Secondary veg: Moss lichen) was changed from to N
Q14_1 (AA on 25 square foot island?) was changed from to N
Q14_2 (AA on 2 acre island?) was changed from to N
Q15_1_A (Vegetation<-->Water = solid form) was changed from to N
Q15_1_B (Vegetation<-->Water = intermediate) was changed from to Y
Q15_1_C (Vegetation<-->Water = checkerboard) was changed from to N
Q15_2 (Channel flow spreading?) was changed from to y
Q16_A (Vegetation class = solid) was changed from to Y
Q16_B (Vegetation class = intermediate) was changed from to N
Q16_C (Vegetation class = mosaic) was changed from to N
Q17 (Plant form richness) was changed from to N
Q18 (Upland<-->Wetland edge irregular?) was changed from to N
Q19_1_A (Wind shelter?) was changed from to N
Q19_1_B (Wind shelter + fetch?) was changed from to N
Q19_2 (Wave protection?) was changed from to N

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I1 (Threatened/Endangered Species?) was changed from to N
I2 (Designated/Controlled Area?) was changed from to N
I3 (State Listed Cultural Resource?) was changed from to N
I4 (Unusual or rare local type?) was changed from to N
I5 (Only wetland in locality?) was changed from to N
I6 (Substantial previous $ expenditure?) was changed from to N
I7 (Unnaturally high salinities?) was changed from to N
I9 (Downslope sensitive features in floodplain?) was changed from to N
I10 (Dredging - spawning - ss) was changed from to Y
I11 (WWTP Priority Areas?) was changed from to Y
I12 (Drinking water supplies?) was changed from to N
I13 (Nutrient sensitive waters?) was changed from to Y
I14 (Bathing areas?) was changed from to N

I15 (Sole source aquifer, groundwater discharge ?) was changed from to Y
I16 (Actively used wells?) was changed from to N
I17 (Wildlife critically flow limited?) was changed from to N
I18 (Features in erosion prone areas?) was changed from to N
I19 (USFWS/IRP fishery?) was changed from to N
I20 (USFWS/IRP wildlife?) was changed from to Y
I21 (USFWS Waterfowl Use Region?) was changed from to Y
I22 (Limited dependent species?) was changed from to N
I23 (Education opportunity?) was changed from to N
I24 (Research resource?) was changed from to N
I25 (Pristine?) was changed from to N
I26 (Recreation in deficient area?) was changed from to N
I27 (Recreation access point?) was changed from to N
I28 (Urban area?) was changed from to Y
I29 (Only or closest to named feature?) was changed from to N
I30 (Region losing this type?) was changed from to Y
I31 (Acreage > than % annual loss rate?) was changed from to N
Q1_1 (Evaporation > precipitation?) was changed from to N
Q1_2 (Rainfall-erosivity > 300?) was changed from to N
Q1_3 (Freeze-over > one month?) was changed from to N
Q2_1_1 (Area < 5 acres?) was changed from to N
Q2_1_2 (Area > 40 acres?) was changed from to N
Q2_1_3 (Area > 200 acres?) was changed from to N
Q3_1 (Another Wet Depression within 1 mile?) was changed from to Y
Q3_2 (Cluster wetland?) was changed from to Y
Q3_3 (Oasis wetland?) was changed from to N
Q4_1 (< 5 miles to major water?) was changed from to Y
Q4_2A (< 1 square mile watershed?) was changed from to Y
Q4_2B (1 -100 square mile watershed?) was changed from to N
Q4_2C (100-2500 square mile watershed?) was changed from to N
Q4_2D (> 2500 square mile watershed?) was changed from to N
Q5_1_1 (AA < 5% of watershed?) was changed from to N
Q5_1_2 (AA > 20% of watershed?) was changed from to N
Q5_2 (Upslope wet depressions > 5% of watershed?) was changed from to Y
Q6_1 (Downslope drop > upslope rise?) was changed from to Y
Q7 (v < 10 cm/s?) was changed from to I
Q8_1 (Permanent inlet?) was changed from to Y
Q8_2 (Intermittent inlet?) was changed from to N
Q8_3 (Permanent outlet?) was changed from to Y
Q8_4 (Intermittent outlet?) was changed from to N
Q9_1 (Outlet < one third average width?) was changed from to Y
Q9_2 (Sheet flooding?) was changed from to N
Q10_A (Lacustrine?) was changed from to N
Q10_B (Palustrine?) was changed from to Y
Q10_C (Riverine nontidal?) was changed from to N
Q10_D (Riverine tidal?) was changed from to N
Q10_E (Estuarine?) was changed from to N
Q10_F (Marine?) was changed from to N
Q11 (Fringe or island wetland?) was changed from to N
Q12_A (Dominant veg: forested) was changed from to N
Q12_AA (Dominant veg: forested and dead) was changed from to N
Q12_AB (Dominant veg: forested and needle-leaved evergreen) was changed from to N
Q12_AC (Dominant veg: forested and broad-leaved evergreen) was changed from to N
Q12_AD (Dominant veg: forested and needle-leaved deciduous) was changed from to N
Q12_AE (Dominant veg: forested and broad-leaved deciduous) was changed from to N
Q12_B (Dominant veg: Scrub-shrub) was changed from to N
Q12_BA (Dominant veg: Scrub-shrub and dead) was changed from to N
Q12_BB (Dominant veg: Scrub-shrub and needle-leaved evergreen) was changed from to N
Q12_BC (Dominant veg: Scrub-shrub and broad-leaved evergreen) was changed from to N
Q12_BD (Dominant veg: Scrub-shrub and needle-leaved deciduous) was changed from to N
Q12_BE (Dominant veg: Scrub-shrub and broad-leaved deciduous) was changed from to N
Q12_C (Dominant veg: Aquatic bed) was changed from to N
Q12_CA (Dominant veg: Aquatic bed and algal) was changed from to N
Q12_CB (Dominant veg: Aquatic bed and floating vascular) was changed from to N
Q12_CC (Dominant veg: Aquatic bed and rooted vascular) was changed from to N
Q12_CD (Dominant veg: Aquatic bed and aquatic moss) was changed from to N
Q12_D (Dominant veg: Emergent) was changed from to Y
Q12_DA (Dominant veg: Emergent and persistent) was changed from to Y

Q12_DB (Dominant veg: Emergent and non-persistent) was changed from to N
Q12_E (Dominant veg: Moss lichen) was changed from to N
Q13_A (Secondary veg: forested) was changed from to N
Q13_AA (Secondary veg: forested and dead) was changed from to N
Q13_AB (Secondary veg: forested and needle-leaved evergreen) was changed from to N
Q13_AC (Secondary veg: forested and broad-leaved evergreen) was changed from to N
Q13_AD (Secondary veg: forested and needle-leaved deciduous) was changed from to N
Q13_AE (Secondary veg: forested and broad-leaved deciduous) was changed from to N
Q13_B (Secondary veg: Scrub-shrub) was changed from to N
Q13_BA (Secondary veg: Scrub-shrub and dead) was changed from to N
Q13_BB (Secondary veg: Scrub-shrub and needle-leaved evergreen) was changed from to N
Q13_BC (Secondary veg: Scrub-shrub and broad-leaved evergreen) was changed from to N
Q13_BD (Secondary veg: Scrub-shrub and needle-leaved deciduous) was changed from to N
Q13_BE (Secondary veg: Scrub-shrub and broad-leaved deciduous) was changed from to N
Q13_C (Secondary veg: Aquatic bed) was changed from to N
Q13_CA (Secondary veg: Aquatic bed and algal) was changed from to N
Q13_CB (Secondary veg: Aquatic bed and floating vascular) was changed from to N
Q13_CC (Secondary veg: Aquatic bed and rooted vascular) was changed from to N
Q13_CD (Secondary veg: Aquatic bed and aquatic moss) was changed from to N
Q13_D (Secondary veg: Emergent) was changed from to Y
Q13_DA (Secondary veg: Emergent and persistent) was changed from to Y
Q13_DB (Secondary veg: Emergent and non-persistent) was changed from to N
Q13_E (Secondary veg: Moss lichen) was changed from to N
Q14_1 (AA on 25 square foot island?) was changed from to N
Q14_2 (AA on 2 acre island?) was changed from to N
Q15_1_A (Vegetation<-->Water = solid form) was changed from to N
Q15_1_B (Vegetation<-->Water = intermediate) was changed from to Y
Q15_1_C (Vegetation<-->Water = checkerboard) was changed from to N
Q15_2 (Channel flow spreading?) was changed from to Y
Q16_A (Vegetation class = solid) was changed from to Y
Q16_B (Vegetation class = intermediate) was changed from to N
Q16_C (Vegetation class = mosaic) was changed from to N
Q17 (Plant form richness) was changed from to N
Q18 (Upland<-->Wetland edge irregular?) was changed from to N
Q19_1_A (Wind shelter?) was changed from to N
Q19_1_B (Wind shelter + fetch?) was changed from to N
Q19_2 (Wave protection?) was changed from to N

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I1 (Threatened/Endangered Species?) was changed from to N
I2 (Designated/Controlled Area?) was changed from to N
I3 (State Listed Cultural Resource?) was changed from to N
I4 (Unusual or rare local type?) was changed from to N
I5 (Only wetland in locality?) was changed from to N
I6 (Substantial previous $ expenditure?) was changed from to N
I7 (Unnaturally high salinities?) was changed from to N
I9 (Downslope sensitive features in floodplain?) was changed from to N
I10 (Dredging - spawning - ss) was changed from to Y
I11 (WWTP Priority Areas?) was changed from to Y
I12 (Drinking water supplies?) was changed from to N
I13 (Nutrient sensitive waters?) was changed from to Y
I14 (Bathing areas?) was changed from to N
I15 (Sole source aquifer, groundwater discharge ?) was changed from to Y
I16 (Actively used wells?) was changed from to N
I17 (Wildlife critically flow limited?) was changed from to N
I18 (Features in erosion prone areas?) was changed from to N
I19 (USFWS/IRP fishery?) was changed from to N
I20 (USFWS/IRP wildlife?) was changed from to Y
I21 (USFWS Waterfowl Use Region?) was changed from to Y
I22 (Limited dependent species?) was changed from to N
I23 (Education opportunity?) was changed from to N
I24 (Research resource?) was changed from to N
I25 (Pristine?) was changed from to N
I26 (Recreation in deficient area?) was changed from to N
I27 (Recreation access point?) was changed from to N
I28 (Urban area?) was changed from to Y
I29 (Only or closest to named feature?) was changed from to N
I30 (Region losing this type?) was changed from to Y
I31 (Acreage > than % annual loss rate?) was changed from to N

Q1_1 (Evaporation > precipitation?) was changed from to N
Q1_2 (Rainfall-erosivity > 300?) was changed from to N
Q1_3 (Freeze-over > one month?) was changed from to N
Q2_1_1 (Area < 5 acres?) was changed from to N
Q2_1_2 (Area > 40 acres?) was changed from to N
Q2_1_3 (Area > 200 acres?) was changed from to N
Q3_1 (Another Wet Depression within 1 mile?) was changed from to Y
Q3_2 (Cluster wetland?) was changed from to Y
Q3_3 (Oasis wetland?) was changed from to N
Q4_1 (< 5 miles to major water?) was changed from to Y
Q5_1_2 (AA > 20% of watershed?) was changed from to N
Q5_2 (Upslope wet depressions > 5% of watershed?) was changed from to Y
Q6_1 (Downslope drop > upslope rise?) was changed from to Y
Q7 (v < 10 cm/s?) was changed from to I
Q8_1 (Permanent inlet?) was changed from to N
Q8_2 (Intermittent inlet?) was changed from to N
Q8_3 (Permanent outlet?) was changed from to N
Q8_4 (Intermittent outlet?) was changed from to N
Q10_A (Lacustrine?) was changed from to N
Q10_B (Palustrine?) was changed from to N
Q10_C (Riverine nontidal?) was changed from to N
Q10_D (Riverine tidal?) was changed from to N
Q10_E (Estuarine?) was changed from to Y
Q10_F (Marine?) was changed from to N
Q11 (Fringe or island wetland?) was changed from to N
Q12_A (Dominant veg: forested) was changed from to N
Q12_AA (Dominant veg: forested and dead) was changed from to N
Q12_AB (Dominant veg: forested and needle-leaved evergreen) was changed from to N
Q12_AC (Dominant veg: forested and broad-leaved evergreen) was changed from to N
Q12_AD (Dominant veg: forested and needle-leaved deciduous) was changed from to N
Q12_AE (Dominant veg: forested and broad-leaved deciduous) was changed from to N
Q12_B (Dominant veg: Scrub-shrub) was changed from to N
Q12_BA (Dominant veg: Scrub-shrub and dead) was changed from to N
Q12_BB (Dominant veg: Scrub-shrub and needle-leaved evergreen) was changed from to N
Q12_BC (Dominant veg: Scrub-shrub and broad-leaved evergreen) was changed from to N
Q12_BD (Dominant veg: Scrub-shrub and needle-leaved deciduous) was changed from to N
Q12_BE (Dominant veg: Scrub-shrub and broad-leaved deciduous) was changed from to N
Q12_C (Dominant veg: Aquatic bed) was changed from to N
Q12_CA (Dominant veg: Aquatic bed and algal) was changed from to N
Q12_CB (Dominant veg: Aquatic bed and floating vascular) was changed from to N
Q12_CC (Dominant veg: Aquatic bed and rooted vascular) was changed from to N
Q12_CD (Dominant veg: Aquatic bed and aquatic moss) was changed from to N
Q12_D (Dominant veg: Emergent) was changed from to Y
Q12_DA (Dominant veg: Emergent and persistent) was changed from to Y
Q12_DB (Dominant veg: Emergent and non-persistent) was changed from to N
Q12_E (Dominant veg: Moss lichen) was changed from to N
Q13_A (Secondary veg: forested) was changed from to N
Q13_AA (Secondary veg: forested and dead) was changed from to N
Q13_AB (Secondary veg: forested and needle-leaved evergreen) was changed from to N
Q13_AC (Secondary veg: forested and broad-leaved evergreen) was changed from to N
Q13_AD (Secondary veg: forested and needle-leaved deciduous) was changed from to N
Q13_AE (Secondary veg: forested and broad-leaved deciduous) was changed from to N
Q13_B (Secondary veg: Scrub-shrub) was changed from to N
Q13_BA (Secondary veg: Scrub-shrub and dead) was changed from to N
Q13_BB (Secondary veg: Scrub-shrub and needle-leaved evergreen) was changed from to N
Q13_BC (Secondary veg: Scrub-shrub and broad-leaved evergreen) was changed from to N
Q13_BD (Secondary veg: Scrub-shrub and needle-leaved deciduous) was changed from to N
Q13_BE (Secondary veg: Scrub-shrub and broad-leaved deciduous) was changed from to N
Q13_C (Secondary veg: Aquatic bed) was changed from to N
Q13_CA (Secondary veg: Aquatic bed and algal) was changed from to N
Q13_CB (Secondary veg: Aquatic bed and floating vascular) was changed from to N
Q13_CC (Secondary veg: Aquatic bed and rooted vascular) was changed from to N
Q13_CD (Secondary veg: Aquatic bed and aquatic moss) was changed from to N
Q13_D (Secondary veg: Emergent) was changed from to Y
Q13_DA (Secondary veg: Emergent and persistent) was changed from to Y
Q13_DB (Secondary veg: Emergent and non-persistent) was changed from to N
Q13_E (Secondary veg: Moss lichen) was changed from to N
Q14_1 (AA on 25 square foot island?) was changed from to N

Q14_2 (AA on 2 acre island?) was changed from to N
Q15_1_A (Vegetation<-->Water = solid form) was changed from to Y
Q15_1_B (Vegetation<-->Water = intermediate) was changed from to N
Q15_1_C (Vegetation<-->Water = checkerboard) was changed from to N
Q16_A (Vegetation class = solid) was changed from to Y
Q16_B (Vegetation class = intermediate) was changed from to N
Q16_C (Vegetation class = mosaic) was changed from to N
Q17 (Plant form richness) was changed from to N
Q18 (Upland<-->Wetland edge irregular?) was changed from to N
Q19_1_A (Wind shelter?) was changed from to N
Q19_1_B (Wind shelter + fetch?) was changed from to N
Q19_2 (Wave protection?) was changed from to N

87 B2

I1 (Threatened/Endangered Species?) was changed from to N
I2 (Designated/Controlled Area?) was changed from to N
I3 (State Listed Cultural Resource?) was changed from to N
I4 (Unusual or rare local type?) was changed from to N
I5 (Only wetland in locality?) was changed from to N
I6 (Substantial previous $ expenditure?) was changed from to N
I7 (Unnaturally high salinities?) was changed from to N
I8 (Features sensitive to flooding?) was changed from to Y
I9 (Downslope sensitive features in floodplain?) was changed from to Y
I10 (Dredging - spawning - ss) was changed from to Y
I11 (WWTP Priority Areas?) was changed from to Y
I12 (Drinking water supplies?) was changed from to N
I13 (Nutrient sensitive waters?) was changed from to Y
I14 (Bathing areas?) was changed from to N
I15 (Sole source aquifer, groundwater discharge ?) was changed from to Y
I16 (Actively used wells?) was changed from to N
I17 (Wildlife critically flow limited?) was changed from to N
I18 (Features in erosion prone areas?) was changed from to Y
I19 (USFWS/IRP fishery?) was changed from to N
I20 (USFWS/IRP wildlife?) was changed from to Y
I21 (USFWS Waterfowl Use Region?) was changed from to Y
I22 (Limited dependent species?) was changed from to N
I23 (Education opportunity?) was changed from to N
I24 (Research resource?) was changed from to N
I25 (Pristine?) was changed from to N
I26 (Recreation in deficient area?) was changed from to N
I27 (Recreation access point?) was changed from to N
I28 (Urban area?) was changed from to Y
I29 (Only or closest to named feature?) was changed from to N
I30 (Region losing this type?) was changed from to Y
I31 (Acreage > than % annual loss rate?) was changed from to N
Q1_1 (Evaporation > precipitation?) was changed from to N
Q1_2 (Rainfall-erosivity > 300?) was changed from to N
Q1_3 (Freeze-over > one month?) was changed from to N
Q2_1_1 (Area < 5 acres?) was changed from to N
Q2_1_2 (Area > 40 acres?) was changed from to N
Q2_1_3 (Area > 200 acres?) was changed from to N
Q3_1 (Another Wet Depression within 1 mile?) was changed from to Y
Q3_2 (Cluster wetland?) was changed from to Y
Q3_3 (Oasis wetland?) was changed from to N
Q4_1 (< 5 miles to major water?) was changed from to Y
Q5_1_1 (AA < 5% of watershed?) was changed from to N
Q5_1_2 (AA > 20% of watershed?) was changed from to Y
Q5_2 (Upslope wet depressions > 5% of watershed?) was changed from to Y
Q6_1 (Downslope drop > upslope rise?) was changed from to Y
Q7 (v < 10 cm/s?) was changed from to I
Q8_1 (Permanent inlet?) was changed from to N
Q8_2 (Intermittent inlet?) was changed from to Y
Q8_3 (Permanent outlet?) was changed from to N
Q8_4 (Intermittent outlet?) was changed from to Y
Q9_1 (Outlet < one third average width?) was changed from to Y
Q9_2 (Sheet flooding?) was changed from to N
Q10_A (Lacustrine?) was changed from to N
Q10_B (Palustrine?) was changed from to Y
Q10_C (Riverine nontidal?) was changed from to N

Q10_D (Riverine tidal?) was changed from to N
Q10_E (Estuarine?) was changed from to N
Q10_F (Marine?) was changed from to N
Q11 (Fringe or island wetland?) was changed from to N
Q12_A (Dominant veg: forested) was changed from to N
Q12_AA (Dominant veg: forested and dead) was changed from to N
Q12_AB (Dominant veg: forested and needle-leaved evergreen) was changed from to N
Q12_AC (Dominant veg: forested and broad-leaved evergreen) was changed from to N
Q12_AD (Dominant veg: forested and needle-leaved deciduous) was changed from to N
Q12_AE (Dominant veg: forested and broad-leaved deciduous) was changed from to N
Q12_B (Dominant veg: Scrub-shrub) was changed from to N
Q12_BA (Dominant veg: Scrub-shrub and dead) was changed from to N
Q12_BB (Dominant veg: Scrub-shrub and needle-leaved evergreen) was changed from to N
Q12_BC (Dominant veg: Scrub-shrub and broad-leaved evergreen) was changed from to N
Q12_BD (Dominant veg: Scrub-shrub and needle-leaved deciduous) was changed from to N
Q12_BE (Dominant veg: Scrub-shrub and broad-leaved deciduous) was changed from to N
Q12_C (Dominant veg: Aquatic bed) was changed from to N
Q12_CA (Dominant veg: Aquatic bed and algal) was changed from to N
Q12_CB (Dominant veg: Aquatic bed and floating vascular) was changed from to N
Q12_CC (Dominant veg: Aquatic bed and rooted vascular) was changed from to N
Q12_CD (Dominant veg: Aquatic bed and aquatic moss) was changed from to N
Q12_D (Dominant veg: Emergent) was changed from to Y
Q12_DA (Dominant veg: Emergent and persistent) was changed from to Y
Q12_DB (Dominant veg: Emergent and non-persistent) was changed from to N
Q12_E (Dominant veg: Moss lichen) was changed from to N
Q13_A (Secondary veg: forested) was changed from to N
Q13_AA (Secondary veg: forested and dead) was changed from to N
Q13_AB (Secondary veg: forested and needle-leaved evergreen) was changed from to N
Q13_AC (Secondary veg: forested and broad-leaved evergreen) was changed from to N
Q13_AD (Secondary veg: forested and needle-leaved deciduous) was changed from to N
Q13_AE (Secondary veg: forested and broad-leaved deciduous) was changed from to N
Q13_B (Secondary veg: Scrub-shrub) was changed from to N
Q13_BA (Secondary veg: Scrub-shrub and dead) was changed from to N
Q13_BB (Secondary veg: Scrub-shrub and needle-leaved evergreen) was changed from to N
Q13_BC (Secondary veg: Scrub-shrub and broad-leaved evergreen) was changed from to N
Q13_BD (Secondary veg: Scrub-shrub and needle-leaved deciduous) was changed from to N
Q13_BE (Secondary veg: Scrub-shrub and broad-leaved deciduous) was changed from to N
Q13_C (Secondary veg: Aquatic bed) was changed from to Y
Q13_CA (Secondary veg: Aquatic bed and algal) was changed from to N
Q13_CB (Secondary veg: Aquatic bed and floating vascular) was changed from to Y
Q13_CC (Secondary veg: Aquatic bed and rooted vascular) was changed from to N
Q13_CD (Secondary veg: Aquatic bed and aquatic moss) was changed from to N
Q13_D (Secondary veg: Emergent) was changed from to Y
Q13_DA (Secondary veg: Emergent and persistent) was changed from to Y
Q13_DB (Secondary veg: Emergent and non-persistent) was changed from to N
Q13_E (Secondary veg: Moss lichen) was changed from to N
Q14_1 (AA on 25 square foot island?) was changed from to N
Q14_2 (AA on 2 acre island?) was changed from to N
Q15_1_A (Vegetation<-->Water = solid form) was changed from to Y
Q15_1_B (Vegetation<-->Water = intermediate) was changed from to N
Q15_1_C (Vegetation<-->Water = checkerboard) was changed from to N
Q16_A (Vegetation class = solid) was changed from to N
Q16_B (Vegetation class = intermediate) was changed from to Y
Q16_C (Vegetation class = mosaic) was changed from to N
Q17 (Plant form richness) was changed from to N
Q18 (Upland<-->Wetland edge irregular?) was changed from to N
Q19_1_A (Wind shelter?) was changed from to Y
Q19_1_B (Wind shelter + fetch?) was changed from to N
Q19_2 (Wave protection?) was changed from to N

97_a

Q9_2 (Sheet flooding?) was changed from N to y
Q12_CC (Dominant veg: Aquatic bed and rooted vascular) was changed from N to y
Q12_DA (Dominant veg: Emergent and persistent) was changed from Y to n
Q13_CA (Secondary veg: Aquatic bed and algal) was changed from N to y
Q13_CB (Secondary veg: Aquatic bed and floating vascular) was changed from N to y
Q13_CC (Secondary veg: Aquatic bed and rooted vascular) was changed from N to y
Q13_DB (Secondary veg: Emergent and non-persistent) was changed from N to y
Q14_1 (AA on 25 square foot island?) was changed from N to y

Q15_1_A (Vegetation<-->Water = solid form) was changed from Y to n
Q15_1_C (Vegetation<-->Water = checkerboard) was changed from N to y
Q16_B (Vegetation class = intermediate) was changed from Y to n
Q16_C (Vegetation class = mosaic) was changed from N to y
Q17 (Plant form richness) was changed from N to y
Q18 (Upland<-->Wetland edge irregular?) was changed from N to y
Q22_1_1 (AA contains a Channel?) was changed from N to y
Q22_1_2 (AA contains a Sinuous channel?) was changed from N to y
Q32_A (Spatial Dominant Hydroperiod = perm flooded nontidal?) was changed from N to y
Q32_F (Spatial Dominant Hydroperiod = temp flooded nontidal?) was changed from Y to n
Q33_A (Permanent Hydroperiod = perm flooded nontidal?) was changed from Y to n
Q33_B (Permanent Hydroperiod = intermit exposed nontidal?) was changed from N to y
Q34_1 (Local dams?) was changed from N to y
Q39 (Special habitat features?) was changed from N to y
Q44_C (5 in < secondary water depth < 8 inches) was changed from N to y
Q44_D (9 in < secondary water depth < 20 inches) was changed from N to y
Q44_E (21 in < secondary water depth < 39 inches) was changed from N to y
Q44_F (40 in < secondary water depth < 59 inches) was changed from N to y
Q44_G (5 feet < secondary water depth < 6.5 feet) was changed from N to y
Q44_H (6.5 feet < secondary water depth < 26 feet) was changed from N to y
Q46_A (Physical Habitat Interspersion = uniform) was changed from Y to n
Q46_C (Physical Habitat Interspersion = mosaic) was changed from N to y
Q50 (Plants: waterfowl value?) was changed from N to y

97_b

Q9_2 (Sheet flooding?) was changed from N to y
Q12_CC (Dominant veg: Aquatic bed and rooted vascular) was changed from N to y
Q12_DA (Dominant veg: Emergent and persistent) was changed from Y to n
Q13_CA (Secondary veg: Aquatic bed and algal) was changed from N to y
Q13_CB (Secondary veg: Aquatic bed and floating vascular) was changed from N to y
Q13_CC (Secondary veg: Aquatic bed and rooted vascular) was changed from N to y
Q13_DB (Secondary veg: Emergent and non-persistent) was changed from N to y
Q14_1 (AA on 25 square foot island?) was changed from N to y
Q15_1_A (Vegetation<-->Water = solid form) was changed from Y to n
Q15_1_C (Vegetation<-->Water = checkerboard) was changed from N to y
Q16_B (Vegetation class = intermediate) was changed from Y to n
Q16_C (Vegetation class = mosaic) was changed from N to y
Q17 (Plant form richness) was changed from N to y
Q18 (Upland<-->Wetland edge irregular?) was changed from N to y
Q22_1_1 (AA contains a Channel?) was changed from N to y
Q22_1_2 (AA contains a Sinuous channel?) was changed from N to y
Q32_A (Spatial Dominant Hydroperiod = perm flooded nontidal?) was changed from N to y
Q32_F (Spatial Dominant Hydroperiod = temp flooded nontidal?) was changed from Y to n
Q33_A (Permanent Hydroperiod = perm flooded nontidal?) was changed from Y to n
Q33_B (Permanent Hydroperiod = intermit exposed nontidal?) was changed from N to y
Q34_1 (Local dams?) was changed from N to y
Q39 (Special habitat features?) was changed from N to y
Q44_C (5 in < secondary water depth < 8 inches) was changed from N to y
Q44_D (9 in < secondary water depth < 20 inches) was changed from N to y
Q44_E (21 in < secondary water depth < 39 inches) was changed from N to y
Q44_F (40 in < secondary water depth < 59 inches) was changed from N to y
Q44_G (5 feet < secondary water depth < 6.5 feet) was changed from N to y
Q44_H (6.5 feet < secondary water depth < 26 feet) was changed from N to y
Q46_A (Physical habitat Interspersion = uniform) was changed from Y to n
Q46_C (Physical Habitat Interspersion = mosaic) was changed from N to y
Q50 (Plants: waterfowl value?) was changed from N to y

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Q8_3 (Permanent outlet?) was changed from N to y
Q8_4 (Intermittent outlet?) was changed from N to y
Q12_CC (Dominant veg: Aquatic bed and rooted vascular) was changed from N to y
Q12_DA (Dominant veg: Emergent and persistent) was changed from Y to n
Q13_CA (Secondary veg: Aquatic bed and algal) was changed from N to y
Q13_CB (Secondary veg: Aquatic bed and floating vascular) was changed from N to y
Q13_CC (Secondary veg: Aquatic bed and rooted vascular) was changed from N to y
Q13_DB (Secondary veg: Emergent and non-persistent) was changed from N to y
Q14_1 (AA on 25 square foot island?) was changed from N to y
Q14_2 (AA on 2 acre island?) was changed from N to y
Q15_1_A (Vegetation<-->Water = solid form) was changed from Y to n
Q15_1_C (Vegetation<-->Water = checkerboard) was changed from N to y

Q16_A (Vegetation class = solid) was changed from Y to n
Q16_C (Vegetation class = mosaic) was changed from N to y
Q17 (Plant form richness) was changed from N to y
Q22_1_1 (AA contains a Channel?) was changed from N to y
Q29_2 (Buffer zone slopes < 5%?) was changed from N to y
Q31_2 (Area of Zone B > 10% of AA?) was changed from N to y
Q32_A (Spatial Dominant Hydroperiod = perm flooded nontidal?) was changed from N to y
Q32_G (Spatial Dominant Hydroperiod = intermit flooded nontidal?) was changed from Y to n
Q33_B (Permanent Hydroperiod = intermit exposed nontidal?) was changed from N to y
Q33_G (Permanent Hydroperiod = intermit flooded nontidal?) was changed from Y to n
Q34_1 (Local dams?) was changed from N to y
Q39 (Special habitat features?) was changed from N to y
Q44_B (1 in < secondary water depth < 4 inches) was changed from N to y
Q44_C (5 in < secondary water depth < 8 inches) was changed from N to y
Q44_D (9 in < secondary water depth < 20 inches) was changed from N to y
Q44_E (21 in < secondary water depth < 39 inches) was changed from N to y
Q44_F (40 in < secondary water depth < 59 inches) was changed from N to y
Q44_G (5 feet < secondary water depth < 6.5 feet) was changed from N to y
Q44_H (6.5 feet < secondary water depth < 26 feet) was changed from N to y
Q50 (Plants: waterfowl value?) was changed from N to y

99

Q8_4 (Intermittent outlet?) was changed from N to y
Q9_2 (Sheet flooding?) was changed from N to y
Q12_CC (Dominant veg: Aquatic bed and rooted vascular) was changed from N to y
Q12_DA (Dominant veg: Emergent and persistent) was changed from Y to n
Q13_CA (Secondary veg: Aquatic bed and algal) was changed from N to y
Q13_CB (Secondary veg: Aquatic bed and floating vascular) was changed from N to y
Q13_CC (Secondary veg: Aquatic bed and rooted vascular) was changed from N to y
Q13_DB (Secondary veg: Emergent and non-persistent) was changed from N to y
Q14_1 (AA on 25 square foot island?) was changed from N to y
Q14_2 (AA on 2 acre island?) was changed from N to y
Q15_1_A (Vegetation<-->Water = solid form) was changed from Y to n
Q15_1_C (Vegetation<-->Water = checkerboard) was changed from N to y
Q16_A (Vegetation class = solid) was changed from Y to n
Q16_C (Vegetation class = mosaic) was changed from N to y
Q17 (Plant form richness) was changed from N to y
Q18 (Upland<-->Wetland edge irregular?) was changed from N to y
Q22_1_2 (AA contains a Sinuous channel?) was changed from N to y
Q29_2 (Buffer zone slopes < 5%?) was changed from N to y
Q31_2 (Area of Zone B > 10% of AA?) was changed from N to y
Q32_A (Spatial Dominant Hydroperiod = perm flooded nontidal?) was changed from N to y
Q32_G (Spatial Dominant Hydroperiod = intermit flooded nontidal?) was changed from Y to n
Q33_B (Permanent Hydroperiod = intermit exposed nontidal?) was changed from N to y
Q33_J (Permanent Hydroperiod = irregularly exposed tidal?) was changed from Y to n
Q39 (Special habitat features?) was changed from N to y
Q46_A (Physical Habitat Interspersion = uniform) was changed from Y to n
Q46_C (Physical Habitat Interspersion = mosaic) was changed from N to y
Q50 (Plants: waterfowl value?) was changed from N to y
Q61 (DO limiting to fish?) was changed from Y to n

Appendix
P

APPENDIX P

BASIN-WIDE STORMWATER POLLUTION LOADINGS

HACKENSACK MEADOWLANDS DISTRICT SAMP/EIS

Appendix Prepared by:

CAMP DRESSER & McKEE

FEBRUARY 1995

Appendix P
Basin-wide Stormwater Pollution Loadings

Mass loadings were determined in the BCUA study only for BOD and ammonia-nitrogen (AN) because these constituents most affect the dissolved oxygen concentrations in the Hackensack River, which was the subject of the BCUA study. The mass loadings calculated for this impact assessment include COD, suspended solids, total nitrogen, ammonia-nitrogen (AN), copper, lead, and zinc. Thus, the only constituent that can be directly compared between the mass loadings calculated for this impact assessment to the existing loadings determined by the BCUA study is AN. (The mass loading of AN from stormwater in the lower Hackensack River basin presented in the BCUA study is 92 tons per year). The NURP regression equations can be applied to the entire 84-square-mile drainage area of the lower Hackensack River basin (the BCUA study's mass loadings are for the entire lower Hackensack River basin) in an attempt to calculate existing mass loadings from stormwater to the Hackensack River for the other constituents, so comparisons can be made between existing loadings, and predicted additional loadings from the Preferred Alternative. The only problem with that approach is that the relationship between drainage area size and mass loading in the NURP regression equations is not linear. For example, the mass loading calculated by the NURP equations for a 30-acre drainage area is not three times the mass loading for a 10-acre drainage area.

Thus, for analytical purposes, an "average" size drainage area (the average area draining to a single stormwater catchment) needed to be determined. To determine the average size of the drainage area, iterations of the regression model were made until the total mass loading of ammonia nitrogen was approximately equal to 92 tons per year (the contribution of ammonia nitrogen from stormwater discharges to the entire lower Hackensack River basin determined in the BCUA study). For the purposes of estimating mass loadings from stormwater discharges to the lower Hackensack River, the combination of mass loadings from 2,688 individual 20-acre drainage areas (equal to the 84 square miles drainage area of the lower Hackensack River) provide a calibrated mass loading of 91.8 tons per year of ammonia nitrogen (compare to the 92 tons per year presented in the BCUA study). Thus, the NURP equations can be used on the 2,688 individual 20-acre drainage areas to estimate the loadings from the entire lower Hackensack River basin for the remaining constituents.

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