

**EIS80172F11**

United States

Region V

April, 1981

Environmental Protection

230 South Dearborn

City

Chicago, Illinois 60604

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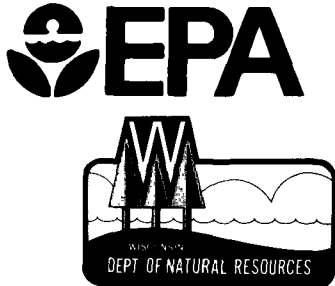
Water Division

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Wisconsin Department of Natural Resources

Bureau of Environmental Impact

Box 7921, Madison, Wisconsin 53707



# **Environmental Impact Statement** **Final**

## **Milwaukee Metropolitan Sewerage District**

### **Water Pollution Abatement Program**

#### **Appendix XI Public Comments**



FINAL ENVIRONMENTAL IMPACT STATEMENT  
MILWAUKEE METROPOLITAN SEWERAGE DISTRICT  
WATER POLLUTION ABATEMENT PROGRAM

Prepared by the  
  
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
  
REGION V  
  
CHICAGO, ILLINOIS  
  
and  
  
WISCONSIN DEPARTMENT OF NATURAL RESOURCES  
  
MADISON, WISCONSIN  
  
with the assistance of  
  
ESEI - ECOLSCIENCES ENVIRONMENTAL GROUP  
  
MILWAUKEE, WISCONSIN

APRIL 1981

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MILWAUKEE METROPOLITAN SEWERAGE DISTRICT  
WATER POLLUTION ABATEMENT PROGRAM  
ENVIRONMENTAL IMPACT STATEMENT

APPENDIX XI  
PUBLIC COMMENTS

APRIL, 1981



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SECTION 1  
INTRODUCTION

## SECTION 1 - INTRODUCTION

This Appendix of the Final Environmental Impact Statement (EIS) to the Milwaukee Water Pollution Abatement Program responds to the comments submitted by the public on the Draft EIS. All comments received within the public comment period are included in Section 2 of this Appendix. In the left-hand margin of the reduced letters are circled numbers. These numbers indicate the line on which a comment or question begins. Each circled number refers to a response in Section 3. Occasionally, the same comment was made by several individuals. In such cases, one response has been developed to answer similar questions. For this reason, a number may appear in several places throughout the comments in Section 2, although it appears only once in Section 3.

SECTION 2  
PUBLIC COMMENTS

STATEMENT

MILWAUKEE METROPOLITAN SEWERAGE DISTRICT

DRAFT EIS PUBLIC HEARING

DECEMBER 18, 1980

On behalf of the Commissioners of the Metropolitan Sewerage District of the County of Milwaukee, I will comment today in general on the draft Environmental Impact Statement, relating to the District's Water Pollution Abatement Program Facilities Plan, which has been prepared by the Wisconsin Department of Natural Resources and the United States Environmental Protection Agency. In addition to these general remarks, the District will provide detailed comments for entry into the official record before the end of the comment period.

The EIS process provides the opportunity for a review of our work from a different perspective, and another opportunity for the public to participate in the decision-making process. The first formal opportunity occurred during the public hearings last April on the Facilities Plan recommended to us by our staff and consultants. This hearing on the Environmental Impact Statement, and that scheduled for next April, will provide more such opportunities for formal comment on the Water Pollution Abatement Program by the local public as well as the rest of the country. In addition to these official

Page 2

occasions, the District has carried on a vigorous community involvement program since 1979 to present to the public the planning process as it unfolded and to make available occasions for exchanges of viewpoints between the public and the District. In our opinion, this public involvement program has been highly successful and has contributed toward a greater understanding of the Water Pollution Abatement Program and how it will affect different segments of the public.

The Facilities Plan, which is the subject of the Environmental Impact Statement process under consideration here, is a plan that will help protect the public health and preserve our water resources. Implementation of the plan will be a major step forward in meeting the nation's fishable and swimmable standards for the waters of our District. Ordinarily it would take from five to ten years to complete a facilities plan as complex as ours in conformance with present regulations; however, because of the need to meet the time constraints placed on the District by two Court Orders and because of the expertise of our consultants and District staff, the Facilities Plan for the Water Pollution Abatement Program was completed in two years. This is a significant accomplishment and carries with it the urgent need to complete the Environmental Impact Statement process by May of 1981 to make sure that Court

mandated schedules can be met. In addition, each year we save in time reduces the total cost of the Program due to inflation by \$135 million.

I will now provide a very brief summary of the Facilities Plan for those not familiar with it. This plan is complete and comprehensive. It addresses the present and future problems through the year 2005 that must be remedied in order to deliver a sewer system that reduces wet weather overflows of raw sewage into our waters, and treatment plants that operate effectively and efficiently. The Plan has carefully considered the present authority and responsibilities of the District in recommending actions to resolve these problems. These recommendations are based on the least cost of building facilities that will protect the health of the citizens of this community and allow fish to thrive again in Lake Michigan and the streams that flow into it. An important additional benefit is that implementation of the Program will provide \$576 million in primary construction and support service earnings. Economic growth and business for supplying industries will add an additional \$600 million in earnings over the life of the Program.

The Facilities Plan which we adopted on June 5th made extensive use of information available from the Southeastern Wisconsin Regional Planning Commission. Information such as population

forecasts, population growth patterns, and water and air quality data was available from the Planning Commission and provided at our request. Because of the use of this key information, our Plan recommendations conform generally with those of the Southeastern Wisconsin Regional Planning Commission whose perspective covers a much larger area than the District's planning area.

The Facilities Plan recommends a regional system of sewage collection and treatment through the elimination of all but two local treatment facilities. It extends the District service area into Muskego, Thiensville, Germantown, and the Caddy Vista Sanitary District in Racine County, and expands service in several communities already connected to the District system and located both inside and outside of Milwaukee County through the construction of several interceptor sewers. These recommendations match those of the Southeastern Wisconsin Regional Planning Commission.

The major problem we face is caused by rainfall which enters our sewers from combined sewers and through leaks and illegal connections. During wet weather periods, flows entering the sewer system in the central part of the metropolitan area,

and in the outlying areas as well, increase tremendously. Of the \$1.6 billion total cost of the Program, \$1.2 billion is required to take care of the rainwater that gets into the sewers. To solve this wet weather problem, the Facilities Plan recommends rehabilitation of existing local sewers to eliminate currently excessive clear water in those systems, and construction of large main sewers beneath the lower reaches of the Milwaukee and Menomonee Rivers to prevent overflows from the outlying separated sewer area.

The Plan proposes eliminating overflows in the combined sewer service area through partial separation of existing combined sewers (constructing new storm sewers to carry street runoff) and utilizing these same large main sewers under the Milwaukee and Menomonee Rivers for the remaining flows from the combined sewer service area. The Plan recommends some additional storage for these combined sewer flows in a mined cavern in the vicinity of Milwaukee County Stadium, and localized storage units near the surface in four other locations. These large main sewers are the lowest cost and safest means of solving the problem of overflows caused by rainwater.

In addition, the existing major District treatment plants at South Shore and Jones Island will be expanded and upgraded. A byproduct of the treatment process will be methane gas which will be used in the operation of the plants. The sludge generated by the process will be applied to landfill and agricultural lands. Accordingly, the District will save tremendous amounts of natural gas now needed to manufacture Milorganite. Additionally, farmers will benefit greatly from the fertilizer value of sludge applied to agricultural lands.

Expansion at both plants will require the filling of areas in the Lake. This method of expansion is the least costly, has an insignificant effect on the Lake, and provides the best flexibility for future expansions. All Milwaukee County property taxpayers who reside in the District will share in the cost of these improvements, as will residents of communities outside the County who connect to the District system. The recommended cost distribution method is according to present District practice and authority.

The Commissioners considered all public comment, all technical recommendations, including an assessment of environmental and socio-economic impacts, and adopted the recommended Plan on June 5, 1980, with a minor modification to the manner in which expanded service is to be provided in Franklin.



A review of the Draft EIS by the District has highlighted the following major dissimilarities:

- (1) The EIS contains no conclusions. It is, therefore, difficult at this time to determine the position of the EIS on key elements of the Facilities Plan and also difficult to provide comments.
- (2) The alternatives analyzed by the EIS are not always the same as those in the Facilities Plan. The EIS combines elements such as Jones Island and Combined Sewer Overflow differently from the Facilities Plan. The reader of the EIS may find these differences confusing if one wishes, for example, to compare environmental impacts described in the EIS with those described in the Facilities Plan.
- (3) The development of the Facilities Plan was based upon earlier work and data developed by the Southeastern Wisconsin Regional Planning Commission. The population forecasts generated by this agency for the planning area were the best available and have been used extensively in the Facilities Plan,

but have not been utilized in the EIS. This could ultimately result in recommendations which conflict with regional plans based on these forecasts.

- (4) A totally different approach was taken, in the EIS, to determine water quality impacts of alternative solutions. The Facilities Plan used in-stream modeling techniques consistent with the practice of the Southeastern Wisconsin Regional Planning Commission, while the EIS used a loading analysis which is not based on in-stream modeling.

Thus, the results of the EIS analysis appear to be more subjective than the analysis in the Facilities Plan and not totally consistent with the Areawide Water Quality Management Plan of the Southeastern Wisconsin Regional Planning Commission.

In addition, the method used in the EIS to determine water quality impacts is not representative of the real situation. As a result, the Facilities Plan recommendations appear to have a negative impact on water quality. This is not the case. It results from the method used in the EIS to determine water quality impacts.

In fact, the Facilities Plan recommendations are a major step forward in bringing the water quality of the streams in the metropolitan area up to the standards required by the Department of Natural Resources.

5) (5) The EIS does not critique the Facilities Plan, which we believe to be one of the functions of an EIS. In the Facilities Plan, alternatives are developed based on certain analyses. When the EIS develops additional alternatives, it does not point out what the problems were, if any, with the Facilities Plan analyses which led to the development of new alternatives. Again, this makes the comparison of the Facilities Plan and EIS difficult for the District to comment on.

6) (6) In several instances the EIS suggests further study to resolve questions raised in the EIS. For example, hypochlorite disinfection at the District treatment plants is recommended for further study in the EIS but no reason is given. The Facilities Plan recommends use of chlorine gas and states why this selection is made. Like the Facilities Plan, the EIS should be a complete report and not suggest

further study for issues which can be resolved by the present study.

7) (7) While the EIS makes no recommendation regarding the proposed lakefills at both the Jones Island and South Shore Treatment Plants, the Department of Natural Resources has publicly, and in correspondence, stated its opposition to lakefills. The construction impacts of lakefills on water quality are minimal, and the social and economic cost of the lakefill is significantly less than other alternatives. The Facilities Plan has made a complete analysis of the environmental effects of a lakefill and has found such a practice to be without any significant impact on the Lake or the aquatic life within it.

8) (8) The EIS considers the large main sewers beneath the Milwaukee and Menomonee Rivers as necessary to prevent overflows from the outlying separated sewer area and considers them to be also available for the remaining flows from the combined sewer area. This is consistent with the recommendations of the Facilities Plan; however, the EIS evaluates

these large main sewers with respect to the combined sewer area without adequately addressing their primary benefit in eliminating overflows of raw sewage in the outlying areas of the District.

In conclusion, we appreciate the opportunity to again present our Facilities Plan and highlight major dissimilarities between it and the EIS. Our detailed comments will be submitted in writing to both the United States Environmental Protection Agency and the Wisconsin Department of Natural Resources for the official record. The staff of the Metropolitan Sewerage District stands ready at any time to meet with the grant agencies to discuss our comments if so desired.

MMSD COMMENTS ON THE DRAFT EIS -  
MILWAUKEE WATER POLLUTION ABATEMENT PROGRAM

GENERAL COMMENTS

There are a number of differences between the EIS and the MMSD Facilities Plan with respect to alternatives considered, philosophy, and methods of analysis. It is our understanding that the EIS has to address alternatives developed in the MMSD's Facilities Plan, pursuant to 40 CFR Part 6, Subpart B, Sections 6.201 (c) and (g) and Subpart 6.203 (b) (1) and (c); also 40 CFR Part 1502. This does not limit the EIS to only review and critique of the MMSD alternatives. The EIS is free to develop other alternatives with reasonable justification. All viable alternatives, including the MMSD's preferred alternative, should then be rated and compared. If the MMSD's alternatives are rejected, the basis for rejection would then be demonstrable or justifiable. It is not evident that alternatives developed by the MMSD have been given adequate review. Some alternatives analyzed are attributed to the MMSD which were not considered as alternatives in the MMSD's analyses.

(10) Generally, the EIS must do an independent analysis using valid, generally acceptable and defensible methods. However, we believe it will be difficult for the public to understand an EIS which does not use the WPAP alternatives and data as a baseline. The current EIS uses a different data base and could reach different conclusions and facility alternatives because of this fact. This approach does have to be documentable, justifiable and technically defensible per 40 CFR Part 1502, Section 1502.24. The EIS also must acknowledge the independent MMSD approach, results, and facility alternatives.

(11) There are also a number of areas where no specific differences occur, but where methods do differ and information is presented with no further analysis or conclusion. Also, the prerequisites of 40 CFR, Part 35, Section 35.1533 (4) (a) and (b) and 40 CFR 35, Subpart E which require the consideration and use of already existing designated water quality management agency information, goals, and objectives in the facility planning process (namely WDNR and SEWRPC 208) do not seem to be adequately considered by the EIS.



Milwaukee Metropolitan Sewerage District  
735 North Water Street Milwaukee, Wisconsin 53202  
414-278-3958

January 5, 1981

*Gene Wojcik*  
Mr. Gene Wojcik  
U.S. Environmental Protection Agency  
Region V  
230 South Dearborn Street  
Chicago, Illinois 60604

Dear Mr. Wojcik:

The Metropolitan Sewerage District of the County of Milwaukee is hereby submitting as an attachment to this letter formal comments on the Draft Environmental Impact Statement for the District's Water Pollution Abatement Program.

These comments are being submitted in accordance with the Notice of Public Hearing dated November 3, 1980, and the notice of extension of the comment period dated December 23, 1980.

Sincerely,

*Tom Wolf*  
Thomas F. Wolf  
Acting Executive Director

TFW:FM:dt  
Attachment

cc: H. Druckenmiller - DNR

Metropolitan Sewerage District of the County of Milwaukee  
Sewerage Commission of the City of Milwaukee  
Metropolitan Sewerage Commission of the County of Milwaukee

## MAIN REPORT

### 12 Page 1-8, Fourth Paragraph

This statement implies that the existing Germantown WWTP site would be used for the new land application system, which it would not. The statement for Muskego NE, substituting Germantown for Vernon, would be more appropriate.

### Page 1-15, First Paragraph

"The use of local construction firms for sewer separation alternatives would introduce money into the local economy. Constructing a deep tunnel system would require the reliance on firms outside the area, causing a loss of income to the local economy."

### 13 This is an extreme oversimplification, and not necessarily correct. The MMSD would be able to package either alternative to encourage participation by locally owned firms or not. However, some "locally owned" construction contractors with an interest in the Program are not headquartered in Milwaukee County. Even large national contractors who bid successfully to become prime contractors will benefit the local economy by extensively using local subcontractors and hiring locally. This is the general practice.

### Page 1-17, Fourth Paragraph

To call the alternatives in Table 1-2 "preferred" is misleading. The recommended plan indicated a single solution for each plant. In most cases this was connection to the regional system. This portion of the EIS "Executive Summary" may cause readers to think that the Facilities Plan, like the EIS, has no conclusions.

### 14 Page 1-19, First Paragraph

The implication is left that applying solids (from South Shore) to agricultural land would be hazardous. Given that the EIS on site-specific solids alternatives is still to come, such a conclusion seems inappropriate.

### Page 1-19, Fourth Paragraph

If population does not grow to planned levels, the expanded sewer service would permit (not encourage, which is the role of local governments) increasingly decentralized (not scattered) development.

### 15 Page 1-21, Table 1.7

The equalized average annual property tax rates shown in this table do not correspond to those found in Chapter 7 of the

WWSP-EA. This is because the tax rates are averaged over a shorter time period (1985 - 2000) for communities already connected to the system than in the WWSP-EA (1980 - 2000), making the annual tax rates higher.

### Page 1-20, Third Paragraph

"These costs were determined assuming that Milwaukee (sic) would construct all elements of the alternatives."

The city? "Milwaukee" probably means the MMSD.

## Chapter 2

### Page 2-7, Third Paragraph, First Sentence

The goal of the Milwaukee Water Pollution Abatement Program is to end discharges of untreated or partially treated wastewater.

## Chapter 3

### Page 3-1, Second Paragraph

The EIS is proposing a slightly different organizing system than the Facilities Plan, with five "components." This presents no problem for those familiar with the Program and the WPAP reports, but may be difficult for those with less background trying to compare the EIS to the Facility Plan.

### Page 3-6, Third Paragraph, Fifth Line

This sentence should be changed to read -- "...sewer area was divided into 363 community basins, and each community basin was...."

16

### Page 3-8, Third Paragraph, First Line

There are 12, instead of 9, public and 9, instead of 8, private facilities operating in the planning area, as shown on Figure 3-3. The MMSD owns and operates Jones Island, South Shore and Hales Corners treatment plants. Within the planning period, 1985-2005, there will only be 9 public and 8 private facilities operating in the planning area.

17

### Table 3.1, Subregional

Some mention should be made that a northern subregion with Thiensville, Mequon and Germantown, together, was also looked at but dropped from further consideration.

18

### Table 3.3, Double Star Note, Land Application Alternatives Number 1, Number 2

Is this normal irrigation and high rate irrigation?

- (19) Table 3.4. Franklin 1 Plant Alternative  
The discharge to Fox River basin, Wind Lake -- is this Wind Lake drainage canal or Wind Lake proper?
- (18) Table 3.4  
Same comment as Table 3.3.
- (20) Page 3-11, Second Paragraph  
Our data show an average flow of 0.39 MGD.
- (21) Page 3-11, Second Paragraph  
Processes used for wastewater treatment also include phosphorus removal.
- (22) Page 3-11, Fifth Paragraph  
Our data show an average flow of 0.54 MGD.
- (23) Page 3-11, Fifth Paragraph  
This sentence seems to contradict the last column on Table 3-2 for Muskego NW.
- (24) Page 3-13, Fifth Paragraph  
The WWT? also has phosphorus removal and disinfection by chlorination.
- (25) Page 3-13, Last Paragraph  
Phosphorus removal and disinfection are also included in the process.
- (26) Page 3-14, Last Paragraph  
The description of the Caddy Vista treatment plant does not include a list of treatment components, as other descriptions do. There is a trickling filter and no disinfection.
- (27) Page 3-14, First Full Paragraph  
The treatment units, activated sludge and phosphorus removal and disinfection, should be listed, as was done with other plants, for this Thiensville plant.
- (28) Page 3-17, Point 8  
Not all facilities will be connected directly to the MIS; most will be connected to local systems, especially private treatment plants.

- (29) Page 3-18, Last Paragraph, Second Line  
Topography was not one of the criteria for identifying sub-regions.
- (30) Page 3-21  
The existing Muskego Northeast wastewater treatment was evaluated for upgrading and expansion.
- (31) Page 3-21, First Paragraph  
The Jones Island plant's location is not shown in Figure 3-8.
- (32) Figure 3-10  
The service area for the Northeast Side Relief Sewer is incorrect. Portions of Milwaukee, Brown Deer, River Hills, Bayside, Fox Point, and Glendale area are also included.
- (31) Page 3-25, Second Paragraph  
The location of the South Shore Treatment Plant is not shown in Figure 3-6.
- (33) Table 3.12, New Berlin Southeast Plant, B, Construct Plant Discharge Deer Creek  
We question how the New Berlin Plant can meet ammonia standards when Regal Manors does not since both discharge to Deer Creek. In addition, the land acreage needed for aerated lagoons is 211 acres. The number quoted for present worth in the New Berlin Southeast Plant land application differs under the New Berlin comparisons of A and B alternatives for this same configuration. Finally, the Regal Manors present worth cost is different in the comparison section.
- (34) Table 3.12, Muskego Northwest Land Application, Infiltration, Percolation, Aerated Lagoons at Northwest Site  
It should be stated that this is not an alternative considered in the MMSD Facility Plan.
- (35) Eighth Bullet  
New Berlin already is a contract community.
- (36) Table 3.13, Plant at Muskego, Construct Plant Discharge to Tess Corners Creek, Eighth Bullet  
It seems unlikely that there are no failing septic systems in Muskego.

(37) Table 3.13 - The EIS notes a preferred alternative which agrees with the WPAP-recommended alternative but deletes the concept in a note at the end of the table because of high costs and water quality. These are the primary reasons for maintaining the alternative.

(38) Table 3.14, Remote Storage Alternative

The South Shore Present Worth figures should be \$1,818 and \$1,917 if no private work is done in CSSA. All South Shore present worth figures in Table 3.14 seem to be incorrect.

(39) following 3-58; following 3-86

The west end of the Crosstown and Upper Lincoln Creek and Honey Creek Interceptors are missing. This figure is not large enough to show what it needs to.

(40) Page 3-73, Fifth Paragraph

What does a conceptual level only mean? Were system level alternatives evaluated conceptually?

41 Page 3-82, First Paragraph

Muskego is identified as being land application but New Berlin SE and Germantown are not although they are recommended for land application. Why?

(42) Page 3-82, Third Paragraph

The recommended local alternative is not the most environmentally sound (per water quality appendix); however, it is the least costly.

(43) Page 3-85, 3-90, 3-91

The Mitchell Field South and Northridge interceptors should be included in the list.

(39) following page 3-90

- a. The entire inline storage system is missing
- b. Franklin-Muskego Interceptor is not identified
- c. The South 81st Street and West Grant Street Interceptor is not shown
- d. The Caddy Vista and South Milwaukee connections are incorrectly drawn based on the legend.

39 following page 3-90

- a. The entire inline storage system is missing
- b. Same as above
- c. Same as above
- d. Caddy Vista only same as above
- e. Muskego Rendering is not shown.

(44) Page 3-95, Fourth Paragraph

Wouldn't there be any long term changes to Oak Creek?

(45) Chapter 4

Page 4-2, First Paragraph

All lakes and creeks are not shown on Figure 4-1. For example: Indian Creek, Pigeon Creek, Beaver Creek, Nor-X-Way, Dousman Ditch, Lilly Creek, Lower Kelly Lake, Scout Lake to name a few.

(46) Page 4-3, Third Paragraph

The Thiensville wastewater treatment plant adds effluent to Pigeon Creek at its confluence with the Milwaukee River.

47 Page 4-6, Table 4.2

The 208 recommended classifications and numeric criteria should be utilized to conform with regional planning.

(48) Page 4-8, Second Paragraph

The impression is given that all sewage contains these substances which is not the case.

(49) Page 4-8, Third Paragraph

There are many species of bacteria comprising the fecal coliform group. Fecal coliforms also come from non-human sources, so they are not a good indicator of pollution resulting from sewage.

(50) Page 4-9, Second and Third Paragraphs

The water quality conditions described only occur below the North Avenue dam in the estuary portions of the Milwaukee River.

- (51) Page 4-12, Fourth Paragraph

The EIS states there are low levels of suspended solids in Deer Creek except during wet weather. In fact, suspended solids in Deer Creek have been measured at 5-40 milligrams per liter. The average is 17 milligrams per liter.

- (52) Page 4-13, First Paragraph

The additions referred are not cumulative. Losses do occur to the sediment and as a result outflow.

- (53) Page 4-17, First Paragraph

The FP does not show there is any evidence of organic deposition near the South Shore Wastewater Treatment Plant and outfall.

- (54) Page 4-17, First Paragraph

Where are the supporting data for PCB information?

- (55) Page 4-17, Second Paragraph

The benthic community near South Shore is not similar to that near Oak Creek power plant according to WPAP sampling results.

- (56) Page 4-17, Fourth Paragraph

No fish species in Lake Michigan have been killed by oxygen depletion. This is not a problem in Lake Michigan.

- (57) Page 4-17, Fourth Paragraph

The statement about the longjaw cisco (may have been killed by lake eutrophication) coupled with the statement on page 4-13 (that the Jones Island and South Shore wastewater treatment plants contribute 10% of the phosphorus from WWTP's on Lake Michigan) could constitute an accusation that the treatment plants are responsible for the disappearance of the longjaw cisco from Lake Michigan.

- (58) Figure 4.6 follows 4-26

This figure was never represented in the MMSD's sources. It is evidently a compilation of wildlife habitat maps and unprotected woodlands and wetland maps. If it is to be attributed to the MMSD, it should be properly referenced.

- (59) Page 4-26, Third Paragraph

Racine County was omitted as part of the MMSD planning area counties.

- (60) Page 4-62

Only three of the six railroad companies are mentioned.

- (61) Page 4-62

The archaeological and historic sites within the Jones Island study area are addressed; however, the sites within the remainder of the planning area should also be covered.

#### Chapter 5

- (62) Page 5-3, Table 5.1

Most concentration values are close to those used by the Water Pollution Abatement Program except: (1) chromium is significantly higher than any of our data would suggest; (2) nitrogen is also significantly higher; (3) bacteria count is an order of magnitude higher; (4) phosphorus is only about one-half of our estimate; (5) higher loadings are presented, principally due to higher flow values used. Five thousand one hundred mg/yr was the highest predicted CSO from the January-December STORM model; 3,700 mg/yr is the average April through October STORM model output; 4,400 mg/yr (no Lincoln Creek) was chosen for analysis since it is the midpoint between the April-October value, considered to be accurate, and the full year value, considered less accurate due to inclusion of frozen ground periods.

- (63) Page 5-4, Table 5.2

The EIS assumes much higher pollutant concentrations than the Water Pollution Abatement Program. WPAP-estimated concentrations were taken from Jones Island influent during wet weather. The EIS source of flow information is not given. Also, how were siphons, bypasses, and plant bypasses related here? The FP estimates for annual bypass volumes are higher. The FP estimates are based on extrapolations from I/I flows in the I/I report.

- (64) following page 5-4

There are numerous errors of locations on this figure. There are community bypasses in Brookfield and Elm Grove. How did an MMSD bypass get into Brookfield. The legend is self contradicting - the title is "MIS Bypass Points" and the first two lines are local bypasses.

- (65) Page 5-5, Fourth Paragraph, Second Sentence

The facility contributes 28 percent of the phosphorus, 84 percent of ammonia.



66 Page 5-5, Fifth Paragraph

All of the sewage treatment plants in the planning area contribute 1,127 pounds/day of phosphorus, not 2,100 pounds/day. Regarding a recommended maximum total lake loading, IJC (1978), the same report the EIS references has stated "It has to be reiterated that the whole lake phosphorus loading reduction program is not required for Lakes Superior and Michigan. Special attention, however, is required for segments of both lakes to protect nearshore water quality. The southern portion of Lake Michigan should be treated as a subsystem similar to Saginaw Bay by agencies developing management plans for phosphorus load reductions." Such planning has not been undertaken by any agency. The recommended maximum total load for Lake Michigan, 11,250,000 pounds, is a target load that the IJC feels will not result in further degradation of the lake. The current project-related load would be 5.3 percent of this total and would be reduced to 3.1 percent under the Recommended Plan. It must be emphasized that neither IJC nor any other planning or management agency has recommended phosphorus removal to less than 1 mg/l. Under the Recommended Plan, both Jones Island and South Shore would discharge less than 1 mg/l; yet, the EIS implies that these two plants alone would preclude attainment of the total lake target load.

67 Page 5-6, Table 5.3

The numbers appear to be present conditions from the water quality appendix, which has been shown to be 1977 WPDES effluent monitoring data in most cases. What is exact source?

68 Page 5-7, First Paragraph, Last Sentence

It would be useful to expand the text on the hydrodynamics of mixing, etc., including references.

Page 5-8, Table 5.4

69 1. EIS projected discharge, compared to WPAP estimates, is significantly higher for complete separation, slightly higher for half-year level of protection, significantly higher for inline.

70 2. The derivation of concentrations is not clear. The concentration for half-year level of protection lead, BOD (particulate), particulate phosphorus and particulate TOC is especially high compared to inline alternative. Suspended sediment is lower for this alternative; the reasons are unknown.

71 Page 5-9, Table 5.5

Do the calculations for this table include a 25 percent reduction for storm water from a separated system? The methods and

assumptions used are required for adequate review of this table.

72 Page 5-10, Table 5.6

What are the sources for this table?

73 Page 5-11, First Paragraph

Water quality standards contained in the 208 would be met. Low flow is not an adverse impact to the Menomonee River.

74 Page 5-11, Fourth Paragraph

Low flow is not an adverse impact to Tess Corners Creek. The 208 water quality standards could be met; they could not be with continued discharge.

74 Page 5-12, Fourth Paragraph

It should be mentioned that low flow in Deer Creek resulting from the abandonment of the Regal Manors Facility is not a negative impact.

75 Page 5-17, Table 5-9

In light of the comments on EIS water quality assumptions, these numbers are questionable.

74 Pages 5-18 through 5-19

There is no basis for the assertion that low flow is a negative impact.

76 Pages 5-20 through 5-25

It is inappropriate to assume that future pollutant loads will be the maximum allowed by the WPDES permits, when the plants are actually discharging less. If WPDES limits are to be used, then they should be applied to existing flows as well. It presents the Water Pollution Abatement Program as having a negative water quality impact. Same comment for Tables 5.7 and 5.8. No action is not shown on Tables 5.7 or 5.8.

77 Page 5-23, Local Regional and Mosaic Alternatives

Low flow is a regularly occurring natural phenomenon, and aquatic organisms are adapted to it in some manner. Ability to withstand desiccation, life cycle synchronization with wet seasons, the ability to recolonize and high reproductive rates are all examples of biological adaptation to low flow conditions. It can be stated with certainty that in nearly all situations, with the return of normal flows, however long or severe the drought, the indigenous aquatic biota will rapidly reappear.

- 78 Page 5-25, First Paragraph  
The long ear sunfish has never been reported south of Saukville, approximately 20 miles upstream of Thiensville.
- 79 Page 5-26-27, Second Paragraph  
The following statement should be added -- "...however, modeling these with the DNR model (PTDIS) showed these emissions did not change the ground level 24-hour concentration over 5 mg/cubic meter, which is the break point for affected sources...."
- 80 Page 5-30, Second Paragraph, General Statement  
Included as sources of groundwater pollution should be failing septic systems, polluted water from rivers and exfiltration from surcharging sewers into the shallow aquifer.
- 81 Page 5-36, First Paragraph  
The MMSD Facility Plan does not recommend channelization of the creek; it is recommended to leave the creek and flood plain in a natural state.
- 82 Page 5-36, Second Paragraph  
What is the source for saying that the New Berlin Regal Manors treatment plant is located in the flood plain of Deer Creek?
- 83 Page 5-37, Second Paragraph  
The Muskego NW WWTP is not surrounded by marsh. It is bordered on two sides by marsh.
- 84 Page 5-37, Next to Last  
Wouldn't unplanned development have effects on wildlife habitats within the planning area under a no action alternative?
- 85 Page 5-39, Third Paragraph  
Caddy Vista Subdivision is in Racine County and is not a subdivision of New Berlin, but of Caledonia Township.
- 86 Page 5-41, Third Paragraph  
The difference between SEWRPC and EIS population numbers is well explained here. Unfortunately, this distinction is not clearly made in the Secondary Growth Impacts Appendix. Other review notes on this topic are found in comments on that Appendix.

- 87 Page 5-42, Second Paragraph  
The Northeast Side Relief Sewer was included as a part of the MMSD Facility Plan no action alternative and therefore should be a part of the EIS's no action alternative.
- 88 Page 5-120, First Paragraph, First Sentence  
Is the survey referred to here the DNR complaints which are cited in the Water Pollution Abatement Program's odors section, or was this a survey done by the EIS consultants?
- 89 Page 5-121, Second Paragraph  
Would these remaining pathogens be human pathogens?
- 90 Page 5-125, Third Paragraph, First Line  
Please specify which eight interceptors are referred to here.
- 91 Page 5-135, Table 5.63  
What is the source for this table?

JONES ISLAND - APPENDIX II

92 Page I-2, bullet 1

When paired with solids handling alternatives, the recommended liquid treatment alternative has the lowest present worth cost of the alternatives under consideration.

93 Table III-32

Differences exist between fuel oil consumption reported in the EIS and MMSD records.

	<u>EIS</u>	<u>MMSD</u> <sup>1)</sup>
1976	217,700 gallons	250,480 gallons
1977 <sup>2)</sup>	4,395,000 gallons	2,242,042 gallons
1978	534,700 gallons	534,697 gallons

- 1) Source: Richard E. Birner, JI Assistant Plant Superintendent
- 2) The high requirements in 1977 were due to a 50 day curtailment of natural gas

94 Page III-33

The existing ferric chloride consumption appears overestimated. In 1978, the average consumption was 32,000 lbs/day.

95 Page IV-75

What data are used to substantiate ozone's superior bacteriacidal properties compared to chlorine? At the disinfectant dosages used in the facility plan, the bacteriacidal effectiveness is equal.

96 Page IV-76, Paragraph 2

It should be noted that the high DO levels in the effluent (after ozonation) may not be a significant benefit in the outer harbor due to the following factors:

1. DO levels over saturation quickly dissipate
2. A DO problem has not been identified in the outer harbor
3. Other disinfection alternatives include reaeration of acceptable levels.

(97) Page IV-77, Paragraph 3

"Hypochlorite could be studied further in AFP or design..." Why should hypochlorite be studied further? It is more energy intensive, more costly and requires slightly more land. Its only advantage is the reduction of the potential public health hazard resulting from accidental releases of chlorine gas.

(98) Page IV-77

"Although discharges from CSO's would end and nonpoint source pollution is predicted to decrease during the planning period, the Jones Island effluent would still constitute a large portion of the pollutant load to the outer harbor." The Jones Island Facility Plan Environmental Assessment (Table 4-9) made different estimates of pollutant loads to the outer harbor. The phrase "large portion of the pollutant load" in the EIS appears to be overstated.

<u>Parameter</u>	<u>JI Effluent as a Percent of Total Load*</u>
BOD	45%
TSS	13%
Total Phosphorus	28%
NH <sub>4</sub> -N	84%

\*Taken from Jones Island Facility Plan - Environmental Assessment

(99) Page IV-77 and IV-88

The positive impacts of a Lake Michigan outfall for Jones Island are presented very strongly with little or no documentation of:

1. The resulting improvement in Outer Harbor water quality (i.e., changes in TSS, phosphorus, ammonia, etc.)
2. The potential negative impacts on nearshore Lake Michigan

Why isn't the outfall analysis in the Facilities Plan and Summary Support Data File discussed? If that analysis is in error, then such error must be identified. Would an outfall constructed 5 feet below the harbor bottom be subject to damage during routine dredging? Where are the impacts of open-cut outfall construction evaluated?

(100) Page VI-84, Paragraph 2 and Page VI-110

It should be noted that the MMSD sampled PCB's in the sediments in the lakefill area and found concentrations lower than 50 ppm.

101) Page IV-85

"Disadvantages (of the lakefill) would be higher cost, implementation problems, and water quality problems." The EIS uses outdated cost data. The EIS shows (Table IV-26) lakefill at \$24 million and dual use at \$18.3 million. The MMSD October 1980 memo to the DNR estimates the cost of lakefill at \$25.4 million and dual use at \$37.2 million. The cost revision is a function of additional geotechnical information. It should also be noted that the MMSD does not consider the water quality problems to be a major consideration.

102) Page V-95

How long does the pollution "...carried by the rivers from different sources accumulate in the harbor waters and sediments?"

103) Table V-1

The un-ionized ammonia concentrations are in error.

104) Page V-97

The outer harbor benthic community is largely composed of oligochaetes, not just in the vicinity of Jones Island.

105) Page V-99

Were the EPA studies referenced designed to evaluate water-related diseases, or, just to evaluate incidents of disease and proximity to WWTP? For example, would a person who lives in Menomonee Falls and swims in the harbor and becomes sick be included under the conditions of these EPA studies?

106) Page V-100

It should be noted that archaeological excavations at Jones Island during the summer of 1980 found no data to indicate the existence of in-situ archaeological deposits. Further excavation is not warranted based upon the information developed.

107) Page V-107

The no action bypass loads of pollution should be documented. What incidence of plant failure is used to estimate these loads?

108) Page V-107 and VI-110

The Jones Island Plant does not discharge free chlorine, it discharges combined chlorine.

109) Page V-107

There is no zone of fish toxicity around the outfall. Expanding the treatment plant will not create a zone of fish toxicity. What pollutants, in what concentrations and for what exposure period result in the alleged "zone of fish toxicity"? What dilution and mixing characteristics were used to determine that this zone is toxic?

110) Page VI-107

Expansion and upgrading of the treatment plant would have more water quality benefits than the two exceptions noted. These include improved reliability of the treatment plant, elimination of inplant bypassing, treatment capacity increases, etc.

111) Page VI-109

How much more similar to Lake Michigan would the outer harbor become? This is the key in evaluating the effectiveness of an outfall, and the EIS inadequately identifies this impact.

112) Page VI-109

"The water quality appendix also shows that reasonable outfall locations exist in Lake Michigan that would avoid polluting water supply intakes and beaches." The Water Quality appendix does not show the existence of such outfall locations but merely assumes they occur.

113) Page VI-109

If the water/sediment interchange in the outer harbor is the same as the lake, then why do sediments accumulate in the outer harbor?

114) Page VI-109

"Over 100 years, there is no guarantee that outer harbor sediments will remain undisturbed or in the dike area." Practical experience with diked disposal areas around the world indicate that for practical purposes, they are permanent disposal areas.

115) Page VI-109

"Pollution from both outfall locations would have the same long-term effect on the eutrophication of Lake Michigan." We strongly disagree. Nutrients (in particular  $PO_4$ ) settle out in the outer harbor and are permanently removed by dredging activities. If these nutrients reached Lake Michigan, increases in algal growths in the nearshore zone could be anticipated.

116 Page VI-110

The EIS should identify what effect dechlorination will have on chlorine characteristics of the effluent, since that is the objective of dechlorination. Evaluating the pH effects of sulfur dioxide in well-buffered waters is a very limited concern.

117 Page VI-111

What is the concentration of a non-ionized ammonia that is considered toxic? What dilution and mixing conditions were used to make this claim? What about the construction-related impacts of outfall construction? Especially since this would probably be open-cut construction. What is the likelihood of changing the trophic characteristics (i.e., algae production) by moving the outfall?

118 Page VI-112

Public health impacts under the no action conditions are misleading. Is the EIS saying that increased bypasses at Jones Island are not a public health threat? Especially as the plant continues to deteriorate?

119 Page VI-113

The improved virucidal effectiveness of ozone needs to be documented. Is this a reason to not select chlorine?

120 Page VI-116, Paragraph 1

"The terminal (General Cargo Terminal No. 1) could be rebuilt and be in full use after construction of the chlorine contact basins." Although it can be fully utilized after construction, the types of uses will be restricted by the load bearing capacity.

121 Page VI-119

How significant are the short-term impacts to water quality/aquatic biota from lakefill construction?

122 Page VI-120

Zooplankton ingestion of contaminated clay particles distributed to the water column during lakefill construction is not a significant environmental effect. Generally, the EIS discussion of lakefill impacts presented here points out the very limited and insignificant nature of those impacts.

123 Page VI-121

See comment on the archaeological issue from Page V-100.

#### SOUTH SHORE - APPENDIX III

124 Page I-1, Paragraph C and Page I-2, Paragraph D

The wording is incorrect. The revetment wall would enclose 30 acres, of which 12 acres would be filled initially to accommodate the additional planned facilities. The remaining 18 acres would be filled within a period of 10 years utilizing spoil material from other MMSD projects or other construction projects. Note: For the fill operation to be included in the Corps of Engineers 404 permit, along with the wall, the fill must be accomplished within a "reasonable" length of time.

125 Pages I-3 and I-4

Original statements deleted and/or corrected. On page I-4 of the revised text, point 4 "resources consumed ..." should read 36,000 yd<sup>3</sup> of stone and gravel, not 36,000 yd<sup>3</sup> of stone and granite.

126 Page 2-6

The first paragraph in Section B is not adequate. While the text indicates that the site was purchased in 1940, it should be indicated that the need for the South Shore Facility was first indicated in the 1933 Report to the Sewerage Commission of the City of Milwaukee by its engineering staff. Also, in 1960 the Metropolitan Sewerage Commission of the County of Milwaukee approved engineering recommendations and began construction of the South Shore plant and the connecting interceptor sewers.

127 Page III-32, Last Sentence

The text indicates that "bypassed effluent is disinfected with chlorine and discharged into Lake Michigan from a separate outfall at the revetment wall." This is incorrect. The plant has only one outfall; bypassed effluent goes from the primary process to the chlorinators, bypassing the secondary process, and is discharged into Lake Michigan via the outfall.

128 Page 45

Secondary treatment process alternatives should include the activated biological filter process.

129 Page 56, Paragraph 1

Because the bluff is not extremely stable, experiences ground-water seepage and is approximately 85 feet high, construction of an access road in this area is a high risk.

130 Figure 10

Alternative 9 - Expansion at lake level without lakefill incorrectly shows pipes running from the additional flotation thickener building to the 8 additional secondary settling basins.

The pipes to the settling basins should start at the aeration tanks.

In addition, the figure does not show pipes leaving the additional secondary settling basins. Pipes should be shown going from the additional secondary settling basins to the proposed disinfection facilities.

131) Pages IV-58 through IV-60

Page IV-59, paragraph 2, includes the statement "however, no alternative has a distinct advantage over another." Then, in the next paragraph it is stated that Alternatives 1 and 8 have an advantage because they would follow the original expansion plans. When is an advantage a distinct advantage?

Other advantages of Alternative 1 include ample area for construction staging at lake level and Alternative 1 is the only alternative which provides for the joint usage of the site; providing space for recreational development on top of the bluff and fishing and public access to the lake.

132 Page V-70, Table V-1

The value shown for the cadmium standard has been changed from 0.0312 to 0.0002 mg/l. The dissolved oxygen standard is 6.0 mg/l.

133 Page V-71 and Table V-2

It would appear that the title to the table should refer to the Oak Creek Power Plant, not the Lakeside Power Plant. This would be consistent with Paragraph C.

134 Page V-7 Page V-77, Paragraph K

The EIS indicates that the 30-acre site west of 5th Avenue was acquired in 1971, whereas it was purchased by MMSD in 1977.

135 Page VI-82, Paragraph 6

The statement concerning the plume detectability appears to be a misinterpretation of data from the South Shore Environmental Assessment.

136 Page VI-92, Paragraph 2

Chlorinated organics are not removed by dechlorination. Their level in the effluent is unknown. It is likely that the chlori-

nated hydrocarbons would be found at very low levels, since the reaction with ammonia is much more rapid.

137 Page VI-92, Paragraph 3

The EIS states that "...ozone would oxidize 50 MG of the ammonia in the effluent...", but does not cite a reference.

138 Page VI-92, Paragraph 5

"...and the increase in total suspended solids may decrease light penetration enough to restrict the depth of growth of aquatic plants...."

What aquatic plants?

139 Page VI-96, Last Paragraph

The EIS makes no comments about safety aspects of the ozone generating equipment.

140 Page VI-100, Paragraph 4

How much electrical energy is needed to create 4,100 tons of ozone/year?

141 Page VI-104

This paragraph, which is part of the summary of the environmental consequences of MMSD's Recommended Plan, should state that Alternative 1, 30-acre lakefill, provides an excellent opportunity to integrate wastewater treatment with recreational development, taking advantage of the opportunity provided by the lakefront location of the plantsite. This alternative is the only alternative, which allows for joint use of the site and provides for lake access by the public. The other alternatives do not provide sufficient space to safely commit land to recreational usage.

142 Page VI-103, Paragraph 1

Trucking of sludge, both upon initial use of the new facilities and in the year 2005, will be significantly less than the present average of 100 round trips daily during 8 months of the year.

SOLID MANAGEMENT - APPENDIX IV

General Comments

- 143 1. Terms are not consistent through the EIS.
- solids - sludge
- land application - agricultural application - application to agricultural land - agricultural land application
- 144 2. Earlier comments on tables in the July 1980 draft do not appear to have been addressed.
- 145 3. It is unclear which data or costs are being taken from the SMR. All such data should be clearly footnoted.
- 146 Page I-1
- The solids quantities presented are for only one liquid/solids alternative. It would be more appropriate to present a range for solids production since 44 liquid/solids alternatives were analyzed. The numbers presented do not match the referred numbers for solids produced in primary and secondary treatment or the solids to the management method.
- 147 Page I-1
- Cocombustion, incineration and pyrolysis were also considered at South Shore.
- 148 Page I-2
- Another adverse impact is the additional agricultural land that must be identified for the application program.
- 149 Page I-3
- The purpose of the SSA is not to identify specific agricultural land for application but to identify general areas where the MMSD might find a higher percentage of suitable land.
- 150 Page I-3
- The purpose of analyzing "program alternatives" (as in the SMR) versus "plant alternatives" (as in the EIS) was to provide the highest degree of flexibility, which is consistent with the MMSD position. There is a very basic difference between the programs recommended in the SMR and the EIS. The SMR recommendation allows for the immediate switchover between land application and landfill in the event of any significant problem that may disrupt either operation. Although not stated, the SMR recommendation also allows the MMSD to choose the final disposal

method for the solids on a day-to-day basis if necessary. Such a decision may be based on solids characteristics or agricultural land availability.

The EIS program requires up to 5 years to implement a backup landfill, thereby eliminating the day-to-day flexibility of the SMR recommendation. The presentation of the \$1/dry ton incremental cost implies that each program has the same degree of flexibility. This is clearly not the case and needs to be presented more accurately in the Executive Summary.

151

Page II-4

Disagree with the statement, "It is possible to provide adequate flexibility by a total system plan which includes only one disposal method"; see previous comment for page I-3.

152

Page II-5

Specific sites within the general areas are being identified based on criteria from the SMR.

153

Page III-1

MDG should be MGD.

154

Page III-4

Milorganite package guarantees 6 percent nitrogen, 2 percent phosphorus and 0 percent potash.

155

Page III-8

The original TSM determined that land application of sludge could occur on an average of only 90 days per year; this necessitates a storage capacity of 270 days.

156

Page IV-9

Cocombustion in lieu of co-disposal.

156

Table IV-3

Cocombustion in lieu of Codisposal.

157

Page IV-10

For Figures 4-1 through 11, the high purity oxygen activated sludge is also without primary treatment.

158

Page IV-12

Figures 4-12 through 22, the (ABF/AAS) liquid alternative includes primary treatment, which is not evident from the wording.

159 Page IV-18

First bullet should read: "...Dissolved air flotation thickening of waste activated sludge, anaerobic digestion of the thickened waste activated sludge and the primary sludge, filter press dewatering...."

160 Page IV-23

Alternatives J15 and J16 differ in the method of solids dewatering, J15 is by centrifugation, J16 is by belt filter. Alternative S11 and S12 also differ in the method of sludge dewatering, S11 is by centrifugation and S12 is by belt filter.

161 Page IV-23

Combustion in lieu of incineration.

162 Page IV-24

EIS definition of flexibility is different than that used in SMR. See comments for Page I-3. No backup is provided for the \$1 incremental cost.

163 Page IV-24

The discussion talks of alternatives to be considered in Phase C, but there isn't discussion on how the final alternatives were chosen. Long-term problems and uncertainties associated with a land application program do not appear to be adequately addressed.

164 Page V-4

Areas used for sludge landfilling or storage are removed from use for other purposes during the planning period but they can be effectively used for other purposes after the planning period (park, playfield, parking lot, etc.). Land application, due to present and anticipated future regulations concerning heavy metals (Cadmium in particular), precludes the use of agricultural land for use in growing food-chain crops.

165 Table V-2

The offsite acreages are considerably less than those reported in Phase III in the SMR.

166 Page V-6

Initially, the annual rates were 4.38 tons/ac/year for Jones Island and 4.37 tons/ac/year for South Shore. The permissible annual Cadmium loadings at present are 2 Kg/ha/yr and decrease to 1.25 Kg/ha/yr in 1984 and 0.5 Kg/ha/yr in 1987. This should be presented rather than implying that the current loading rate is 0.5 Kg/ha/yr.

167 Page V-6

Heavy metal in lieu of "sludge metal."

168 Page V-6

Using a conservative annual limitation of 0.5 kg/ha the limiting metal at Jones Island is Cadmium. The limit will be reached at 8.8 years. The SMR assumed the difference of approximately a year could be gained with some removal of Cadmium in a pretreatment program. Zinc limits South Shore application at a cumulative loading of 250 kg/ha, to 7.1 years. The same assumption regarding pretreatment was made. As a result the site life was 10 years for both plants.

169 Page V-6

Extensive analysis of area photos for the original TSM indicated that 50 percent was a reasonable number in southeastern Wisconsin.

170 Page V-9

Disagree with statement, "...Use of a particular site as a landfill precludes other uses for the life of the landfill and may restrict ultimate uses for many years or perhaps forever following closure...." This is contrary to the entire concept of a well designed and operated landfill which can have several potential uses after closure including parkland, parking, etc. The type of vegetation adapted at a landfill site will be chosen to insure protection of cover materials.

171 Page V-11

It is unclear what land area is being referred to. The area required for solids handling is greater than 8 acres as shown on Table V-1.

172 Table V-4

Based on earlier comments for page V-6, the total land requirement is questioned.

173 Page V-25

It is doubtful that with proper air pollution control devices, the air emissions from a cocombustion facility would exceed the current emissions from the dryer stack at Jones Island.

174 Table V-6

Dry tons/day to incineration for alternatives J51 and J54 includes refused derived fuel.



Even if energy benefits for cocombustion alternatives are lower, they would have to be decreased substantially before a net benefit could not be realized.

It should be noted that the costs as presented for alternatives J31 and S12 are not final. Revised solids loadings resulted in an additional revision to the costs of these alternatives.

A clear definition of flexibility should be added as a note to this table. See comments for page I-3. Back-up information for the costs of providing flexibility for the land application alternatives J11 and S12 has not been provided.

9-A

TABLE V-2  
Land Requirements

Alternative	On-Site		Composting		Agricultural		Landfill		Total	
	Acres	(Ha)	Process & Storage Acres	(Ha)	Acres	(Ha)	Acres	(Ha)	Acres	(Ha)
J16	8.4 ✓	(3.4)	--	--	89,118 567056	(22,686)	--	--	56,064	(22,689)
J31	8.7 ✓	(3.5)	--	--	--	--	408 ✓	(165)	417	(169)
J51	2.9 ✓	(1.2)	--	--	--	--	111 ✓	(45)	114	(46)
J54	2.9 ✓	(1.2)	--	--	--	--	182 ✓	(74)	185	(75)
S64	3.8 ✓	(2.3)	--	--	--	--	97 88	(28)	75	(30)
S12	8.7 ✓	(3.5)	--	--	31,813 26,820	(11,663)	--	--	28,829	(11,667)
S13	8.7 ✓	(3.5)	31	(12)	31,018 357208	(14,249)	--	--	35,248	(14,264)
S30	8.6 ✓	(3.5)	--	--	--	--	342 ✓	(138)	351	(142)
S31	8.6 ✓	(3.6)	31	(12)	--	--	358 ✓	(145)	398	(161)

✓ Acres → hectares

TABLE V-5

## CALCULATED SOIL LOSS FOR ALTERNATIVES WHICH INVOLVE LAND APPLICATION

Alt.	Total Land Requirement Period Planning (ac)	Soil Loss No Sludge Application				Soil Loss After Land Application Over Site Lifetime				Amount of Decrease in Soil For Planning Period			
		Total Tons				Total Tons				Total Tons			
		Grain	Grain	Corn	Corn	Grain	Grain	Corn	Corn	Grain	Grain	Corn	Corn
		Contour	Strip	Contour	Strip	Contour	Strip	Contour	Strip	Contour	Strip	Contour	Strip
J16	<del>56,000</del> 83,000	328,000	164,000	459,000	230,000	265,000	132,000	371,000	186,000	63,000	31,000	88,000	44,000
S12	<del>29,000</del> 32,000	169,000	84,000	236,000	118,000	136,000	68,000	190,000	95,000	33,000	16,000	45,000	23,000
S13	<del>35,000</del> 31,000	206,000	103,000	288,000	144,000	166,000	83,000	233,000	117,000	40,000	20,000	55,000	8,000

Make equivalent change !

(1 ton = .9078 metric tons)



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TABLE V-3

## SOIL LOSS AT LANDFILL

Alternative	Acres of Land Fill	Disturbed Area of Fill (ac)	Soil Loss From Disturbed Area (ton/yr)**
J31	408	20.4	<del>477</del> 447
J31	111	5.6	131
J54	<del>131</del> 120	<del>24</del> 6.0	<del>243</del> 140
J64	<del>69</del> 58	<del>34</del> 4.4	<del>80</del> 103
S30	342	17.1	400
S31	358	17.9	419

\* - 5% total landfill is disturbed at one time

\*\* - from Universal Soil Loss Equation, soil loss from fill calculated at 23.4 ton/ac/yr assuming no cover, uphill and downhill management, and all other variables equal to land without sludge application.



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TABLE V-6

SOLIDS MANAGEMENT ALTERNATIVES  
TRANSPORT VEHICLE FREQUENCY

Alternative	Truck Trips Per Day				Truck Load Interval (Minutes)		
	To Application Site (90 Days)	To Off-Site Storage (260 Days)	To Landfill (260 Days)	To Compost (260 Days)	Application Period	Storage Period	Weighted Yearly Average
Year 1985							
J16	176,154	90,56	1	---	75	811	6
J31	---	---	1845	---	---	---	12
J51	---	---	1817	---	---	---	37
J54	---	---	25	---	---	---	19
J64	---	---	913	---	---	---	53
Year 2005							
S12	110,121	3640	1	---	46	1515	9
S13	4577	1828	1	10	9	21	18
S30	---	---	33	---	---	---	15
S31	---	---	2137	10	---	---	17

Source: Solids Management Report  
February 1980



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TABLE V-8

TRANSPORTATION EMISSIONS LOADINGS<sup>1</sup>

Alternative	Truck Miles/yr. (gal/yr as noted)	Pollutant Emission		Tons/yr		
		Carbon Monoxide	Hydrocarbons	Nitrogen Oxides	Particulates	Sulfur Oxides
Year 1985						
J-16	1,213,200	40	6	25	2	
J-31	748,800	20	3	13	1	2
J-51 (truck)	202,800	6	1	4	0.3	0.6
(barge)	156,000 gal/yr	23	12	56	ND <sup>2</sup>	6
(total)	---	29	13		0.3	6.6
J-54 (truck)	436,000	12	2	8	0.6	1
(barge)	156,000 gal/yr	23	12	66	ND <sup>2</sup>	6
(total)	---	35	14	74	0.6	7
J-64	249,600	4	0.7		0.2	0.4
S-12	720,000	25	4	15	1	2
S-13	693,000	14	2	9	0.6	1
S-30	499,000	16	3	10	0.7	2
S-31	723,000	14	2	9	0.6	1

1. Based on Emission Factors Listed in EPA (1977)

2. No Data Available

Metric Conversion - 1 Ton/day = 0.0022 metric ton/day



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TABLE V-9  
On-Site Resource Use

Alt.	Activated Carbon (lb/yr)	Polymer (T/yr)	Lime (Tx10 <sup>3</sup> /yr)	FeCl <sub>3</sub> (Tx10 <sup>3</sup> /yr)	Fly Ash (Tx10 <sup>3</sup> /yr)	Diesel Fuel (galx10 <sup>3</sup> /yr)	Fuel Oil (galx10 <sup>3</sup> /yr)
<u>1985 Resources Used</u>							
J16	2860	652 ✓	-	-	-	25.0 ✓	-
J31	2860	350 ✓	11.6 ✓	2.9 ✓	12.8 ✓	3.1 ✓	-
J51	5720	391 ✓	16.6 ✓	5.8 ✓	13.3 ✓	3.1 ✓	-
J54	5720	392 ✓	16.6 ✓	5.8 ✓	13.3 ✓	3.1 ✓	-
J64	5720	397 ✓	18.7 ✓	7.9 ✓	14.0 ✓	12.5 ✓	11.0
S12	2860	414 ✓	-	-	-	25.0 ✓	4.3 ✓
S13	2860	225 ✓	7.5 ✓	1.9 ✓	5.3 ✓	3.1 ✓	4.3 ✓
S30	2860	225 ✓	7.5 ✓	1.9 ✓	5.3 ✓	3.1 ✓	4.3 ✓
S31	2860	225 ✓	7.5 ✓	1.9 ✓	5.3 ✓	3.1 ✓	4.3 ✓
<u>2005 Resources Used</u>							
J16	2860	538 ✓	-	-	-	25.0 ✓	-
J31	2860	287 ✓	9.5 ✓	2.4 ✓	5.7 ✓	3.1 ✓	-
J51	5720	323 ✓	13.7 ✓	4.9 ✓	11.0 ✓	3.1 ✓	-
J54	5720	323 ✓	13.7 ✓	4.9 ✓	11.0 ✓	3.1 ✓	-
J64	5720	326 ✓	15.4 ✓	6.5 ✓	11.5 ✓	12.5 ✓	11.0
S12	2860	520 ✓	-	-	-	25.0 ✓	5.7 ✓
S13	2860	282 ✓	9.4 ✓	2.4 ✓	6.6 ✓	3.1 ✓	5.7 ✓
S30	2860	282 ✓	9.4 ✓	2.4 ✓	6.6 ✓	3.1 ✓	5.7 ✓
S31	2860	282 ✓	9.4 ✓	2.4 ✓	6.6 ✓	3.1 ✓	5.7 ✓

## Metric Conversions

lb/yr = 0.4536 kg/yr    T/yr = 0.9072 metric ton/day    gal/yr = 3.7854 liters/yr



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TABLE V-10

TABLE V-10						
used not produced		Resource Production <u>On Site</u> !				
	Electricity	Net Digester Gas Production	Nitrogen	Phosphorus	Potassium	
Alt.	(Kwhx10 <sup>6</sup> /yr)	(SCFx10 <sup>6</sup> /yr)	(Tx10 <sup>3</sup> /yr)	(Tx10 <sup>3</sup> /yr)	(Tx10 <sup>3</sup> /yr)	
<u>1985 Resources Produced</u>						
J16	9.642	685.8	338	?	699	79.9
J31	10.6202	655.2 ✓				
J51	10.5368					
J54	10.5368					
J64	10.799 23.671		(12.4)			
S12	7.645	413.1 ✓	174	?	802	11.3
S13	8.207 7.635	390.6 ✓	207	?	951	13.5
S30	8.207 8.219	390.6 ✓				
S31	8.265 8.250	390.6 ✓				
<u>2005 Resources Produced</u>						
J16	5 8.448	3.9 564.8	278		573	65.7
J31	8.5824	542.0 ✓				
J51	8.55135					
J54	8.55135					
J64	8.846		(16.5)			
S12	2.781 8.8014	7 520.8	219	?	1007	14.2
S13	9.634 9.976	490.43	273	?	1259	17.9
S30	9.534 9.546	490.43				
S31	9.592 9.607	490.43				

I can't verify these numbers with table B-17 ✓  
JMR

## Metric Conversions

1 kwh = 1.600 x 10<sup>3</sup> kJ    1 cu ft/yr = 2.8317 x 10<sup>-2</sup> cu meter    1 T/yr = 0.9072 metric ton/yr

SCF: Standard Cubic Feet

T: Ton



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TABLE V-12

Primary Energy Use  
BTU x 10<sup>9</sup>

1985

Alt.	ON-SITE			OFF-SITE & TRANSPORTATION			Total
	Used	Produced	Net	Used	Produced	Net	
J16	104.7	-411.6	-306.7	65.9	0	65.9	-240.8
J31	111.9	-393.1	-281.2	38.6	0	38.6	-242.6
J51	111.0	0	111.0	332.4	2002	-1669.6	-1556.6
J54	111.0	0	111.0	648.0	3026	-2378	-2267
J64	115.1	-424.8	-309.7	13.2	0	13.2	-423.0
S12	84.4	247.9	-163.5	40.6	0	40.6	120.9
S13	81.2	234.4	-153.2	49.9	0	49.9	102.3
S30	87.3	234.4	-147.1	31.4	0	31.4	115.7
S31	87.6	234.4	-146.8	44.2	0	44.2	152.6

2005

J16	92.2	338.13	-246.7	56.0	0	56.0	80.1
J31	90.6	325.2	-234.6	36.7	0	36.7	-128.14
J51	90.0	0	90.0	229.7	2002	-1677.5	-1557.5
J54	90.0	0	90.0	641.2	3026	-2384.3	-2294.3
J64	94.6	396.0	-174.4	13.2	0	13.2	-161.2
S12	96.7	312.84	-215.7	57.3	0	57.3	-164.4
S13	101.4	294.2	-192.8	55.5	0	55.5	-137.1
S30	101.4	294.2	-192.8	36.1	0	36.1	-156.7
S31	102.0	294.2	-192.2	55.0	0	55.0	-137.1

1 A minus value indicates a net energy producer.

## ENERGY EQUIVALENTS

Electricity	10,500 BTU/kWh
Diesel Fuel	140,000 BTU/gal
Fuel Oil	142,500 BTU/gal
Gasoline	125,000 BTU/gal
Diesel Gas	600 BTU/SCF
Steam	1,200 BTU/lb

## Metric Conversion

1 BTU = 1.0551 kJ	1 kWh = 3.60 x 10 <sup>3</sup> kJ
1 gal = 3.7854 liters	
1 lb = .454 kg	

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V-47

V-47

TABLE V-11

OFF-SITE & TRANSPORTATION  
RESOURCES USED & PRODUCED

Alt.	Wood Chips	Diesel Fuel	Fuel Oil	Gasoline	Electricity	Net Steam Production	N	P	K
	(cu yd/yr)	(gal x 10 <sup>3</sup> /yr)	(gal x 10 <sup>3</sup> /yr)	(gal x 10 <sup>3</sup> /yr)	(kWh x 10 <sup>6</sup> /yr)	(x 10 <sup>3</sup> /yr)	(T x 10 <sup>3</sup> /yr)		
J16		295.116			0.73				
J31		240.241			0.47				
J51		345.347			26.35	834			
J54		380			55.69	1261			
J64		67.57			18.34	(177)			
S12		234.344			0.61				
S13		237.296			0.66				
S30		177.183			0.47				
S31		303			0.60				
J16		240.347			0.66				
J31		240.241			0.67				
J51		345.347			25.958	834			
J54		361.340			55.2935	1261			
J64		61.59			12.38	(165)			
S12		237.318			0.645				
S13		237.356			0.68				
S30		196.203			0.67				
S31		314.5			0.80				
J16		240.347			0.66				
J31		240.241			0.67				
J51		345.347			25.958	834			
J54		361.340			55.2935	1261			
J64		61.59			12.38	(165)			
S12		237.318			0.645				
S13		237.356			0.68				
S30		196.203			0.67				
S31		314.5			0.80				

2005 Resources Used

2005 Resources Produced

Metric Conversions  
1 cu yd/yr = 0.7646 cu meters  
1 km/h/yr = 1.600 x 10<sup>3</sup> kJ  
1 gal/yr = 3.7854 liters/yr  
1 T/yr = 0.9072 metric ton/yrEcolSciences, Inc.  
ENVIRONMENTAL CONSULTING SERVICESV-47  
B-17  
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TABLE VI-1  
JONES ISLAND  
SOLIDS MANAGEMENT ALTERNATIVE COSTS<sup>1</sup>

Alternative	Equivalent Annual Cost (\$/Day/Ton)	Present Worth <sup>2</sup> (\$1,000,000)	Capital Cost <sup>3</sup> (\$1,000,000)	1985 Annual Cost (\$1,000,000)	2005 Annual Cost (\$1,000,000)
J16 (Agriculture)	159 (1) 4	176.452 <sup>4</sup> (1)	110.194 <sup>4</sup> (2)	5.197 <sup>4</sup> (1)	4.662 <sup>4</sup> (1)
J11 (Landfill)	182 (2)	194.463 <sup>4</sup> (2)	108.361 <sup>4</sup> (1)	6.832 <sup>4</sup> (2)	6.160 <sup>4</sup> (2)
J51 (Cocombustion)	261 (4)	282.926 <sup>4</sup> (4)	145.933 <sup>4</sup> (4)	10.297 <sup>4</sup> (4)	10.239 <sup>4</sup> (4)
J54 (Cocombustion)	308 281 (5)	334-308 313.983 (5)	164-907-166.812 (5)	13-334 11.165 (5)	12-928 10.818 (5)
J64 (Inclineration)	205 208 (3)	223-514- 227.691 (3)	121-884 125.164 (3)	8-210 7.995 (3)	6-908 7.102 (3)

1. Source: Solids Management Report, February, 1980 (Phase III Costs). (Conversion made by June 80)
2. Based on 1985-2005 planning period; 6-7/8% interest rate.
3. Includes 30% allowance for administrative, legal and engineering costs. Estimated ENR index for construction cost: 3300 (mid-1980)
4. (1) Indicates relative ranking within category.

Metric Conversion  
1 ton = 0.9072 metric tons

## 179 COMBINED SEWER OVERFLOW - APPENDIX V

Page 1-1

The first sentence should be reworded, it implies that Milwaukee provides service to other communities. There are four communities within the MMSD service area that have combined sewers. The service area for the CSO area should be 25 square miles, not 23 square miles as noted. In the last sentence 450 square miles is too low, it should be approximately 560 miles as shown on page 2-3.

180

Page 1-1, Paragraph 1.0.2

Although only one method of CSO abatement was recommended, which was a CST solution, many systems were analyzed.

181

Page 1-4, Paragraph 2

The EIS does not provide a very clear picture of the problems and alternatives discussed for pollution abatement. There were many alternatives considered and analyzed including combinations, no action, innovative and alternative technologies which are not mentioned. In the in-basin alternative only three new treatment locations were analyzed. For sewer separation the discussion should include complete and partial alternatives. The instream measures alternative definition tends to imply that CSO is the only pollutant source. Section 1.1.1 is very confusing and does not provide a description of the MWPAP nor a clear history of alternative development.

182

Page 1-5, Paragraph 1.1.1

The EIS incorrectly states that the May 24, 1979 Commissioners' Resolution includes: "to meet the Dane County Court Stipulation, sewer separation would be recommended for a portion of the CSSA. The remainder of the CSSA would be served by an Out-of-Basin Convey-Store Treat (CST) system providing a 2-year Level of Protection (LOP); i.e., the system would overflow once every two years on a long-term average."

The resolution does not specify what Level of Protection is required to meet the Dane County Stipulation requirements.

183

Page 1-6, Sec. 1.2.1

The appearance of Jones Island and remote storage alternatives in the discussion is difficult to understand since they are not mentioned previously. In addition, there is no description of the impacts related to sewer construction. Figure 1-2 could be improved by adding a description of alternatives. It might also be interesting to show the relationship between the amount of storage and the resulting effects on decreased pollutants to receiving waters.

(184) Page 1-9

In the last paragraph four alternatives are provided while six alternatives are included in Figures 1 and 2.

(185) Page 2-3

The combined sewer system regulates flows to the MIS by design. Flows from the CSSA are not the principal cause of hydraulic inadequacy in the MIS.

(186) Page 2-5

The condition of combined sewers was determined by sampling 15 percent of the quartersections in the CSSA. The results were extrapolated based on age, pipe type and size, and joint material.

(187) Page 3-6

Please cite the sections of the State administrative code which established the Outer Harbor as a warm water fishery. It has been our understanding that the Outer Harbor is part of Lake Michigan and therefore a cold water fishery.

(188) Page 3-17

Although similarities exist in the upstream downstream impacts of CSO for the three rivers, the baseline quality conditions should be noted for the rivers individually. For instance, with use of the KK flushing tunnel the turning basin area rarely violates water quality standards. Lumping upstream values together tends to distort the conditions inasmuch as each river drains basins of different size and land use.

(189) Page 3-17

What is a harbor seiche?

(190) Page 3-21, Paragraph 1

It should be noted that the dredge spoil disposal area in the south part of the harbor restricts water movement between that area and the area behind the rubble mound breakwater.

(191) Page 3-25, Table 3-80

PCB levels are indicated as 17 mg/lcg with a range of 136-213 mg/lcg. The text appears to be misprinted.

(192) Page 3-40

The statement "Piezometric surface ... top of the aquifer...." is incorrect. It should be "...top of the rock...." since the piezometric surface is the top of the aquifer.

(193) Page 3-42, Paragraph 5

This paragraph implies that the Maquoketa shale is relatively permeable. The Maquoketa rather serves as a confining layer. Direct connections exist only where wells are opened to both aquifers.

(194) Page 3-52, Sec. 3.11

It is incorrect to state that the longjaw cisco has been killed by Lake Michigan eutrophication. The deep waters of the lake are considered oligotrophic. No instances of oxygen depletion in the deep water areas of Lake Michigan have been identified. It is inconceivable that the longjaw cisco's disappearance relates to dissolved oxygen. More likely the lack of collection efforts in deep waters of the lake and the unclear taxonomy of the Coregonus group accounts for the lack of recent identification in the lake.

(195) Page 3-52, Paragraph 2

The records reporting the long-eared sunfish are of sufficient age to bring into question its continued presence in the upper Milwaukee River.

(196) Page 4-15

The discussion highlights six dropshafts on the Menomonee River while Figure 4-2 indicates seven. At this point in alternative development there were seven Menomonee dropshafts. Later, dropshafts number eight and nine were combined.

(197) Page 4-25

In the first paragraph the last sentence, costs and benefits are reversed.

(198) Page 4-30

In the first paragraph the \$2,000 to \$4,000 cost for single family-type structures should not be used for other structures.

(199) Page 4-35

The development of preliminary alternatives should be tied in with the development of the wastewater system plan to provide a better explanation for the reader.

(199) Page 4-36

The crosstown diversion should be explained. In addition, maps should be included to show location and layout of alternatives.

200Page 4-42

The cost of CSO should be \$668,000,000.

201Page 4-47

Capital costs have been prorated based on storage volume. Why haven't O & M costs been prorated based on usage of facilities?

202Page 4-51

The discussion here leads one to believe that CSO requires the inline system when, in fact, inline is needed regardless of CSO.

203Page 4-65

In a discussion of near-surface storage the second paragraph should read 53 feet instead of 50 feet. Solids would be held in suspension by jet aeration, no other solids removal equipment is provided.

204Page 4-65

The last sentence in the first paragraph implies that only one dropshaft has been used for estimating, which is not true.

205Page 4-76

There are only fifteen pump stations not sixteen as stated in the text.

206Page 4-79

In the first paragraph 235 acre-feet should refer to near-surface storage.

207Page 5-2

The origin of the numbers at the bottom of the page needs to be clarified.

208Page 5-4

The origin of the numbers in the first paragraph and second paragraph needs to be identified.

209Page 5-5, Paragraph 1

The large amounts of particulate matter need to be clarified and/or quantified.

(210) Page 5-7, Paragraph 2

The 630 ml/liter BOD appears to be unreasonably high for an average of all flows from the CSSA. The Jones Island WWTP influent concentrations of about 325 mg/l would be more representative.

211 Page 5-8, Table 5-1

Phosphorus concentration for street runoff appears to be higher than average values reported from the IJC Menomonee River study.

(212) Page 5-13, Paragraph 1

The 11 percent area for complete separation has separate sewers with the storm sewer tributary to the outfall sewer of the combined system. The storm water is not now captured by the sanitary sewers.

(213) Page 5-13, Paragraph 3

The pollutant loadings from the modified CST/inline would principally impact only one portion of the inner harbor, namely the portion comprising the turning basin (Kinnickinnic River).

(214) Table 5-3

Total water load and subsequently several pollutant loadings should be reduced for the complete separation alternative. It was noted in the CSO/FP that new sanitary sewers could be constructed to effectively eliminate dry weather infiltration (groundwater) which currently enters the combined sewers. This in turn lowers the annual volume of water treated at the Jones Island WWTP and subsequently discharged to the Outer Harbor.

(215) Page 5-8, Table 5-1

What concentrations of each pollutant are assumed for the Jones Island WWTP effluent discharges (i.e., what values are used to calculate loadings).

(216) Table 5-11 and 5-12

Sample calculations for the qualitative predictions are needed for an understanding of the procedure.

(217) Page 5-36, Paragraph 5

The 208 plan does not predict metals reductions. Instream suspended solid transport was not modeled as part of the Section 208 Plan.



218 Page 5-36, Paragraph 2

The presumed pathway (i.e., specific food chain) for pollutants to enter the food chain should be identified.

219 Page 5-40, Paragraph 3

An un-ionized ammonia standard of 0.04 mg/l is referenced. The administrative code does not to the best of our knowledge cite this value. The only mention is in NR 104.02(3)e where total ammonia value of 3 mg/l (warm temperature conditions) and 6 mg/l (cold temperature conditions) is cited for waters classified as not supporting a balanced aquatic community (intermediate aquatic life). The only other control of ammonia is under the general provisions of NR 102.02(3)(d) which prohibit "...unauthorized concentrations of substances.... toxic to fish or aquatic life."

220 Page 5-47, Paragraph 2

An economic benefit is implied in that harbor dredging is reduced. This would be offset to some degree by the cost of treating and disposing of solids by means of the treatment plant and subsequent solids handling processes.

221 Page 5-50, Paragraph 1

Not all CSO events cause sediments scour. Rather, high intensity rainfall events are the principal factor. Consoer, Townsend noted that for low intensity events DO gradually decreased then increased, apparently due to the exertion of BOD in CSO only, with no additional oxygen demands from stirred sediments. Due to the operational characteristics of the diversion structures flow will tend to be quickly diverted to the outfall during a high intensity event, while a greater portion of the storm water may enter the MIS during low intensity events. Since high intensity events cause the scouring, it is unlikely that any greater number of events with scour would occur with separate sewers than with the present combined sewer system. Also related to this is the varying characteristics of parts of the inner harbor. Sediment scour was demonstrated for the Milwaukee River portion of the inner harbor, which has several large volume outfalls, and has not received maintenance dredging since the late 1950's. The occurrence of similar response to CSO discharge has not been demonstrated for the other two rivers. The different hydrologic characteristics of the Kinnickinnic and Menomonee Rivers with a more "flashy" response to storm events may mean that scouring could be a function of river flow rather than, or addition to, CSO (or storm water) discharge. In addition, navigational activities within the turning basin (Kinnickinnic portion of the inner harbor) likely stir sediments to as great a degree as would CSO/storm water discharges.

222 Page 5-54

The location of the Jones Island outfall one mile east of the treatment plant would place it about 2,000 feet from the main harbor entrance. Since inflow of Lake Michigan water into the harbor is estimated to comprise seventy-five percent of the total hydraulic load, it is likely that effluent would, in fact, reenter the harbor from that location. Thus, the pollutant loading from Lake Michigan to the Harbor must be increased relative to baseline conditions. Potential impacts to beaches and water supply intakes, and dispersion characteristics outside the breakwall must be addressed. Positive impacts described for outfall relocation must be balanced against potential negative impacts to the lake.

223 Page 5-58, Paragraph 5

Phosphorus levels even with relocation of the Jones Island outfall would not limit algal productivity. Algae that settle to the bottom of the harbor should be considered part of the organic load.

224 Page 5-67, Paragraph 1

Pollutant loads to the Kinnickinnic River should be identified under the inline and modified CST/inline.

225 Page 5-72

Sediment data collected to date indicates that lead concentrations are relatively variable throughout the inner harbor. We do not believe the data show present lead concentrations two to three times the concentrations in other parts of the inner harbor. It appears unlikely that future deposition would exhibit the differential lead concentrations suggested here. It should be noted that lead is presumed to be derived from automobile exhausts. As unleaded gasoline becomes predominant in fuel use, stormwater transport of lead will be reduced, independent of CSO abatement alternatives.

226 Page 5-77

To cause a shock effect, the pollutants referenced must be at acutely toxic levels. There is no demonstration of acute toxic levels of pollutants being present for any alternatives.

227 Page 5-89, Paragraph 2, PR 30, Volume 2

SEWRPC Planning Report 30, Volume 2 provided a ranking system for pollutant potential within each water shed. The Milwaukee River areas within the CSSA, including the central business district, are rated as having moderate potential similar to other urban areas of Milwaukee and southeastern Wisconsin. The only areas of higher potential within the CSSA are small

areas of the Menomonee and Kinnickinnic Rivers. SEWRPC recommended a 25 percent reduction in nonpoint sources for non-CSSA portions of these three rivers.

228 Page 5-95, Paragraph 2

There would be no dewatering in the sandstone aquifer. The Maquoketa shale isolates the Niagaran aquifer from the sandstone.

229 Page 5-98, Paragraph 2

An increase in the size of storage would have a greater effect on groundwater than deletion of shallow storm sewers. Most near-surface collectors would be below the groundwater table. Designs of near-surface storage facilities include at least 20 feet of cover. The water table would most likely be above the storage and infiltration would most likely occur.

230 Page 5-99

Residences using groundwater are limited to the southwestern and northeastern portion of the county. Industry/businesses having high capacity wells utilize the sandstone aquifer. Current groundwater level indicators show the level to be increasing. This may continue or may stabilize depending on development in Waukesha county.

231 Page 5-100

The analysis of the complete sewer separation alternative is not consistent with other discussions.

232 Page 5-106

This table implies that 58 percent of the costs of the inline storage system should be allocated to the CSO program.

This statement has significant implications for the distribution of program costs, and it is directly in conflict with the MMSD's analysis that, because the Inline System is needed regardless of which CSO alternative is chosen, Inline System costs should not be considered part of the CSO program. The result of the EIS logic could have at least two effects.

1. The MMSD could be denied funding for large parts of the inline storage system costs if they are assigned to the CSO program with a very low funding priority compared with the inline storage system, which has a project priority rank of 17, and is in the fundable range for federal funds at the 75 percent level.
2. The suburban lawsuit could be aided in arguing that suburban communities should not have to share inline storage as well

as CSO costs if the EIS concludes that a majority of the inline system's cost should be considered CSO costs.

The EIS should make a more careful analysis of the Wastewater System Plan in order to properly understand the process which resulted in the identification of the inline system. Such EIS conclusions as those implied in Table 5-31 belie the validity of the facility planning process.

(233) Page 5-112

The modified CST/inline storage dropshaft construction should result in little disruption to local business regardless of the length of time. The near-surface collector work will be mostly tunnel. In either case, is the disruption severe?

(234) Table 5-35

Complete separation will require work in building, such as drilling or jackhammering through stone foundation, and digging of a lateral trench. Noise levels will increase in and around the structures for a period of from one to three years.

(235) Page 5-117

Water problems discussed in the first two paragraphs would be negligible if they would exist at all. The rivers would continue to be a source of odors.

(236) Page 5-119, Paragraph 3

Connection of buildings to the MIS would be very difficult and was not proposed in the CSO/FP. The extent of the MIS in the CBD areas is limited, and excavation would still be required to connect laterals.

237 Page 5-121, Table 5-36

Construction of near-surface storage would require approximately one to three years.

(238) Page 5-125, Table 5-37

The relationship established between transportation impacts such as inadequate parking facilities and the capacity of Capitol Drive is unclear. This comment applies to other sites as well.

239 Page 5-147, Table 5-42

What does footnote 1 refer to? Are these energy requirements based only on CSO portion of alternative or combined alternative including I/I-related work.

(240) Page 5-105, 4-81, 4-83

The cost for screening structures under the modified CST/inline and modified total storage should not be the same number.

(241) Page 5-149

Figures for percentage of annual concrete production are misleading, since usage would occur over more than one year.

(242) Page 5-151, Paragraph 5

Pumpout from the inline system would be to either plant.

(243) Page 5-146 and 5-147

The relationship between energy usage of alternatives and local energy supplies is not stated. Modified CST/inline and modified total storage require over three times the electrical energy of inline or sewer separation. It is not clear if increased treatment plant energy requirements are included.

#### LOCAL ALTERNATIVES - APPENDIX VI

(244) Page 1-1 to 1-11

In general, although the two Menomonee Falls WWTP's are mentioned, there is no mention of the Hales Corners WWTP operated by MMSD and soon to be abandoned.

(245) Page 3-3, Paragraph 4

The winter pH standard should read 6 - 7.4 rather than 6 - 7.2 as shown.

(246) Page 3-8, Paragraphs 2 and 3

It should be stated that connection to the Oak Creek local sewer would severely limit any new connections for Caddy Vista due to limited conveyance capacity.

(247) Page 3-9, Paragraph 4

Caddy Vista could only be served by South Shore and not Jones Island.

(248) Page 4-1, Paragraph 3

This sentence leaves the erroneous impression that the WWTP is located west of the Village rather than west of the Old Village area in the center of the Village.

(249) Page 4-6, Paragraph 2

Treatment Capital Cost column includes conveyance costs and should so state. Also, the normal irrigation cost should be \$19,000 rather than \$10,000 as shown.

(250) Page 4-7, Paragraph 3

Even though the infiltration/percolation alternative is more costly, no mention of the 115% cost-effectiveness benefit for land application is included.

(251) Page 4-11, Paragraph 3

To the best of the MMSD's knowledge, methemoglobinemia is fatal to infants only, not all children as implied. The term "high nitrate concentrations" should be defined. The Facilities Plans used 10 mg/l (the U.S. Public Health Service limit for  $\text{NO}_3^-$ ) as a minimum safe level.

(252) Page 5-3, Paragraph 2

There appears to be some text, at least 1-2 lines, missing between lines 6 and 7.

(253) Page 5-4, Table

No pH limits were included with DNR effluent limitations given to the MMSD.

(254) Page 5-6, Paragraph 2

Cost for treatment and conveyance should be \$3.77 million. The \$3.20 million shown is for treatment only.

(255) Page 5-8, Paragraph 1

The MMSD shows an annual O & M of \$0.285 million rather than the \$0.205 million as shown.

(256) Page 5-9, Paragraphs 1 through 4

To reevaluate infiltration/percolation based only on cost is erroneous. The Northeast service area lies almost totally in the Lake Michigan drainage basin while the land application site is in the Fox River basin, thus creating a potentially illegal interbasin transfer of water which should be discussed at least.

(257) Page 5-13, Table

No pH limits were in the DNR effluent limitations as provided to the District.

(258) Page 5-14, Paragraph 5

Peak flow should read 3.83 MGD rather than the 5.83 MGD as shown.

259 Page 5-22, Paragraph 1

The effluent limitations from DNR to the District do not include pH limits.

260) Page 5-24, Paragraph 2

The MMSD disagrees with the statement that the plant makes development north of McShane Road less desirable. This alternative opens that area for development by eliminating the existing WWTP. The new plant can be adequately screened to eliminate it from sight. Any development is better than the none possible with the existing WWTP in place.

(261) Page 5-26, Paragraph 2

The seven ponds should be identified as being infiltration/percolation ponds to avoid confusion.

(262) Page 5-28, Paragraph 2

The described route includes the Franklin-Muskego Interceptor, which is a different type of conveyance system (Interceptor extension) and provides conveyance for Franklin also. The discussion of the Muskego NE and NW connection should end at the county line.

(263) Page 5-29, Paragraph 3

The connection cost does not agree with anything we have for Muskego above or Muskego and the Franklin-Muskego Interceptor or local rehabilitation. This cost should be verified.

(264) Page 6-1, Paragraph 4

The single family connections should be 782 rather than the 222 as shown.

(259) Page 6-4, Paragraph 3

The DNR effluent limitations to the MMSD did not include pH limits.

(265) Page 6-13, Paragraph 3

The cost should read \$32.40 million rather than the \$35.45 million as shown.

(265) Page 6-13, Paragraph 4

The cost should read \$36.70 million rather than the \$39.79 million as shown.

(265) Page 6-14, Paragraph 1

Not all of the Treatment Capital Costs agree with the MMSD's: normal irrigation - 55.50, high rate irrigation - 74.30, infiltration/percolation - 36.50 and marsh enhancement - \$56.80, all \$x10<sup>6</sup>.

(266) Page 6-14, Paragraph 3

The Interceptor would not start at Greenfield Avenue but at Needham Avenue (one block south) where the existing connection to MMSD is located.

267) Page 6-14, Paragraph 5

The cost should read \$35.50 million rather than the \$38.55 as shown.

267 Page 6-15, Paragraph 1

The cost should read \$38.80 million rather than the \$41.85 as shown.

267 Page 6-15, Paragraph 3

Not all of the Treatment Capital Costs agree with MMSD's. MMSD's costs are normal irrigation - 59.30, high rate irrigation - 78.10, infiltration/percolation - 40.40, and marsh enhancement - 60.10, all \$x10<sup>6</sup>.

268 Page 6-9, Paragraph 5

This sentence implies that Regal Manors will serve the entire City of New Berlin in the planning area rather than only a portion. It should be rewritten more clearly.

269 Page 6-16, Table 6-1

All of the treatment and conveyance costs differ from those in Chapter 7 of the System Plan.

270 Page 6-17, Paragraph 2

The size range is 27-36 inches rather than the 30-36 inches as stated.

271 Page 6-20, Paragraph 4

This sentence should be expanded upon earlier in the text (methodology section) to further explain the importance of the 11% cost analysis preference for innovative and alternative technology.

272 Page 6-25, Paragraph 7

Should read New Berlin, rather than Thiensville.

273 Page 7-1, Paragraph 5

There is no mention of phosphorus removal which is present in the plant.

274 Page 7-1, Paragraph 6

Since the original permit expired June 1979, and the one listed expires 30 June 1982, the permit number probably should read WI-0028819-2.

275 Page 7-6, Paragraph 3

The city name should read South Milwaukee rather than Milwaukee as shown.

276 Page 8-1, Paragraph 2

Size range is 6-15 inches.

277 Page 8-1, Paragraph 4

The WWTP is actually about 200 yards north of Freistadt Road.

278 Page 8-5, Paragraph 4

The connection would not start at the WWTP but at the existing pump station located on Cedarburg Road about 600 feet south of Freistadt Road.

279 Page 8-6, Paragraph 1

Part of the distance, from the pump station to Mequon Road, would serve only Thiensville, and would be 21-inch pipe. The MMSD would therefore suspect the costs presented to be erroneous.

280 Page 9-2, Paragraph 2

A clarifying statement should be added that identifies that the permit is for all of the outfalls (12) and that the WWTP discharges through only one of them (No. 9). The other 11 are for cooling and/or process water from the power plant itself.

281 Page 9-7, Paragraph 5

No mention is made of the upgraded capacity which is 0.083 MGD, or of existing flows of 0.052 MGD.

282 Page 9-7, Paragraph 6

Since there was an earlier permit, the MMSD would suspect that the permit number should read WI-0052272-2.

282 Page 9-8, Paragraph 5

The described potential site on the company's property is not suitable. The firm's consultant has stated that there is a perched water table in the entire area. There is, however, a potential site to the west on land owned by Payne and Dolan, but adjacent to Muskego Rendering Co. land. Preliminary site investigations by the consultant have indicated that the site is suitable for use and that the owner is amenable to Muskego Rendering Co. leasing land for use.

282 Page 9-9, Paragraph 3

The length should read 9,600 feet rather than the 6,900 feet shown.

282 Page 9-12, Paragraph 3

There was a WPDES permit issued to this plant. Number WI-0022977 expired 30 June 1977 and was never renewed. The former owner was Union Oil Co., which has since sold the facility. The new owner has not applied for a WPDES permit. The entire issue is currently under litigation.

282 Page 9-14, Paragraph 3

The permit number shown (WI-0029980-2) was issued 5 October 1977. The original permit was issued in 1974 as stated.

283 Table 11-1 and Figures 11-1 and 11-2

The order of presentation is not consistent. Table 11-1 presents the local list, then the regional list, but Figure 11-1 is the regional while Figure 11-2 is local. Figures' order should be reversed.

284 Table 11-1

The EIS should verify costs based on previous comments.

285 Figure 11-1

Thiensville connection is incorrect, Figure 12-2-2 in the System Plan shows the correct route. Franklin-Muskego Interceptor is shown, but not identified. South 81st Street and West Grant Street Interceptor is not shown or identified.

Franklin Northeast or Menomonee Falls-Germantown is not identified. The entire inline storage system is not shown or identified.

There is a line from South Milwaukee to South Shore. It is not a "connection" line nor is it identified, and should be redrawn correctly. Caddy Vista connection should be redrawn as connecting sewer.

286 Figure 11-2

Hales Corners Interceptor is not identified. Franklin Northeast Interceptor is not identified. New Berlin connecting sewer along 124th Street is not correct. South 81st Street and West Grant Street Interceptor is not shown or identified. The entire inline storage system is not shown or identified. The Franklin portion of the Franklin-Muskego Interceptor is not shown or identified. Part would be built even for the local alternative. Menomonee Falls-Germantown Interceptor is not identified.

## WATER QUALITY - APPENDIX VII

### General Comments

A totally different view of water quality impacts is presented in this document than that presented in the Facility Plan prepared by the MMSD.

This EIS establishes a policy that the outer harbor is to be managed as a recreational resource or at least implies as much. This is suggested by the way the harbor analysis is written (Pg. 23-30). This analysis is in conflict with the MMSD concept of the outer harbor primarily as a transportation corridor, and an area to settle out pollutants from the river prior to being discharged to Lake Michigan.

The method of analysis in this appendix compares future worst case conditions to present average conditions. This shows the MMSD Facility Plan to have no or slight negative impact on water quality, as applied by pollutant loads. The use of effluent concentrations equal to the maximum allowable concentration (WPDES permit) for future conditions, and existing concentrations for existing conditions (which are often less than permit levels), results in apparent negative impacts which do not actually exist. This is especially true for Jones Island and South Shore phosphorus loadings. The difference here results from the EIS's comparison of future and existing conditions.

The EIS methodology does not permit prediction of changes in water quality due to changes in upstream sewage treatment plants. A loading analysis is not a dynamic model. Conservative pollutants can be lost through sedimentation. Nonconservative pollutants are not necessarily rapidly dissipated. For example, BOD, a nonconservative substance, may have impacts far beyond the point of discharge, depending on the rate of BOD exertion. For example, organic solids discharged to the upper Menomonee can be carried to the outer harbor during high flows, where the assimilation occurs.

The EIS largely ignores differences in loads of fecal coliform bacteria between the alternatives. The information is presented in various tables, but addresses the impacts in the text.

### Specific Comments

#### Page 1, DNR's Objectives

287

DNR's objectives are not defined. Are they NR 102-104 water quality standards? The FP used the water quality objectives recommended by the 208, which have been approved by the State. Presumably these recommendations will replace the current standards. 40 CFR 35, Subpart E, requires the consideration and use of already existing designated water quality management agency information, goals and objectives in the facility plan-

ning process. The 208 method of determination of compliance was used in the Water Pollution Abatement Program's analyses (percent of time standards met, all flow conditions). The EIS used the standard DNR method, a critical condition analysis (low flow conditions, Q<sub>7-10</sub>), but expanded its application and interpretation beyond the usual limits.

288 Page 1, First Paragraph

If a stream or lake is a dynamic, complex system in which many different processes must be considered when predicting the fate of pollutants, of what use is a simple loading analysis?

289 Page 1

What data were used to characterize present water quality? Were the data used characteristic of average or low flow conditions? How was the extrapolation made to characterize Q<sub>7-10</sub> water quality conditions?

290 Page 2

Are these 11 common in typical effluent, or Milwaukee sewage? This implies that cadmium, chromium and lead are common in all sewage effluent. What list of 169 pollutants is referred to?

291 Table 1

The metals can be lost through sedimentation, especially in Lake Michigan, where they are likely to be in insoluble carbonate forms. Particulate solids are not necessarily conservative. The volatile fraction is broken down with time.

Page 4

292 If fecal coliforms are not randomly distributed, then all fecal coliform tests are grossly inaccurate. Is there any evidence for these assertions? Fecal coliform loads are meaningless without knowledge of die-offs or dispersion. It is apparently the EIS's position that fecal coliform concentrations cannot be measured; nevertheless, the State of Wisconsin believes measurement is possible. No mention of clumping or an attempt to measure clumps versus water concentrations is contained in State codes. An argument similar to this could be put forward for any parameter, due to physical limitations to mixing. Effluents are routinely assumed to be completely mixed with receiving water following an appropriate mixing zone.

293 Most (70%) of the ammonia in sewage effluent at even extreme conditions (i.e., maximum allowable pH of 9.0 and 22°C) is in the nontoxic ionized form.

Page 4

294 Ammonia is never oxidized to nitrogen gas. Nitrogen gas is formed under anaerobic conditions through reduction of nitrate to nitrite and then to nitrogen gas.

295 Page 4

Does amount of agitation mean reaeration rate?

296 Page 5

Streeter Phelps may not be as applicable to small streams as large. Nevertheless, reaeration, carbonaceous BOD, and nitrogenous BOD kinetics have been investigated so that values can be used with relative confidence. Further note that other sources and sinks of oxygen can readily be incorporated into the Streeter Phelps equation, if they are considered to be important. The limitations of Streeter Phelps' modeling are greatly exaggerated. It has been widely used for about 50 years to assess the effects of organic loads on streams. The simplified Streeter Phelps equation makes the assumption that the following sources and sinks of oxygen and BOD are negligible:

1. Removal of BOD by absorption or sedimentation
2. Addition of BOD by tributary inflow
3. The addition of BOD or removal of oxygen by the benthic layers
4. Photosynthesis
5. Algal respiration

This allows assessment of the impacts of the initial BOD load alone. The occurrence of the above mechanisms does not invalidate these impacts.

The simplifying assumptions are, in fact, reasonable. In most streams, there is no net deposition of material; sediment oxygen demand is small compared to soluble BOD, and algal photosynthesis and respiration are roughly equal. Variations in these assumptions may be taken into account in practical cases. For the streams in the planning area, the simplifying assumptions are valid (except for the CSSA, where the model was not applied). This type of modeling was also used by SEWRPC in the 208 planning.

The DNR uses a sophisticated form of the Streeter-Phelps equation in the determination of wasteload allocations. The DNR expends considerable effort on field surveys at the sites of discharges or proposed discharges in order to adequately quantify these sources and sinks. Dissolved oxygen simulation via

Streeter-Phelps modeling is currently the sole basis for waste-load allocations (and hence, effluent limitations) in Wisconsin today. The claim that DO is not modelable is inaccurate.

In the EIS analysis, how were the pathways of oxygen depletion and replenishment traced?

297 Page 5

Increases in pH may be rapid below sewage treatment plants where nutrient discharges may result in large amounts of algae and other aquatic plants. Also, ambient downstream pH will not necessarily equal ambient upstream pH. The change in the pH level is controlled by the rate of respiration or photosynthetic activity. CO<sub>2</sub> losses to the atmosphere are minimal for highly buffered waters such as those within the study area.

298 Page 5

The temperature of water is not conservative. Rather, it is highly dependent on surface area, water depth and atmospheric temperature. Temperature mass-balance calculations appear suspect.

299 Page 5

This seems to imply that conservative pollutants are the most important to the lake. The claim that the past accumulation of pollutants is more important than the present input is dubious, especially for conventional pollutants. Heavy metals are chemically bound in the sediments largely as insoluble carbonates; the rate of metal release to the water column would not be expected to be only related to their concentration in the sediments. Soluble conservative pollutants such as chlorine do not end up in sediments. Release from sediments to overlying waters is largely a function of dissolved oxygen and pH.

300 Page 6, Item B

Nonpoint source pollution is delivered to streams during runoff events, however, the exertion of nonpoint source pollution effects may be greatest during low flow. Nonpoint pollution that ends up in the sediments would exert its greatest effects when the volume of overlying water is small.

301 Page 6, Item C

"Upstream water quality is assumed to be in the future as it is at present." Does this mean present mean flow, or present low flow? If mean flow, this is an invalid assumption. If low flow, what data base was used? There are few data in SQUIM that are correlated with low flow. Where did the EIS get such data? If it is indeed low flow data, it would be very limited.

302 Page 6, Item D

The 208 recommends different levels of reduction for different parameters. It is not apparent how reductions were incorporated into this analysis. This also contradicts the statement that "present" water quality was used.

303 Page 6

If the EIS analysis is accurate to one order of magnitude, then nearly all of the differences in impacts between alternatives is insignificant. One obvious exception is fecal coliform bacteria, however, the text does not discuss this parameter.

304 Page 9

The Milwaukee River presently does not meet water quality standards (NR 102-NR 104). Dissolved oxygen and fecal coliform standards are violated (208 method of determination of compliance).

305 Page 9

What is the basis for the prediction that the Thiensville sewage treatment plant would not measurably affect dissolved oxygen concentrations? - calculations? What is the basis for the numbers presented? Does the EIS take upstream conditions and add plant loadings? Does the EIS use downstream conditions? The baseline data, effluent data and computations would be helpful for analysis. What is the source for the residual chlorine data for the Milwaukee River? What is the source for the fecal coliform loadings? The 0.022 mg/l un-ionized ammonia exceed the criteria (.02 mg/l) recommended by the 208 plan. The EIS and Water Pollution Abatement Program baseline data differ significantly for ammonia and flow.

306 Page 10

How can this statement on oxygen at Menomonee Falls be made? Where are the supporting data for the statements made on page 10, paragraph 3 regarding the attainment of DNR water quality standards?

307 Page 10

Is flow augmentation considered desirable, especially effluent flow augmentation? What effluent limits are assumed here? They sound like they differ between plants. The New Berlin southeast effluent would not be similar to ambient water quality. Phosphorus, ammonia and chlorine would be higher. There is no biological or cultural need for flow augmentation.



308 Page 12

The DNR un-ionized ammonia criterion of 0.04 mg/l should be documented.

309 Page 14

The statement that "the Root River would remain within State Standards during low flow" needs to be explained. What "standards" are referred to and what percentage of compliance is considered to be "within state standards." How can statements like these regarding an entire watershed be made, since the analysis states that even the most traditional modeling (i.e., Streeter-Phelps) is inappropriate. Note that the EIS analysis is accurate to one order of magnitude.

310 Page 14

How were changes in BOD, chlorine, ammonia and fecal coliform concentrations between Muskego and Caddy Vista estimated? If these are slight over- and-underestimates, what are the actual estimates?

312 Page 14

SEWREC and DNR are proceeding with plans for Oakwood Reservoir. Any treatment plants to be located on Root River must address the impact on this future recreational resource. What State goals are mentioned? This ignores the 208 recommended phosphorus standards.

312 Page 14

The assertion that 0.04 mg/l un-ionized ammonia is acceptable should be documented. What are DNR goals for intermittent streams? How could the New Berlin Southeast treatment plant meet standards unless nitrification is included?

313 Page 16

Is marsh development in Big Muskego Lake increasing in rate? Big Muskego Lake cannot be classified as a "lake" from a limnological standpoint. What future lake rehabilitation plans are being referred to?

314 Page 16

The 208 plan recommends abandonment of the northwest plant and an 85 percent reduction in nonpoint phosphorus loads. Then rehabilitation measures will be necessary to meet water quality objectives.

315 Pages 16-29

The phosphorus discussion is generally in conflict with Water Pollution Abatement Program position. Lowered future flows at Jones Island result in reduced loads, although South Shore flows do increase. We have attributed a reduced phosphorus load at South Shore to result from better clarification and a better operation of pickle liquor feed.

316 Page 18

Sediment resuspension in the outer harbor was not addressed in the reference cited. The sediments were found to be resuspended by the velocity of the discharge at combined sewer overflows.

317 Page 18

The use of USGS data collected outside the CSSA to characterize the lowest reach of the CSO area is improper unless the EIS can precisely document the CSO pollutant loads and the fate of the pollutants in the rivers, especially the estuary portions.

318 Page 18

More information is needed to determine if this is an appropriate method to estimate outer harbor mixing. Bothwell (1975) noted a lack of correlation between chloride (used by the PMO) and specific conductance (used for the EIS analysis).

319 Page 19

Why is only the "relatively well-mixed central portion" of the harbor used? What are the limits of this area? How was it determined? Don't the assumptions of the EIS analysis regarding "no biological uptake, settling or sediment inputs" in the harbor make the predictions of future harbor water quality speculative? They are presented as fact.

320 Page 19

The DNR standard for un-ionized ammonia should be documented. What is the specific water use designation that the standard is based upon?

321 Page 19

Biological uptake and settling are key factors in interpretation of the function and quality of the outer harbor.

322 Tables 8A, 8B and 8C

It is not clear if the separation described here is complete separation or the partial separation of the MMSD's Recommended Plan. Where is the no action Jones Island column? It is not

explained why the Jones Island and CSO alternatives are evaluated together here.

323 Page 24

The length of a possible outfall is unclear. The Water Pollution Abatement Program analyses indicated that an outfall located just outside the breakwall would still allow effluent back into the harbor. The EIS would imply the same phenomenon, since harbor is considered to be 75 percent lake water. Does this policy establish that slight improvements in harbor water quality are worth degrading in Lake Michigan? Are the impacts in the nearshore Lake Michigan waters considered in detail?

324 Page 24

South Shore data indicates some parameters were indistinguishable within 1,000 feet of the outfall. Others were found to be at elevated levels around the outfall. The waste field analysis and the dye studies both indicate probable plume detectability over a much wider area.

76 Page 24

The analysis should use effluent limits for existing conditions, as well as future. Otherwise, these values are inherently misleading. Further, a no action future alternative is necessary for comparison.

325 Page 29

This again appears to be a misinterpretation of the monitoring data from the area surrounding South Shore.

326 Page 29

Although we do not address lake harbor interchange with depth, it appears that temperature gradation in the harbor exists. River flow may float on the top, and lake water may enter the harbor at lower depths. This subject will be evaluated in the WQM monitoring studies.

327 Page 29

Ammonia losses to the atmosphere will be minimal at ambient lake pH levels.

#### INTERCEPTOR ALIGNMENT APPENDIX VIII

328

Underwood Creek - The EIS states that Alternative 7 for the Underwood Creek interceptor (the Recommended Plan) would require a new 16.5 MGD pump station (page I-5). The Water Pollution Abatement Program's analysis has indicated that a 32 MGD pump station would be required to handle existing peak flows. This comment is also true for Alternatives 8 and 9.

329

Franklin-Muskego - The EIS states that, as a result of the screening process, modifications were made to the original routes to minimize impacts on Tess Corners Creek (page II-10). In actuality, the routes were changed because an archaeological site was identified on the south side of the creek in the direct path of the original alternatives. The modified routes subsequently proved beneficial to Tess Corners Creek. In the EIS, the 7-day, 10-year low flow is given as "less than 0.01 cfs (page II-10)." It is given as simply 0.01 cfs in the Franklin-Muskego Interceptor Facility Plan Element-Environmental Assessment (EA). Also, the EA does not note any impacts on wetlands in the interceptor construction corridor as does the EIS (page II-18).

330

Franklin Northeast - The EIS states that interceptor construction may alter flood plain configuration (page III-13). However, there are no areas within the HUD-designated 100-year flood plain in the Franklin Northeast interceptor construction corridor.

331

Oak Creek North Branch - Oak Creek North Branch interceptor Alternatives 8, 9, 11, 12 and 13 were not eliminated by MWPA2 because of unacceptable levels of energy consumption (page IV-8). Also, Alternatives 11, 12 and 13 were not considered workable for future points of connection (page IV-8). MWPA2's environmental assessment for this interceptor does not note any construction impacts on wetlands, as does the EIS (page IV-17). The EIS recommended plan differs from MWPA2's (page IV-18).

332

The EIS Recommended Plan is to upgrade the Wildwood Drive lift station. This is a new alternative which was not considered by the MMSD. The MMSD recommended the Combination Alternative, a gravity flow interceptor. The difference in recommendation lies in the fact that the EIS doubts that the level of development projected by SEWRPC for the City of Oak Creek for the year 2000 will actually occur. It, therefore, sees no necessity for the Oak Creek interceptor at this point in time. Because the MMSD is required to use SEWRPC's population and land use projections, an interceptor alternative was recommended in order to remain consistent with regional plans.

Root River - Many of the conclusions presented in the EIS have been outdated by the Root River interceptor environmental assess-

ment that has recently been completed. The EA screening results were:

Alternative 1 - Eliminated due to its high cost.

Alternative 2 - Retained for detailed assessment.

Alternative 3 - Eliminated due to its high cost.

Alternative 4 - Eliminated due to its impacts on woodlands and surface waters, and because of its high cost.

Alternative 5 - Eliminated due to its impacts on woodlands and surface waters.

Alternative 6 - Eliminated due to its impacts on woodlands and surface waters, and because of its high cost.

Alternative 2, Alternative 5A (a slight variation of Alternative 5 that avoids woodlands and surface waters) and the No Action alternative were assessed in detail.

333 The EIS assumes that all homes near the Root River interceptor construction corridor use city water (page VI-6). This is incorrect. Homes west of 124th Street on the north end of the route rely on groundwater. Also, many homes in West Allis now on city water originally used private wells, which are still functional and are used for lawn watering, etc. Groundwater in this area is high and, even at the shallow construction depths proposed, the EA has determined that there is a potential for minor impacts on well yields and groundwater quality.

The EIS conclusion differs from that reached by MWPAP in the Root River Interceptor Facility Plan Element - Environmental Assessment.

334 The secondary growth impacts analyses for interceptors are not comparable to the Water Pollution Abatement Program's because, by requirements of 40 CFR 35, subpart E, we are required to use the population projections generated by the designated areawide water quality management agency, which, in this case, is SEWRPC.

## SECONDARY GROWTH IMPACTS APPENDIX IX

335

Pages II-28, II-29 and V-23

The appendix is difficult to review, and will be difficult for the public to use, because it contains internally inconsistent statements and no clear conclusions relating growth to facilities recommended. For example, pages II-28 and 29 seem to recommend smaller capacity facilities than recommended by the Facility Plan for the Germantown connector and the Hales Corners interceptor between the Hales Corners plant and the Milwaukee County line. But later (page V-23) the recommendation appears to rely on institutional controls to mitigate potential secondary impacts from these two facilities, a position consistent with the Facilities Plan.

336

Page II-1 and Chapter III

The EIS prepared its own growth forecasts for the planning area. It is not possible to evaluate how the research and analysis presented in Chapters IV, V and VI was translated into quantified assumptions (such as found on page II-10, paragraphs 3, 4 and 5) for use in predicting growth, as this is not contained in the Appendix.

The Facility Plan used the SEWRPC forecasts, which, though somewhat dated, have been uniformly used as the basis for all of the existing, integrated regional planning documents, and are acceptable for 201 planning according to federal regulations.

337

Page IV-7 and IV-10

The SEWRPC population forecasts for the Milwaukee SMSA and Milwaukee County in 1980 are each approximately 8% higher than the comparable Wisconsin Department of Administration's estimates. The EIS says using these forecasts as the basis for sewerage system planning creates risk that the true intent of SEWRPC's policies (discouraging sprawl, protecting critical environmental areas and prime agricultural lands) will not be met. However, preliminary 1980 census figures indicate that DOA population estimates may have systematically underestimated Milwaukee's population, meaning the SEWRPC forecasts do not overestimate as much as earlier believed.

338

Page V-22, paragraph 4

The EIS implies when it makes findings of secondary impact that its 1990 forecasts will be more accurate than SEWRPC's. SEWRPC forecasts are set up in the Appendix as an ideal goal and EIS forecasts as actual development expected (for example, page II-18, second full paragraph and along with many other places). Yet the EIS acknowledges that forecasts significantly better than SEWRPC's cannot be prepared until detailed 1980 census data are available. The EIS development projections are, like any forecast, quantified opinion about the future, not fact.

The EIS overemphasizes the recommendations of the regional plan for recentralization and contiguous development. SEWRPC itself is much more committed to maintaining a cooperative atmosphere in which local officials consult with the regional agency and consider issues raised by SEWRPC staff, than in ensuring strict adherence to forecast population totals or funneling growth back into the City of Milwaukee. This is demonstrated in the EIS summary of secondary impacts in the Franklin NE Interceptor area. Whereas the EIS maintains that constructing an interceptor would undermine the regional plan in that area, SEWRPC joined Franklin in insisting that an interceptor was essential, and pump stations would be insufficient.

#### General Comments

Population growth and settlement patterns are volatile, and our ability to predict them is limited in the absence of strong central control of individuals' location decisions. Consequently, expensive permanent capital facilities should not be designed to require replacement or substantial modification should they not be met. Facilities should reflect general growth expectations with other controls used to tailor growth more precisely.

(340 In summary, the EIS takes a different approach to secondary impacts than the Facility Plan. It assumes a much greater MMSD role in development planning is appropriate and politically feasible, an opinion not widely shared. The EIS postulates a new set of specific growth predictions different from, but not demonstrably better than, those used by SEWRPC in the 208. As a result, smaller capacity facilities (capacity unspecified) are recommended (at least in one portion of the Appendix) to serve New Berlin and Germantown, and upgraded lift stations are recommended in place of the Oak Creek and Franklin Northeast Interceptors. These conclusions were reinforced by the EIS findings of indirect fiscal impact.

#### FISCAL/ECONOMIC APPENDIX

(341 Page 37, Paragraph 2

"The fact that the cost to Milwaukee County residences drops with the local alternative is noteworthy. It demonstrates that, assuming Milwaukee County finances all construction (as the Mosaic Plan indicates), the burden to Milwaukee County residents increases if the communities of Caddy Vista, Germantown, Muskego, New Berlin and Thiensville connect instead of maintaining local treatment facilities.... To a degree, Milwaukee County residents would subsidize the cost of connecting the outlying communities."

These statements, and the data supporting them, are consistent with data presented in the Facilities Plan. They are presented in far greater detail in the EIS with costs to each community presented for this variation. The implication that not all facilities should be financed Districtwide, is inconsistent with the plan adopted on 5 June. A review of the contract formula may reveal an acceptable alternative that would allow District-wide financing.

(342 Pages 40-41

"Community Cost Distribution Methods" - Explains that for communities outside Milwaukee County, the EIS contacted communities to find out how capital charges are distributed.

The MMSD assumed for comparative purposes that capital charges are distributed on the basis of equalized value for several reasons: 1) uniformity of comparison, 2) the local community's methods can be changed at will, and 3) difficulty in projecting future charges based on the existing mechanisms (specific examples of these problems shown later).

(343 Pages 45-46

The EIS estimated the average household charge in contract communities by dividing the average year capital charge by the EIS-estimated average year number of households.

The validity of the present and future sewered households used for this analysis is uncertain. For 1979, EIS data suggest 3,800 sewered households, while MMSD data suggest that there were 3,580 residential connections and 3,632 household units served. (Most numbers seem close.)

More fundamentally, there is a logical problem created by dividing average year charges by the average year households, because the two variables do not vary consistently over time. The heaviest charges are in the years 1980-1990 when there are the fewest number of households,

The MMSD Recommended Plan is more expensive than the local alternative for Germantown if MMSD finances construction only in Milwaukee County.

(344 Table 54 (Page 94) and Text Pages 89-93

Shows the results of 60 and 75 percent funding for the local plant.

These tables make the local alternative appear potentially cheaper for New Berlin, Muskego, Germantown and others. It is the MMSD's contention that these communities would not be eligible for funding, because the present worth analysis shows that local alternatives are more expensive systemwide.

344 "Breakevens," Page 93

"Caddy Vista's local alternative would have to be at least 70 percent funded to lower the financial burden to the level of the Regional burden. The corresponding percentages for the other municipalities are: Germantown, 17 percent; Muskego, 38 percent; New Berlin, 45 percent and Thiensville, 47 percent." Same comment as previous.

Pages 106-111

"Alternative Cost Apportionment" - The EIS shows the results of distributing the capital charges on the basis of a user charge for capital (simulated on the basis of community flows) and a service area property tax.

This analysis shows that the City of Milwaukee could pay higher costs under a flow-based apportionment (20 percent higher than the existing system) and less under a service area property tax system. It shows that the contract area's bills would increase significantly as a result of a service area tax based system, while several communities would gain or lose significantly from a flow based system.

345 The presentation of some of this information appears to intrude on issues that are decision items for the MMSD. While the EIS is charged with reviewing the impacts of the existing cost distribution mechanism, the EIS role would appear limited to determining whether those impacts are acceptable.

346 The methodology is subject to the same fallacy as the household costs analysis described earlier in that the average year debt service is being divided by average year flows or property values, when the relationship of these variables over time is not constant, particularly for contract communities. Although the peak debt services for MMSD occur around 1990, several of the contract communities' flows as a percent of total system flow will reach their peak between 1990 and 2005.

The EIS implies that a complete sewer separation alternative for CSO would cause a 3.2 percent increase in the property tax for the MMSD.

However, complete separation would increase the significance of the legal issue of whether the District can finance District-wide cost of work on private property. Although the District's legal staff maintains that the District has such authority, there is probably somewhat more risk associated with the assumption of the ability to finance CSO Districtwide in the event that a complete separation alternative for CSO is chosen.

January 20, 1981

Mr. Charles Sutfin, Water Division  
United States Environmental Protection Agency  
Region V - 230 South Dearborn Street  
Chicago, Illinois 60604

Gentlemen:

Per our agreement we are submitting our Committee Reports 20 hours after the January 12 deadline - we want these included in the official written record documentation of the Draft E.I.S. for the Milwaukee Water Pollution Abatement Program. This agreement was solidified by Gene Wojcik, Chief, EIS section of the U.S.E.P.A. (Region V).

These reports are in addition to the ones handed in at the Public hearing held on Thursday December 18, 1980 at Cooley Auditorium at MATC in Milwaukee.

Transmitted herewith are the general comments of the CAC on the Draft EIS of the MMSD WPAP. This represents a citizens viewpoint of the issues involved in the WPAP and their environmental impacts as treated in the Draft EIS.

The CAC was broken into eight subcommittees:

- Interceptors; Deep Tunnel
- Water Quality
- Odors/South Shore
- Jones Island
- Solids Management
- Construction Impacts
- Secondary Impacts
- Fiscal Impacts

Each subcommittee submitted comments on the relevant sections of the Draft EIS. The committee as a whole then voted on the content of the subcommittees' reports, and endorsed the enclosed material.

The enclosed recommendations are the result of approximately six months of meetings by the CAC, and represent informed citizen input to the EIS process. We hope these comments will be seriously considered and form a basis for constructive changes to the EIS and, through it, the Milwaukee WPAP.

-2-

Please confirm receipt and inclusion in the official record.

Thank you.

Sincerely,

Carole Ann Barth, Chairperson  
Citizens Advisory Committee

CAB/dlc

ENCLOSURES

GENERAL COMMENTS OF THE CAC ON  
THE DEIS ON THE MWPAP

These comments present our critique of the document as a whole. In addition to these general comments a representative from each subcommittee will highlight our comments on specific topic areas.

- 347 1) Because of the massive size of this document (roughly 1736 pages) and the importance of the MWPAP, we believe it is necessary to extend the public comment period. The CAC is a small group of citizens which has undertaken a large, complex task. We are willing to make the effort to produce thoughtful, useful, and specific comments. However, the public comment period is too brief to allow such a review, particularly with the holidays counting as a part of the comment period. Therefore, we petition the DNR and EPA for a two week extension of the public comment period. This would allow us to submit more detailed, written comments.
- 348 2) One reason this document is so difficult to review is its lack of organization. The information it contains is not readily accessible. For example, there is an appendix entitled, "Water Quality." Now, an uninitiated citizen might expect to find an exhaustive discussion of water quality in that appendix. Not so-- the bulk of the water quality analysis is actually in an appendix called "Combined Sewer Overflow." Sadly, the water quality appendix does not specifically refer the reader to the combined sewer overflow. Cross-referencing, bold-face headings, and complete glossaries and table of contents are all necessary to improve readability. There is a fairly extensive table of contents in the main draft but since it is located between chapters 1 and 2 (roughly 30 pages into the text) it is a poor road map to the document.
- 349
- 350 3) Overall, the document's exposition is vague and wordy. There are also whole sections in the document which are duplicative. For example: see pages 3-97, 3-99, and 3-100, Environmental Consequences-Groundwater.

CAC Comments  
18 December 1980  
Page Two

- 351 4) In any decision there are both policy issues and technical issues. A significant governmental action has both environmental and policy impacts, and an EIS must provide an integrated discussion and analysis of those impacts. However, this EIS does not articulate or discuss policy issues.
- 352 5) In the screening of alternatives, a "feasibility" criterion is used. "Feasibility" does not simply connote technically possible. To be "feasible" an alternative must also be "practicable." "Practicable" can be understood as familiar to designers, contractors, and operators. Unfortunately, under this system alternatives which use innovative technology would seem to be automatically ruled out as "infeasible."
- 353 6) A complete EIS considers the potential for long-term impacts. However, this EIS only takes the perspective of the 20 year planning period of the MMSD program. While it is true that the approval is restricted to a 20 year planning period the agencies still have the obligation to consider the long-term impacts of the activity seeking approval.
- 354 7) We believe that a discussion of the anticipated results of the MMSD's pretreatment program is required for a realistic analysis of water quality impacts and solids management alternatives.
- 355 8) Since this is an EIS on a "water pollution abatement program" it would be appropriate to include a discussion of water use in the area. If the EIS briefly described patterns of water consumption and use, it would help citizens put the entire program into perspective.
- 356 9) Throughout the document, discussion is slanted toward certain conclusions--even though the agencies do not officially recommend specific alternatives. There are also fundamental assumptions which are never analyzed. For example, all alternatives are designed to achieve a 50% decrease in infiltration/inflow. Yet the EIS does not really discuss the cost-effectiveness of this assumption.

Conclusion

For the above reasons and for additional reasons to be presented in the subcommittee reports and later in the committees' detailed written comments, the Citizens Advisory Committee believes this document is inadequate as an EIS. It does not fulfill either its function as a full-disclosure document or a decision-making tool. We urge the DNR and EPA to make significant changes in writing a final EIS.

## Subcommittee Statement for Public Hearings

December 18, 1980

357

We are appalled to find that two agencies which are responsible for the protection of our natural resources and our environment are so derelict in respect to toxic wastes. Poisonous heavy metals, pesticides, toxic and chlorinated organics are recognized as serious problems by the Environmental Protection Agency and the Department of Natural Resources; however, no solutions to these problems are proposed. Heavy metals are always poisonous. Other poisons degrade only after long periods of time. The Milwaukee Metropolitan Sewage District's plan is to allow these toxic wastes to pass through the system untreated and disperse them in Lake Michigan, on our agricultural land, and in land fill sites. These poisons enter the food chain by mechanisms which are not completely understood, but it should not take an extreme mental effort or any research to realize that this plan is very dangerous.

Poisons which enter Lake Michigan enter our food chain through our drink-in water and fish, which actually concentrate these poisons. Poisons which are spread on agricultural land enter our food chain through ground water pollution, through grass and crops, and through animals which eat them. The Milwaukee Metropolitan Sewage District proposes these methods of dispersment as its prime means of disposal. It seems as though we will spread it around so everybody gets his fair share. The other means of disposal to be used in conjunction with these two is land fill. It takes no expert to recognize that there are serious problems with land fill. Land fill is a new procedure for both EPA and DNR. Policies have not been determined nor has research been completed. It does not seem as though anyone really knows what they are doing with land fill or how to avoid serious future hazards.

Recognizing these problems and the present state of sewer technology we propose that present policies concerning toxic wastes must change, and the sooner the better. No longer should anyone be permitted to dump everything into the sewer system. Wastes which cannot be rendered harmless must not be allowed to enter the system. All toxic wastes must be monitored. Radioactive wastes and PCB's are not even checked. Even though the sources of many toxic wastes are pin-pointed the discharges continue. Again, wastes which cannot be rendered harmless must not be allowed to enter the sewer system.

If this simple basic policy is adopted we can expect the following results:

1. The treatment and solids handling systems will function better, and the costs of operation will be greatly reduced.
2. Nutrients in wastes may be fully utilized without fear of contaminating the food chain.
3. Water quality will improve as heavy metals and other toxic wastes are removed from storm water runoff and treatment plant effluents.
4. Prime agricultural land will no longer be permanently damaged by the addition of permanent contaminants
5. And most important, ~~we~~ our children will be a lot safer.



United States  
Environmental Protection Agency  
Region V  
230 Dearborn Street  
Chicago, Illinois 60604

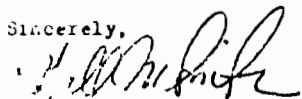
Dear Sirs:

As a member of the Citizens Advisory Committee reviewing the Draft Environmental Impact Statement of the Milwaukee Metropolitan Sewerage District's Water Pollution Abatement Program, I would like to present you with an additional copy of our subcommittee report and my personal notes and comments.

Unfortunately my notes are neither typed nor edited. References are to the Draft EIS.

I trust that these comments will be seriously considered in preparation of the Final Environmental Impact Statement.

Sincerely,



Hall M. Smith

EIS DRAFT

Hall Smith, November 18, 1980

(358 1-12 1.5.2

It should be the duty of the MMSD, DNR, and EPA to propose, initiate, carry forth, and assess solutions to "pollutants accumulated in the sediments and pollution originating upstream of the MMSD service area." The people look to these institutions for protection from pollution.

(359 1.5.3.1

Pollution in storm water ("urban runoff") must be abated. This problem should not be divorced from the conveyance, treatment, and disposal of sanitary sewage.

(360 1-21 Table 1.7

It appears that Milwaukee County residents will carry (and have carried) an excessively large proportion of the cost. All residents get the same service.

(361 3-8 3.1.4

How will the infiltration and inflow rates be maintained to 2005? Unless a strong program is financed and continued a general degradation should be assumed and planned for.

(362 5-20 5.1.1.3.9

Limits of ammonia in the Outer Harbor should not be exceeded. In general spreading poison around is not an acceptable solution, however, if the ammonia loses its toxicity by chemical processes which occur in a short time, it may be acceptable.

(363 5-23 5.1.2.2.

Why don't these action alternatives "greatly alter the input of phosphorus to the Harbor"? We were led to believe that the South Shore Plant was doing a good job in eliminating phosphorus and would do an even better job.

5-24 5.1.2.2.

Heavy metal entering the food chain through the effluent.

(357 5-32 5.1.5.2

The DNR at this time does not know what to do with toxic leachate from landfills. Is it wise to base a large portion of solids management on land fill disposal? Toxic contamination of ground water from landfill sites is not an unknown problem.

(364 5-34 5.1.5.2.2

Please explain "CSO's would be discharging to the rivers". We are proposing to eliminate all CSO's.

365 5-55 5.2.2.1

Statements seem extremely short-sighted. Neither people nor industry will be attracted to foul water or to a community unwilling to solve that problem. In fact, the reverse will probably continue to happen.

366 5-111 5.2.6.3.2

Leather tanning is but one industry that has toxic and heavy metal discharges.

367 5-113 Table 5.56

The table shows that almost all industries pay and will pay a minimal cost to dump anything they want into the public sewer system.

Industry is the only contributor of heavy metals. Elimination of heavy metals greatly lessens the cost of the sewage system and greatly simplify its design and function. It would allow a safe recycling of wastes.

5-116 5.2.7

Aesthetics is NOT merely visual. It has more to do with whether we like or dislike clean or foul water. Hiding foul water does not make it less foul or eliminate our knowledge of its presence or our sense of displeasure or ill ease.

368 5.2.7.2.

Planting trees along property lines is not sufficient. Visibility is not the object. A dense reforestation in all areas is necessary to absorb odors and to deflect odor carrying winds to higher levels.

369 5-117 5.2.8.2

This high level of noise would not be tolerable during sleeping hours and generally unacceptable on weekends or during the summer with windows open.

369 5-119 5.2.8.2

Trucking of solids from the treatment plants will be a continual and objectionable source of noise, dust, and exhaust pollutants.

5-123 5.2.10.2

Storm water treatment again. Power outages must not be an excuse for any bypasses.

I prefer to work on a single issue, that is, the prevention of heavy metals from outgoing the sewer system. This would apply to any other materials which can not be rendered harmless currently employed techniques.

It is proposed that these substances would enter the food chain through agricultural application, ground water contamination from land fill leachates, and the effluent. Spreading the poisons around equally may be fair, but is it wise?

3-85 3.13.2.3

Storm water pollutants heavy metals water quality.

3-87 3.13.2.3.2 3rd paragraph

Assumptions seem too tenuous to be a good basis for such definitive planning.

3.13.2.3.2 4th paragraph

Bypasses again

3-88 Table 3.15

Unintelligible

(370

3-91 3.13.4.2

And footnote why the DNR and EPA are 6 months behind MMSO?

(371

3-92 3.14.1.2

Bypassing again. And can't we all agree that bypasses do not improve water quality?

(372

3-94 3.14.1.3

I assume this applies only at the Thiensville discharge point. Water quality all along this important water course should be analyzed, especially in the MMSO.

3-96 3.14.1.10

1st paragraph cadmium  
2nd paragraph ammonia more improvement desired  
3rd paragraph spread it around again

(373

3-96 3.14.1.11

Excellent? Potable? Do we swim around the big piers? We are the worst polluters of the lake and the water quality will be worse after we spend over 2 billion? We should do better.

357

3-99 3.14/3

2nd paragraph. Minimizing is not sufficient, especially when DNR does not know what they are doing.

3-100 3.14.3

1st paragraph. Assumes bypassing again.

3-101 Table 3.18

6 percent interest is not reasonable 0 percent inflation??

3-107 3.14.8

Trucking of solids not mentioned.

374 Figure 4.2

Lower reaches of the three rivers and harbor waters not fouled?

4-7 4.1.1.1.2

Pesticides and heavy metals.

4-8 4.1.1.1.4

Toxics entering the food chain.

375 4-8 4.1.1.1.6

Nonpoint sources 2/3 of all pollutants, runoff. Estimate should be more specific about individual sources of each pollutant.

4-9 4.1.1.1.6

"detailed nonpoint source control plan" more stalling?

4-10 4.1.1.2.1

toxics

4-10 4.1.1.2.2

toxics

4-10 4.1.1.2.3

toxics

4-13 4.1.1.2.8

Heavy metals, toxic sediments

10 percent of phosphorus low MMSD greatest polluter of Lake Michigan  
If the waters of Lake Michigan meet the "stringent" criteria the criteria  
are not stringent enough.

4-16 4.1.2.8

Outer Harbor poisonous sediments.

4-17 4.1.2.8

Poisons enter food chain making fish unfit for human consumption. The  
lakes could be a great source of protein.

376 4-34 4.2.2.2

"Public services based on number of households" not always (schools, unemployment compensation, libraries, police) basically an incorrect assumption  
and stated as fact and used as a basis for planning.

4-42 4.2.2.3

Pollution may be a reason for shifting industry. Owners, executives, decision makers, are interested in living in amiable environments.

377 4-44 4.2.3.5

Tourism and conventions, sporting events do not bring external income to the area?

4-44 4.2.3.6

Are not all industries and firms positively affected by a cleaner environment?

(378 4-54 4.2.5.1

Toxics are allowed in the system at NO CHARGE.

4-56 4.2.5.3

2 percent depreciation rate is too low.

(379) 4-59 4.2.6

Noise is a problem inside the buildings. The working environment must be considered and rectified.

4-62 4.2.9

A 44 percent increase in freeways by 2000 is not reasonable.

(380) 4-62 4.2.10

Intensive human occupancy for more than 200 years is unreasonable.

4-64 4.2.11

Poisoned fish

Appendix I Clarification letter April 14, 1976, page 3

2) Pollution.....

Problem is not addressed as promised.

February 8, 1980

# Appendix IV

I-2 I D 5

Heavy metals - food chain.

(381)

II-4 II D

Limitations.....

Site Specific Supplement a stalling technique?

Environmental impacts should be anticipated.

(382)

II-5 II D

In an effort.....

Very serious adverse impacts result from proposed solids management. They should not be hidden or scattered.

(383)

III-7 III B 1 3rd paragraph

The incinerator at South Shore is new (about 5 years old), does not work, has never worked, and probably will never be operated. Planning should not be based on the use of this equipment.

(384)

IV-8 and 9 3.

MMSD, DNR, EPA all avoid pretreatment and the admission of toxics to the sewer system. Toxics must be excluded until they can be handled safely.

(385)

IV-19 The MMSD.....

Negative impacts heavy metals (trucking)

Appendix IV (cont)

December 9, 1980

V-6 1st paragraph

Cadmium

2nd paragraph

(357

Heavy metals. We plan to poison to the maximum "safe" limit. Jones Island cadmium. SS zinc. 6 3/4 years. Minimize harmful effects by not spreading heavy metals.

V-7 deleterious.....

Heavy metals toxics wildlife food chain.

Individual.....

386 Discing of grasslands not normal. This method of application would seriously affect wildlife both flora and fauna.

The land.....

Translocation of heavy metals by plants.

V-8

387 Effects of toxics and spreading poisons.

Last paragraph

Each hectare of farmland is NOT similar in forms of habitat quality.

V-9 Landfill

Landfill site maintenance forever.

V-10 Top of page.

Plant incorporation of landfill pollutants.

3rd paragraph

Compost not out of food chain.

V-11 Groundwater

Groundwater pollution from landfill leachate.

Last paragraph

Heavy metal leachate to groundwater.

V-12 1st paragraph

Heavy metal leachate from landfill.

4th paragraph

Ridiculous.

V-13 Land application.....

388 Dangerous - all heavy metal leachate will get to either surface or groundwater.

The WCNR.....

357 Major planning should not be based on nebulous future policies. More research must be done with landfill leachate.

V-13 The potential.....

The potential for adverse impacts is great.

Under.....

Operational accidents.

V-14 1st paragraph

Heavy metals - groundwater pollutants.

The mobility.....

Continuous controls needed forever

Nitrates

Continuous controls for life of application.

V-15 Surface Water

Heavy metals.

V-19

Heavy metals.

Pathways to man not understood.

Method of application effects contamination of man. But also the contamination in the sludge.

V-20 Landfilling

Report to the EPA on the Jones Island Appendix

1. Readability: The report is not overly technical, which is commendable. As a matter of fact there probably is not enough technical data, see 3. and 4. below.

(389) 2. Jones Island appendix does not present or evaluate worst case, eg. problems with only three day storage of solids, impact of ammonia on Outer Harbor waters, problems presented by low flow periods in the Harbor. The problems associated with the projected increase in ammonia in the effluent are merely sketched in; no mention is made of the likely effect on air quality (odors) due to this increase in pollution of the Outer Harbor, for example. It is stated only that there will be a zone of toxicity for fish around the outfall. This seems quite an understatement of the problems posed by the recommended alternative.

352 3. The criteria used by the EIS team, specifically the Feasibility criterion ("The alternative must be technically possible and practicable. Well established and proven past history of processes in the alternative would make it readily acceptable, thus practicable, by the designers, contractors and operators.") seem to rule out consideration of advancements in technology. This apparent sacrifice of innovation to familiarity does not seem warranted. The HPO alternative, for example, is dismissed as too experimental yet it is in use in three major cities: Detroit, Denver and . Incidentally this criterion does not seem to have been applied to the deep tunnels which pose great problems with our groundwater.

390 4. There should be a more thorough explanation of the differences between the various alternatives. If there is no difference between them other than cost, as the presentation of the elimination process implies, then some real alternatives could have been included rather than six versions of the same system.

391 5. Effluent characteristics are not presented in a clear and specific manner, eg. the table on p. III-26. The information is partially here, partially in chapters five and six. It should be together.

392 5. Evaluation of the ozone alternative is unclear. Does evaluation of all alternatives presuppose chlorine disinfection or is disinfection considered a separate process? and therefore cost?

393 6. There should be some evaluation of a best case in the EIS, for example effects of industrial pretreatment programs. There should be some attempt to discuss pretreatment.

Questions

394 1. What kind of evaluation has there been of possible odor problems at the Summerfest grounds (right across the river) as a result of anaerobic digestion? eg. ammonia odors, methane, possible fish kills, poor water quality as a result of the non-treatment of the ammonia in the effluent.

392 2. has there been a cost/benefit analysis done on ozone vs. chlorine disinfection? given that  
ozone is more effective on viruses;  
chlorine disinfection requires three acres, ozone one;  
chlorine is more dangerous to transport and store;  
chlorine requires three steps, ozone one;  
chlorine forms carcinogenic compounds when mixed with other elements of the effluent;  
the one anticipated tightening of water quality standards mentioned is for chlorine;  
the energy savings are still 50% per year even with the more expensive ozone alternative;  
ozone improves the quality of the receiving waters which chlorine does not.

389 3. What kind of alternative plans have been made in the event of more than a three day buildup of solids? Eg. blizzard, strike, legal problems with landfill sites or lack of landfill sites.

395 4. Given that appropriate landfill sites are scarce and distant from the Jones Island plant, why was this alternative chosen over land application, incineration or codisposal?

(396) 5. There should be a more thorough discussion of the possible moving of the Jones Island outfall, including effects on beaches and drinking water if the outfall is moved to Lake Michigan. There should be a more thorough discussion of the effect on water quality in the Outer Harbor if the outfall is moved. The comment that the Outer Harbor would become "more similar to nearshore Lake Michigan water in chemical composition" is too vague to be useful in evaluating whether the improvement is worth spreading pollutants over a much wider area.

397 6. Has the MMSD or the EIS team looked into treating the effluent for ammonia before discharge into wherever it's going? If not why not as this seems to be a major problem with the Jones Island plan. There should be generation and costing of alternatives for this in the final EIS.

Additional comments

367 1. A pretreatment program should definitely be a part of the MMSD's recommended plan and the EPA should insist on its inclusion before approving the plan. The 1.65 billion to be spent on the sewer project will leave the Outer Harbor (and other waters) as badly polluted as before, if not more so. This is not good value for that amount of money. Industrial pretreatment would remove many problems associated with Jones Island effluent and solids disposal.

397 2. Without treatment of the ammonia generated in anaerobic digestion, the Jones Island plan seems pointless since the spirit of the court order, to protect Lake Michigan from further harm, will be violated even if the letter is not. No one in Milwaukee wants to be taxed to death to pay for a smelly and unusable Outer Harbor. The fishable-swimmable standards will be farther away than ever.

398 3. The sewer project should be seen as the first phase of a long-term effort to clean up Milwaukee's waters, rather than as a final solution. With this in mind alternatives which add to the problem or obstruct future cleanup (ammonia, chlorine, toxic wastes) should be avoided.

SOUTH SHORE SUBCOMMITTEE REPORT -ODORS & GASSES

The South Shore treatment plant has had a serious odor problem since 1975. In addition, residents living near the plant have complained of various physiological disorders symptomatic of the toxic gases which are known to be present in the treatment of sewage.

- 399 The Draft EIS does not provide sufficient information about the residential population near the plant or their complaints to permit evaluation of current or future odor and gaseous emission complaints and the effect on the residential population.

The EIS should include data detailing the following twelve points:

- 399 1. The area in South Milwaukee which has produced the greatest number of complaints includes approximately 300 single family homes, 20 duplexes and 210 nursing home residents. An additional 100 to 200 Oak Creek families are living in an area that is severely affected.
- 399 2. The two north lagoons at South Shore were built in 1973. They have been the cause of the greatest number of odor complaints. The lagoons were built to within 500 feet of a then existing Class A residential subdivision.
- 399 3. The residents of these areas state that they cannot plan to have activities in their yards because of the threat of odors from South Shore. Sometimes they cannot even stand to work in their yards.
- 399 4. Residents of the area state that they must close up their houses at times, regardless of the temperature, to keep sewage odors from getting into their furnishings. Most would not dare hang out a wash.
- 399 5. Area residents have reported up to \$ 10,000. in lost market value on their homes.
- 399 6. Area residents closest to the lagoons have reported effects such as nausea, headache, loss of sleep, appetite, impaired breathing and allergic reactions.
- 399 7. The South Shore plant was and is in violation of the Oak Creek zoning code. Specifically, it is in violation of Section 17.38.8 par. c of the Performance Standards.
- 399 8. Residents of the area are continuing to ask for a comprehensive air quality study to identify odor sources and potentially hazardous gaseous emissions and to establish reasonable limits for them. The EIS side steps this issue by declaring that: a) air quality studies are too expensive; b) Odors are subjective; c) Pointing to other sources of odor in the area; and d) Suggesting that by draining the lagoons, all of the problems will go away.

- 399 9. Odor correction orders have been issued by the Wisconsin DNR on two occasions, in response to vigorous complaints by community groups. The DNR orders have resulted in getting the two north lagoons drained.

- 399 10. The exposed lagoon beds, which should have been covered with a layer of top soil, are still a major cause of odor complaints. When it rains, they become wet and smell as bad as ever.

- (399) 11. It should be recognized that any one of many elements of the South Shore plant could become a major odor producing problem if precautions are not taken and unless a high standard of housekeeping is maintained.

- (399) 12. MMSD has in the past and is continuing to demonstrate a serious lack of concern for the problems it creates for its neighbors. Some means is needed to insure that a high standard of housekeeping will be maintained at South Shore and that local residents can bring pressure to bear on them if they neglect this responsibility.

#### SOUTH SHORE SUBCOMMITTEE REPORT - CHLORINE

The Draft EIS specifies that with the MMSD Recommended Plan, the South Shore treatment plant would use up to 700 tons of chlorine per year. It further specifies that the chlorine would be shipped to South Shore in liquid form, in pressurized 55 ton railway tank cars, along an existing railway spur track.

400. Chlorine is one of the most dangerous of the hazardous chemicals which are used in industry today. At atmospheric pressure the liquid vaporizes and the deadly gas is carried by the prevailing winds for considerable distances. Every year there are chlorine spills which result in deaths, injuries and in mass evacuations of thousands of nearby residents. Horror stories about such spills appear in the evening news with the regularity of a ticking clock. A chlorine spill in Youngstown, Florida on February 28, 1978 killed 8 and injured 158 persons.

Within one mile of the chlorine unloading station at South Shore, which can handle six 55 ton tank cars, there are large residential subdivisions to the north, west and southwest. In addition there is a shopping center and two nursing homes with 210 residents. A three mile radius would include all of South Milwaukee and most of Oak Creek as far west as Howell Avenue.

It is requested that the EIS recognize and deal with the hazards of transporting and handling chlorine at both Jones Island and at South Shore. The following specific recommendations are proposed.

- 401 1. Establish inspection requirements for the spur track to qualify them for handling hazardous chemicals. Spur tracks are not normally inspected or maintained by railroads until a derailment identifies a problem.
- 402 2. Establish a mandatory reporting procedure for all chlorine leaks. Correcting minor leak problems as they occur frequently prevents a major leak.
- 403 3. Establish a requirement for an emergency plan for Oak Creek and South Milwaukee which includes an appropriate evacuation plan.

#### SOUTH SHORE SUBCOMMITTEE REPORT - EXPANSION ALTERNATIVES

404

The draft EIS does not address the expansion requirements at South Shore under the Local or Subregional alternatives. All of the ~~base~~ data is for the recommended plan.

The EIS should include expansion requirements for each of the action alternatives. The costs of each alternative should be adjusted accordingly.



SOUTH SHORE SUBCOMMITTEE REPORT - *EXPANSION ALTERNATIVES*

404 The draft EIS does not address the expansion requirements at South Shore under the Local or Subregional alternatives. All of the ~~1974~~ data is for the recommended plan.

The EIS should include expansion requirements for each of the action alternatives. The costs of each alternative should be adjusted accordingly.

5198 Woodbridge La. So.  
Greenfield, WI. 53221  
January 10, 1981

TO: Chas. H. Gutfin, Dir. Water Div.  
U.S. Environmental Protection Agency  
Region V - 200 S. Dearborn Street  
Chicago, Illinois 60604

RE: Written comments to be included in the official documentation of the Draft Environmental Impact (EIS) Statement for the Milwaukee Water Pollution Abatement Program.

As a member of the EIS SOLIDS MANAGEMENT MMSD WATER POLLUTION ABATEMENT PROGRAM, following are my views on this section--this is a consensus of our committee.

- (405) Referring to Appendix IX MMSD's Recommended Plan, the draft EIS fails to address the elements of the June 3, 1980 "Citizens Report on the Milwaukee Water Pollution Abatement Program".
- 406 The EIS are cited throughout the Citizens Advisory Committee such as ALTERNATIVES. However, in the EIS feasible alternatives -- but never really go into any study, detail on said alternatives. They are strictly addressing the MMSD's position while its land application and landfill. They also neglect to go into detail on the AGROSS COMMITTEE activities which were requested numerous times by committee members but never received any written or oral information on.
- The Citizens group discussed and studied at length Co-disposal, self-energizing processes, compost, etc. It seems that this investigation of alternatives was a question or non-existent.
- EIS ALTERNATIVES -- MOTIONS WERE PASSED BY THIS ADVISORY COMMITTEE ON OCTOBER 21, 1980
- 357 1. "The EIS should address the legal enforcement of guidelines, regulations or laws as related to individual land owners' use of said land after sludge application"
- 407 2. "The EIS should ask for the results of a co-disposal pilot study done by MMSD in the 1980-81 capital improvement programs of the MMSD. If the results are not available then a request is made for a presentation"
- 408 3. "The combined agencies should state when conclusions in the EIS are drawn upon inadequate or non-existent information and identify limitations in the data"
- 409 4. "The EIS should determine what laboratory studies and university researches have been done to augment security and safety in regards to toxic sludge application to farm land"
1. That the above were not adequately addressed in the EIS and feel the EIS is not to be considered legally adequate without answers to the motions and a decision cannot be made at this point in time because of the consultants lack of evaluation of the concerns.
- It should be noted is the statement of the Solids Management Subcommittee of THE CITIZENS ENVIRONMENTAL ASSESSMENT COMMITTEE WHICH PRELUDED THE ADVISORY COMMITTEE. Please read the statement along with the above motions and take into consideration that the EIS in our opinion is inadequate in that it does not address the concerns that were addressed in our meetings with THE DWR, TGS AND ECGI.

ADDITIONAL COMMENTS: Without the above we do not feel that a useful or adequate or legal decision can be made at this point in time.

SUBMITTED BY: Shirley H. Mueller

*Shirley H. Mueller*

STATEMENT OF THE SOLIDS MANAGEMENT SUBCOMMITTEE  
OF THE  
CITIZENS ENVIRONMENTAL ASSESSMENT COMMITTEE

There is great concern among people everywhere that our society is fast approaching the limits of the available resources. Individuals, industries and governments have instituted a multitude of projects and programs that recycle waste into usable resources. Such efforts include the recycling of aluminum cans, paper, neighborhoods, buildings, people, etc.

"Should the Milwaukee Metropolitan Sewerage District recycle the nutrient value contained in the sludge it collects?" That is the critical question before the Solids Management Subcommittee, CEAC, the MMSD and the community in general. In 1925, Milwaukee began producing Milorganite, a heat dried fertilizer out of the sludge from the Jones Island Wastewater Treatment Plant. This pioneering effort has served as an excellent disposal method of the community's sludge, but the energy required to dry the sludge is becoming too expensive. The District is in the process of disposing of South Shore (the treatment facility in South Milwaukee) solids by spreading them on farmland and incorporating them into the soil by disking. There are many advantages to this method of disposal; most notable is the recycling of nutrients and low cost.

There is concern by this Subcommittee and the MMSD that there are potentially dangerous contaminants contained in the community's sludge. Of primary concern are the heavy metals, especially cadmium, found in sludge. "The introduction of heavy metals ... is of concern because heavy metals pose potential food chain hazards. Cadmium accumulates in the kidney and liver of animals and humans, ..." (Volume I, Total Solids Management, September 1978, Section V-1). The largest known sources of these heavy metals are industrial, but apparently some are also from domestic sources.

The Solids Management Subcommittee recommends that the MMSD implement a five-part program to reduce the level of contaminants contained in sludge. It should be noted that some of these programs are already underway. The recommendations are qualified with the consideration that these programs be combined in a cost-effective manner:

1. Pretreatment - The removal of contaminants preceding the wastewater treatment process. That is, encourage the dischargers of contaminants to pretreat their wastes, by implementing a program of financial incentives and an effective monitoring system.
2. Sidestream Treatment - The MMSD should construct a separate treatment facility for contaminant-laden waste.

The District should be responsible for collection, treatment and disposal of these wastes with these costs to be recovered to some extent by an Industrial Cost Recovery Program.

3. Contractual Arrangements - The District should develop and implement contractual arrangements with landowners who participate in the agricultural application program. These arrangements should include monitoring the contaminant content of soils and crops and the regulating of the types of crops grown on applied soils.
4. Education - Inform the public of the importance of contaminant control. Change the marketing program for Milorganite to discourage its food-chain related uses.
5. Basic Research - To the extent that there are Federal and/or State funds available, the District should implement a multifaceted research program aimed at removing contaminants from sludge. This research should include methods of contaminant removal before, during and after wastewater treatment by physical, biological, and/or chemical means.

#### INTERIM RECOMMENDATION

Until the Environmental Protection Agency, the Department of Natural Resources and other regulating agencies develop guidelines and regulations to replace the existing interim standards for contaminants, the Subcommittee advises against the selection of a long-term solids management method. As an interim measure, the District should acquire a landfill site to be used as a backup to existing disposal methods. This will provide flexibility while the above-mentioned agencies promulgate regulations, and the District identifies the economic and social impact associated with pretreatment and sidestream treatment.

#### CEO APPENDIX

##### General Comments

I believe that EPA should state publicly that the current draft EIS does not meet all the requirements for an EPA draft. This document is a political document not an environmental analysis. The document was kept under cover until shortly before Christmas holidays and then released giving the public less than 60 days to read, understand and prepare comments upon 1700 pages of material that does not always relate to other documents that have been prepared in the past. The total impact has simply not been analyzed. The EPA has a convenient way out of this dilemma since the DNR for their "Final" EIS will also hold a public hearing. The EPA can call DNR's Final EIS their Draft EIS. If you do not do this you are leaving yourselves open to a serious legal challenge by anyone opposing the project for most any reason.

The DNR for what ever reasons wants deep tunnels and the EIS is written with that in mind.

The following comments were prepared for the public hearing and are included first in case some of the points were not covered in the verbal testimony.

The two main questions which are not even addressed much less answered in the EIS are:

(410

Do we need the tunnels? What are the alternatives? Even if we need them are they safe or will they pollute even more of our environment namely our ground water?

411

How important is the high quality fresh water to the economy of the city? Who uses it? What is it used for? What quantities and what growth is it needed for?

412

The working assumption of the document seems to be that we will pollute to the maximum degree permissible by law. If the law said that we did not have to treat our sewage we probably wouldn't, because it wouldn't be cost-effective. Yet everyone complains about big government, the EPA, etc.

Technicians defined the issues to be addressed. Not all the issues are addressed. DNR and EPA could have set up a citizens advisory committee or they could have used CEAC. There is no mention of the CEAC, citizens input. If not officially then at least unofficially. (DNR chose not to attend meetings)

##### Specific Comments

413

No Index

Sections not parallel

3.2 Water Resources

3.21 Introduction  
Surface water

3.7 Groundwater

- 414 What does water quality have to do with CSO?
- 415 CSO impacts surface and ground water but not water quality statements.
- 416 No analysis or documentation of why we end up with deep tunnels. No analysis of I/I which is the driving force behind deep tunneling.
- 417 Talk about 50% of water removed but no analysis and only two paragraphs on the flow through (4344)
- 418 (435) Peaking not thoroughly look into.
- 419 No analysis of the issue of private property.
- 420 4.3 Screening of I/I in the CSO appendix.
- 421 4.4 Development of Joint CSO/Clear Water Program where is the analysis of the clear water program.
- 422 After 39 pages in Chapter 5 of inner and outer harbor discussion about water quality and the CSO impact, we find that "In general there is little difference between the CSO abatement alternatives with regard to, average annual loadings" (5-39)
- 423 77 to 93% of the load except under the No Action alternative will still be in the outer harbor.
- 424 No reference or analysis of Chicago's conditions i.e., tunnel, pollution of ground water
- 425 No reference to well diggers
- 426 There is no analysis of what can be done if the aquifer is polluted or the economic impacts of such a disaster. No analysis of the "New Found Truth"
- 427 that its cheaper for Germantown to be part of "the System" vs. going on their own and reducing the area of the MMSD.
- 428 No documentation of the volume of waste material to be generated by tunneling and relating it to an example that people can visualize and understand.
- 769 How can this EIS be approved when the study: "To accurately identify and quantify the impacts of the construction and operation of the proposed tunnels" is just beginning.
- 429 5.161 Why is Jones Island discharge relocation analysis under CSO and not in the Jones Island Section?
- 430 5.16 Sensitivity Analysis  
No sensitivity analysis for water intakes

MOT:gl:ii/28/80  
D.sk #17

# WATER QUALITY SUBCOMMITTEE COMMENTS ON DRAFT ENVIRONMENTAL IMPACT STATEMENT

12 January 1981

## General Comments

- 431 The issues that relate to water quality were not presented in a comprehensive and critical manner. We expected to review and approve a creatively concerned, thoroughly documented environmental impact statement. It was an overly optimistic expectation. The cursory discussion was not the anticipated critical analysis of current and projected conditions. Data relating to water quality is fragmented, unorganized, and presented in such a manner so as not to allow for comparative critical review. The Water Quality Appendix needs an expanded glossary, improved indexing, and a table of contents to include subpoint headings. There are too many non-quantitative words used to describe conditions of water quality, these evaluations are meaningless. Tables should include DNR, EPA standards to allow appropriate evaluation of data. There is no clear development of worst case. We affirm the water quality goals of CEAC.
- 432 The DEIS states in 3.9.4 page 3-51 "because water quality analysis had suggested that standards might not be achieved without instream measures, the Commission requested that SEWRPC and DNR work with them to implement an instream program." This statement indicates that although this project was undertaken to improve water quality, this will not be, in fact, the case. The stated cost of 1.6 billion dollars will not buy a significant upgrade in area water quality. There are no agencies responsible for the maintenance or upgrading of water quality. Water quality benefits of the MWPAP and surface water impacts of the project are not adequately emphasized, even though this is a "water pollution abatement program".
- 433

THE FOLLOWING AREAS ARE ADDRESSED INAD QUATELY:

- 434 1. There is no discussion on what degree is groundwater improved by CSO  
separation.
- 99 2. There are no compelling reasons given for moving the Jones Island outfall.
- 435 3. As it relates to water quality, there is no discussion to determine the  
responsibility for cleaning and dredging the sediment of the inner or outter  
harbor.
- 367 4. From a water quality perspective the discussion of industrial pretreatment  
is superficial. Industrial pretreatment is an integral component for the  
establishment and ultimate achievement of desirable water quality goals -  
standards must be established and a system of continued monitoring by the  
responsible agency or agencies must be done.
- 392 5. As it would improve, over all water quality the evaluation of the analysis  
of chlorine vs ozone treatment should be expanded and clarified.
- 436 6. An expanded discussion of chlorine and ammonia toxicity mix is needed.
- 437 7. There is no review of the exfiltration of force mains and its effect on  
health and environment. Is there potential ground water contamination?  
and what is the amount of loss?
- 438 8. There is no discussion of liability on groundwater drawdown for private  
homes and businesses.
- 439 9. Total sediment loadings to streams and rivers is overlooked, only relative  
loadings from various segments of the proposed plan were covered.
- 440 10. There is no discussion of the timing of construction of interceptors  
through flood plains so as not to occur in spring.
- 441 11. There is no discussion of the collective loading of sediments in the  
construction of interceptors.
- 442 12. How long can water drawdown from wetlands continue before adverse or  
damaging effects to vegetation hydrology of the area occur?

- 443 13. The importance of pure water, the quantity and use of, is not addressed.  
How and who will provide it to industry and private homes in cases of  
dewatering?
- 444 14. The possibility of recycling effluent was not explored in depth nor  
explained thoroughly.
- 445 15. A comparative analysis of present sewers, tunnels and force mains with  
proposed program components for infiltration and exfiltration is needed.
- (446) 16. Data on leachate from present MMSD landfills not included.
- (447) 17. No worst case presented for contamination of groundwater.
- 448 18. No comparative tables for sludge or commercial fertilizer applied to  
land for loadings of metals, toxics, phosphates, nitrates, etc.
- (449) 19. Where will water come from for groundwater recharge?
- (450) 20. There is no discussion of possible alteration of land configuration during  
construction, will this cause flooding?
- (451) 21. If air pressure is used for tunneling who will be responsible for the  
clean up of sediment forced into wells?

SPECIFIC COMMENTS

Main Text - page 4-24 para. 1

- 452 What is meant by groundwater has "generally good quality?"
- 453 page 4-61 para. 3 - One would hope that soil bacteria are never mistaken  
for fecal califorms.
- 454 Appendix III SS - page V-69 para. 3 - What does "still quite clean" mean?
- 455 Appendix VII WQ - page 24 para. 2 - Define "excellent water quality".

The following comments are on DEIS Appendix 9 -  
Secondary Growth Impacts of the Proposed Water  
Pollution Abatement Program.

This Appendix points out the dangers inherent in the MMSD use of population projections for the region which forecast unrealistically high growth. Use of these projections in sewer planning could result in overbuilding of facilities, greater expenditures than necessary, continued urban sprawl, damage to sensitive environmental areas, loss of farmland, and cause very negative impacts on Milwaukee's revitalization efforts. To counter these trends, this document basically recommends that four interceptors - Germantown, Franklin NE, Oak Creek, Hales Corners - need not be built now if at all. At minimum, they should be postponed to put off some of the high projected costs of unplanned or unrealistic growth. These costs occur both in terms of building unnecessary facilities and in terms of the urban support facilities necessary to accommodate additional population. Sprawl development costs everyone money. A few additional comments on the Secondary Growth Impacts Appendix are pertinent.

- (456) 1. The document is generally not clear and easy to read and understand, as a public document should be. It is often wordy and vague. This type of document should be clearly and concisely structured if you expect the public to comprehend and comment on it.

- (457) 2. The whole approach to the problems of cleaning our sewage is too reactive, i.e. the document reviews only the existing alternatives for the WPAP as proposed by MMSD. The document should put forth and suggest innovative alternative solutions to the problems.
- (458) 3. The document presents only a shallow examination of the possible and probable environmental effects of continued sprawl development.
- (459) 4. The analysis of secondary growth impacts should include a more thorough discussion of the negative growth impacts of the WPAP, i.e. the economic burdens on poor and elderly city residents, possibly causing disinvestment and city population loss. Where would new households live given the various economic burdens, and where will existing low and moderate income people go.
- (460) 5. What about industrial and commercial growth impacts? The document does not examine these at all.
- (461) 6. A thorough discussion needs to be made regarding the effects of the proposed contract formula on secondary growth impacts. This formula dictates the cost to suburban communities. Under the present formula, the economic burden on contract communities is far less than on those communities inside Milwaukee County, especially when the already higher property taxes within the County are considered.
- 462 7. Only the proposed new interceptors are looked at as determinants of growth, whereas the EPA specifies that the overall capacity of the treatment facilities should be considered. If no-action on certain

interceptors is proposed as a mitigating influence, then cutting down the size of the central facilities should also be examined. This whole idea of the danger of overbuilding and thus overspending on the proposed facilities should be looked at much more thoroughly in light of the high population forecasts that the MMSD WPAP is based on.

463 8. While population in this area has been decreasing, households have been increasing. This represents a complicated issue. The relationship between the use and sewerage facilities by households versus population needs to be better examined. Perhaps with increasing numbers of households, the same geographic coverage of sewer service would be necessary but at a lesser volume due to less people.

464 9. Finally, the document does not sufficiently examine the potential beneficial effects on secondary growth and on everyone's pocket-book of staging facilities construction. Build the most necessary things first, and put off the less important facilities. This would help to decrease the initial costs while making more manageable the patterns and timing of growth in our metropolitan area.

COMMENTARY ON THE FISCAL IMPACT ANALYSIS OF THE DRAFT -  
ENVIRONMENTAL IMPACT STATEMENT ON THE MILWAUKEE  
WATER POLLUTION ABATEMENT PROGRAM OF THE  
MILWAUKEE METROPOLITAN SEWERAGE DISTRICT

COMMENTARY BY

FISCAL AND ECONOMIC SUBCOMMITTEE

Representative Thomas Crawford (State)

Jeanette Bell

Gerard Froh

CITIZENS ADVISORY COMMITTEE TO THE

ENVIRONMENTAL PROTECTION AGENCY/AND DEPARTMENT OF NATURAL RESOURCES

Overview A  
B  
C  
Specific  
Comments 1  
2  
3  
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5

## FISCAL & ECONOMIC IMPACTS

### OVERVIEW

494 Throughout the Draft - EIS, fiscal impacts are portrayed in an optimistic light. An example is Table 13 of Appendix 10, where an inflation analysis assumes a 10 percent increase in the cost of construction and a 12 percent increase in property value. This seems to be contrived and not based on projections of experience. For the most part, the relative impacts of the MWPAP as identified in the draft EIS do not include the impacts of inflation. This is certainly acceptable for relative comparisons, but the impacts with inflation should be given comparable emphasis.

495 The County published its Recommended 1981 - 1985 Capital Program in August, 1980, indicating a need for \$137,135,000 in bond issues through 1985. This information should be incorporated into the final EIS. Can the County exceed its debt limit? Assuming that it cannot, wouldn't future costs after the debt limit is reached have to be financed by a direct property tax levy?

496 The use of equalized assessed value is confusing because its relationship to assessed value varies by community. It would be more graphic, if the tax impact of the MWPAP for each community based on assessed valuation or percent increase was portrayed. In order to disclose the actual fiscal impact of the MWPAP, it is critical that existing property tax levies on locally assessed property values be portrayed in conjunction with the tax impact of the MWPAP on each localities assessed value. One measure of the fiscal impact of the MWPAP is the average annual cost to the average assessed valued household in each community, but of equal importance is the impact of peak costs on that household.

497 In addition, to fully disclose potential fiscal impacts, it would be appropriate to restate these costs or provide additional tables with information indicating that these costs would increase substantially if bonds were sold at higher interest rates, and if, for whatever reason, bonds could not be sold, it might be necessary to pay for such costs by direct tax levy. Also, what would the costs be with no grants.

## DISTRIBUTION OF COMBINED SEWER OVERFLOW COSTS

498 In Appendix X, a "worst case" analysis is presented of the fiscal impact on combined sewer service area residents of not distributing combined sewer overflow abatement costs district wide. This presentation does not expose the complete fiscal impact, because:

- 1) The fiscal analysis does not include the CSSA resident's share of other components of the MWPAP.
- 2) The fiscal analysis does not include the existing property tax burden on CSSA residents.

These facts are critical because, considered in a vacuum, the MWPAP's fiscal impact is enormous but does not appear to be disastrous. It is when the MWPAP's fiscal impact is added to existing property taxes, already considered heavy, that the harsh reality of an oppressive tax becomes obvious.

499 FISCAL IMPACTS OF MWPAP ON HOMEOWNERS WITH LOW AND/OR FIXED INCOMES, ESPECIALLY THE ELDERLY. (Also Fiscal Impacts on Renters)

The EIS and its 10 appendixes contain about 1736 pages. In the very last Appendix, Appendix X on essentially the very last page, page 128, the very last sentence says "Finally, Homestead Relief will reduce the burden on low income residents". That is all there is in 1,736 pages on the fiscal impacts of the MWPAP on low income residents.

The EIS (App. X, Pg. 128) almost addresses this issue when it states, "Households will be most burdened by the increase in property taxes". Carrying this statement one step further, it is obvious that low income households would have the distinction of being the most burdened of the most burdened.

In these inflationary times, there are few endangered species more in need of societies concern, than the low income elderly homeowner.



OTHER ISSUES

- (500) Considering that the estimated costs for the alternatives presented in the EIS are within 1.8 percent of each other and that the estimated costs have a margin of error of -15 percent to +30 percent, it would seem inappropriate to conclude one alternative is more cost effective than another. Therefore, other criteria should be used in selecting an alternative from a selection whose costs are for all practical purposes identical.
- (501) What is likely to be the impact of recent regulations published in the Federal Register on the loss of Federal grant funds to construct wastewater treatment facilities or that portion of that facility designed to serve the needs of industry?
- (502) What is the impact of the removal of Manufacturers and Commercial Stock (inventory) from the property tax base in 1981.

C

Specific  
Cost Fiscal Problems of Draft EIS  
Milwaukee Water Pollution Abatement Program

Page 1

- (465) 3.14.4 The EIS states that costs are accurate to within +30% and -15%, does this mean that, in effect, there is no difference in costs of the alternatives presented. If so, it should clearly state this.
- (466) 3.14.5 Should be cross referenced to other sections!
- (467) table 3.18 Average annual debt service figures eliminate true impacts of peak years. Assumption 6% interest unrealistic.
- (468) tables 3.19  
3.20 No assumptions given
- (469) table 3.20 No cross reference as to how percentage of income was arrived at. Also missing figure because percentage of income presently paying in property taxes for other purposes not shown.
- (470) 3.14.6 Should be cross-referenced. No explanation as to why the labor requirements of all alternatives will be similar.
- (471) table 4.10 Question the value of this information in regards to the problem.
- 472 table 4.21 Shows the 1980 Budgets for City only, what about school boards, County, MATC as shown on table 4.23. At least make a cross reference to this table
- (473) table 5.22 NPW- Net Present Worth should be explained in the glossary
- 465 5.2.4 Repeat what is said in section 3.14.4 about the accuracy of costs.
- (474) 5.2.4.5 Second paragraph states assumption of District financing of local sewer R&R. Appropriate to explain why.
- (475) 5.2.5.1.5 Why is this an either all cash or all bonds discussion, a better alternative might be to have a mixture of cash and bonds. It would be appropriate to point out the disadvantages and risks associated with bond issuance.
- (476) tables 5.24  
5.25 Could be on one page to save paper
- 477 5.2.5.1.5 Page 5-74 The first sentence is in error, the school districts have a separate 2% limit. Should point out here that the MMSD borrowing program is not feasible if the debt limit will be exceeded within the planning period.

- (478) 5.2.5.1.5 Reverse order of discussion so that impacts of direct taxation prevent it from being a viable alternative.
- (479) 5.2.5.1.6 Paragraph 4- unrealistic assumptions. No alternatives are given when the debt limit is reached. If direct tax levy is the only alternative it should be stated.
- 5.2.5.1.7 A very understandable discussion of the various methods of cost distribution.
- (480) 5.2.5.3 Page 5-81 3rd and 4th paragraphs Does this 5% debt limit also apply to the County ie MMSD.
- (481) table 5.38 Valuable figures, should be expanded. Why are are they shown only under the local alternative. Wouldn't similar figures be applicable to the Regional or Mosaic Alternatives?
- (482) 5.2.5.3 Does this discussion assume the County can exceed its 5% legal debt limit. If so it should be stated.
- (483) table 5.49 Shows only CSO costs to CSSA residents, would be helpful to show also total costs of program- \$11 + \$4.33 = \$15.33 per 1000. Also what is the savings to other communities if CSO costs are removed from them.
- (484) table 5.51 Would make more sense to reverse order
- (485) table 5.52
- (485) 5.2.6 The RIMS model is theoretical or at best applied theory and this should be stated.
- (486) 5.2.6.1 Page 106 2nd paragraph Even if MWPAP is totally Federally funded the construction impacts may disrupt many businesses and have other negative economic impacts, it would never be legitimate to examine only positive impacts.
- (487) 5.2.6.2 If the \$1.6 billion were spent on construction of a monument depicting Judge Grady's concern for the plight of the poor of Milwaukee County would such a project have a similar impact on the total dollar amounts of gross output, earnings and employment that the MWPAP does?
- (488) 5.2.6.3 In this "worst case" analysis an assumption is made that the County will be able to issue 6% 20yr General Obligation Bonds. That is not by any means the worst that could happen. If 8% 20yr GOB's were used the negative effects would be in the range of \$6,390,283,600 and for 9% it would be \$6,843,732,500. Also what happens if outside funding is not available.

- (488) 5.2.6.4 Abandoning the optimistic assumptions of 6% bonds would increase the worst case net impacts to around \$2 billion.
- (489) 5.2.6.6 The residential property tax is only marginally relieved by GPTR & SSR and because these formulas are currently fixed and estimate could surely be made as to increases in state aid because of the MWPAP.  
Because the area is already viewed as a high tax area, the implementation of the MWPAP will highlight that reputation. This will undoubtedly lower the marketability of bonds from the area thereby increasing the eventual cost of the MWPAP.
- (490) 5.2.6.7 Is this section about businesses in general or is it limited to industries? Is this survey statistically valid, was the sampling random-if not what does it prove?
- (491) 5.2.6.8.4 Why is it unlikely that an average annual property tax rate increase of \$.37 or more would have a significant impact on commercial buildings.
- (492) table 5.57 Table is incorrect.
- (493) 5.2.6.9 This appears to be a weak discussion of a very significant aspect of the impacts of the program.

Comments Appendix X EIS Milwaukee Water  
Pollution Abatement Program

- 503 General Comments-- Whenever discussing the fiscal impacts of MWPAP for a specific community it is essential that the existing property tax burden be identified, because MWPAP is an increase and does not exist in a vacuum.
- 504 The appendix is repetitious with many tables and even some discussions repeated word for word as in the main body of the EIS. Some of the tables that are repeated are tables 3A, 5, 6, 7, 8, 9, 10, 12, 51, 54, 55, 59, 60, 61.
- Page 7 (505) MWPAP Models 64A, 65A, 63A, 62A, 68B and 66B  
Do these models assume sale of GOB's at 6% interest?  
Do these models assume that the county's debt limit will be exceeded, if so, that is a pertinent fact and should be stated. Why not develop a realistic model such as; construction costs rise at 15% a year 20 year GOB at 8-9% Direct tax levy when debt limit is reached and the County issues debt in accordance with its Capital Improvements Program.
- Page 27 (507) It would seem relevant to compare various cost indexes rather than make an unnecessary assumption. Compare construction cost index with the CPI with the change in Milwaukee County Equalized Assessed Value.
- (508) Why make the assumption here and in table 12 that the county won't borrow to finance projects, when in fact, the County published a Capital Program for 1981-1985 that is contrary to the assumption?
- (509) Explain why 10% construction inflation and 12% property value inflation were used, (Defend it) rather than 12% construction and 10% Property value inflation.
- 510 Page 30 Next to last paragraph "Once the debt limit is reached, future projects could only be financed by means other than general obligation bond issues" If, as the EIS indicates, this is factual why do the financial models of the MWPAP violate this premise?
- 511 Pages 50-89 tables 22-50 This information could be presented in a much more concise and understandable fashion such as the percent increase above each communities existing property tax, and the amount, indicating assessed/Equalized Assessed Value ratios.
- 512 Page 93 The information should be cross referenced to the section on MMSD debt service and to tables 15, 16, 19,

- (513) Page 98 last sentence It reads "total clear water program" it should be "total clean water program."
- 514 Page 103 What is the cost effective level of I/I removal?
- (515) Page 103 5th sentence \$1,098 billion is 3.2% greater than \$1.064 billion?
- (516) Page 104-105 The analysis does not indicate what interest rate on these bonds, is it 6%? This table should be cross referenced to page 93, Bond Interest Rate Sensitivity. The average annual tax for CSO work spread over CCSA is only the increase, to provide a comprehensive picture the EIS should include existing property tax rates.
- (517) Page 108 Table 62 is redundant, the identical information is contained on table 61.
- (518) Page 111 The table 63 should have a column of existing (1981) property tax burden, for comparative purposes.
- (519) Page 110-123 Regional Economic Models and input-output analysis of the simplistic and extremely general nature presented certainly are of little use to the non-academic.
- (520) The worst case analysis presented on 121-123 assumes 6% GOB's, which are far from the worst case. These assumptions should be identified. Remember that using 9% increases total debt service 27%.
- (521) These models do not appear to recognize time- ie 9 year project and 28 year payback.

CONSTRUCTION:

- 522/1. Where are dump sites for all the dirt and rock that is removed during the sewer tunnelling process?
- 523/2. The roads that are used during sewer construction will need extensive maintenance. Who is responsible?
- 524/3. The above ground work sites are dirty and noisy, who makes sure that the neighboring residents are being treated fairly?
- 438/4. During the tunnelling process, water veins leading to area wells will be cut. Who is responsible for restoring the water supply?
- 525/5. When tunnelling in the vicinity of buildings set on pilings, the water level is drawn down for along period of time. That often results in building damages. Who is responsible?
- 526/6. During tunnelling, blasting is often performed and often causes structural damage to buildings in the area. Who is responsible?
- 527/7. High noise levels from blowers and pumps will be continuous during the nights and weekends, disturbing adjacent residential areas. Who is going to be responsible to see to it that the area is livable?
- 528/8. The sewer system will be going by large fuel storage area. If the ground is saturated with gasoline, what is going to be done to protect the construction workers from explosions?
- 529/9. If a tunnel goes under a river and it has excessive leaking and can not be controlled. Who is responsible?
- 530/10. During any massive construction project, unfore seen events and accidents occur causing hardship and suffering for the citizens in the area. Who is responsible?



## United States Department of the Interior

OFFICE OF THE SECRETARY  
NORTH CENTRAL REGION  
176 WEST JACKSON BOULEVARD  
CHICAGO, ILLINOIS 60604

ER 80/1367

January 12, 1981

Mr. John McGuire  
Regional Administrator  
U.S. Environmental Protection Agency  
230 South Dearborn Street  
Chicago, Illinois 60604

Dear Mr. McGuire:

The Department of the Interior has completed its review of your joint Draft Environmental Impact Statement for the Milwaukee Water Pollution Abatement Program. The complexity of the project and size of the EIS preclude us from providing specific page by page comments. Our comments have been arranged topically, so that they can be properly identified at appropriate places in the EIS and appendices.

### Lake Fills

531 The proposed Milwaukee Metropolitan Sewerage District alternative to upgrading the Jones Island and South Shore wastewater facilities requires approximately 10 acres of fill to be placed in the outer harbor for Jones Island and up to 30 acres of fill in nearshore open water at the South Shore facility. These issues were addressed previously at an April 22, 1980, meeting attended by the Fish and Wildlife Service. A June 17, 1980, letter from the Service indicated the concern over these proposals. Based on our review of the analysis in the EIS, the Service's position is unchanged. We request that the June 17, 1980, letter be included in the final statement as is required by Section 1502.9(a) and (b) of the CEQ NEPA regulations.

In addition to the above concerns, we found no analysis addressing state requirements for lake fill, consistency with the EPA 404(b)(1) guidelines or Corps of Engineer regulations. Although some key issues, such as on-land alternatives have been identified, no structured analysis has been performed. CEQ's NEPA regulations require consolidation of permit analysis (Sections 1500.5(g) and 1502.25).

2

Since no analysis of lake fills has been performed, and because of the Fish and Wildlife Service's previously stated concerns, the comments on this statement do not in any way preclude additional and separate evaluation and comment by the Fish and Wildlife Service, pursuant to the Fish and Wildlife Coordination Act (16 U.S.C. 661, et. seq.) if project implementation requires a permit from the U.S. Coast Guard and/or the Corps of Engineers. In review of the application(s) for such a permit(s) the Service may concur, with or without stipulations, or object to the proposed work depending on project effects to fish and wildlife resources.

We would urge EPA and DNR to perform the necessary analysis of these fill activities so that the final statement contains sufficient information for permit evaluation. In addressing these fills, additional information that has become available since the Service's June 17, 1980, letter should be used. An August 1980 report, published by the University of Wisconsin Sea Grant Program entitled "Fish Spawning Grounds in Wisconsin Waters of the Great Lakes" substantially supports the Fish and Wildlife Service position concerning the historic use of both general fill sites as spawning areas. While these historic spawning grounds may not necessarily be in use at present, the long-term restoration of nearshore water quality, through continued advances in pollution control, could show marked increases in historic spawning area use in the Milwaukee area and aid in the cessation of fish population declines. Additional fishery production in these waters would be especially beneficial proximate to a large metropolitan population.

The Fish and Wildlife Service has instituted a prioritization program called the Important Resource Problem (IRP) system to identify high priority species or habitats. Fishes of the Great Lakes are considered by the Service as a high national priority.

We suggest that the statement would benefit from more specific information on the ground- and surface-water interrelationship with the service area. Such information would be helpful in assessing the potential for any significant effects on surface-water sources from ground-water seepage containing high concentrations of land fill leachate (Appendix IV, page V-11, section D.1, paragraph 4).

### Effluent Quality

532

The proposed action at Jones Island would involve a change in sludge processing with the net effect of increasing ammonia loads 275 percent despite a reduction in flow of 17 percent. Since such a large increase will greatly increase the direct zone of toxicity to fish, and dissolved oxygen would be depressed, nitrification/denitrification treatment might be considered. A goal to achieve reductions in ammonia from present levels, with no decrease in outer harbor dissolved oxygen is desirable. A similar goal is also desirable at the South Shore facility where the ammonia loads will increase 67 percent.

(436 We are also concerned with the proposed ammonia levels since chlorination is still proposed as the method of disinfection. Substantial increases in formation of chloramines will not be precluded because of dechlorination. Since EPA is presently assessing effluent limitations for chloramines, and stringent limits could be set in the future, the current proposal in terms of its long-term cost effectiveness should be reevaluated.

(533 In order to preclude additional chlororganic formation at both facilities, we recommend the final statement address other disinfection techniques, such as ultra violet light and bromine chloride. Should chlorination be approved, the residual limit should be as low as practicable and not set at the current maximum limit of 0.5 mg/l. An adequate sampling sequence could easily allow for bacterial monitoring before dechlorination and still allow full dechlorination and eliminate the discharge of toxic levels of total residual chlorine.

(354 The statement does not adequately address pretreatment of industrial wastewaters or side treatment to remove metals and other toxic substances. While the current effluent permits for the facilities do not limit these substances, an EIS must assess all relevant and important impacts. It is insufficient to state that metals will increase by approximately 40 percent at South Shore or decrease by 17 percent at Jones Island. The assessment of impacts of the changes on local biota such as benthos, plankton, and fish is lacking. Without such an assessment, no need could ever be shown to regulate metals. We are most concerned with the food chain as affected by metals. Any water quality improvement, resulting from more stringent effluent limits, may increase sport fish and pollution intolerant benthos. It would make little sense to achieve significant reductions in ammonia and chlorine or increases in dissolved oxygen in the open lake near South Shore, the inner harbor, or rivers, but allow fish to accumulate heavy metals to significant levels. The necessity to assess water quality on a system's level in terms of impact as well as wastewater collection and treatment is demonstrated by the document.

(535 Side-treatment should be assessed because of metals and other substances which will be diverted to the facilities as a result of combined sewer overflow abatement. In addition, CEQ regulations require consideration of alternatives not presently available for a lead agency to implement. Further, adequate assessment of the viability of a pretreatment program may show substantial problems with required industrial pretreatment from both a spacial and fiscal perspective. We suggest this assessment also address water quality criteria development resulting from the NRDC consent decree dealing with toxic substances and address progress in EPA's publicly-owned treatment works toxic study. Characterization of toxic substances in the Milwaukee wastewater flows can be compared to the toxic study to determine if

(354 significant problems could develop or are occurring.

### Systems Alternatives

The proposed action involves elimination of many outlying wastewater facilities and the construction of interceptors to the two Milwaukee facilities, via existing interceptors. We do not have any objection to the regionalization alternative being proposed since outlying waters will be improved and small incremental additions would be realized at the MMSD facilities. However, a number of alternative interceptor routes may impact sensitive areas, such as wetlands. The level of detail of interceptor routings currently precludes a good analysis of measures to minimize such intrusions. The Department of the Interior will withhold further comment and until more detailed analysis of routings can be undertaken. If possible, needed permits for construction of the interceptors including temporary access roads should be identified.

(536

The draft statement is deficient in assessing the impact caused by regionalization and subsequent growth in new areas, especially environmental corridors. Particularly distressing is the apparent loss of water surface area, including wetlands. Table 4.5 of the main EIS suggests almost 2,000 acres will be lost between 1975-1995 while between 1985 and the year 2000, a net increase of 2 acres will result. These figures appear to be for the entire 208 planning area and not just the MMSD planning area. This should be resolved in the final statement. We also question how a loss of the magnitude projected (occurring) could be allowed if the areawide corridor concept is adhered to and how such significant loss can be abruptly terminated in the post-1995 period. The losses portrayed have not been analyzed with respect to the significance of the loss to fish and wildlife and general environmental quality. The statement needs substantial upgrading to assess in detail the loss contemplated, what assumptions were made to account for the loss, where the loss will occur, how much of the loss is inconsistent with the 208 plan for environmental corridor preservation and what measures will be taken to assure compliance with Executive Order 11950 and Natural Resources Board Policy NR 1.95. Also, we recognize that the corridor concept does not protect all wetlands or all wildlife habitat. Grant conditions and constraints on sewer extension approval which directly or indirectly affect wetlands should be considered as mitigation. Because of requirements in both EPA and DNR water quality planning regulations, we urge that no modification to corridors (except enlarging areas to be preserved) should be entertained or approved because of the apparent lack of interest in the communities to preserve these areas.

### Combined Sewer Overflow

We support the maximum cessation and treatment of combined sewer overflows, consistent with judicial interpretation. Therefore, any alternative comparable to the Modified Total Storage Alternative, with adequate protection to ground water, would be acceptable. We favor the above alternative, because the maximum amount of water would receive some treatment with the added advantage of treating for metals should MMSD ever be required to do so.

522 We do note that substantial quantities of excavated material will be required for tunnel and cavern construction. If the decision is made to pursue this storage and treatment alternative, analysis of the availability of disposal areas will have to be addressed in detail. Fill activities in Lake Michigan and area watercourses or wetlands should be discouraged as a mitigation measure to minimize future aquatic habitat loss.

537 Construction of tunnels and caverns will also require dewatering of excavation sites over long periods of time. The statement needs to address where this water will be discharged, how it will be treated, if at all, and what measures will be taken to minimize oil, hazardous materials, and toxic substances from construction activities, including spills and other accidents, from entering area waterbodies.

#### 99 Outfall Relocation

There has been some acknowledgement of the relocation of the Jones Island outfall to open Lake Michigan waters east of the outer harbor. No assessment is included for this possible measure in the draft statement. We are concerned that many issues may not be adequately treated in the final statement. We are specifically concerned with impacts to fishery resources, especially impacts to nearshore spawning areas, since the statement seems only concerned with locating the outfall in an area which would not impact water supply or swimming beaches. We recommend a separate EIS be prepared on any relocation. In addition to our fishery concerns, which would need detailed field study, we have a number of general concerns regarding effluent relocation:

1. Biologically, it is better to treat effluent than to attempt to disperse persistent aquatic contaminants.
2. Increased monitoring difficulty will be experienced.
3. There will, in our opinion, be less chance to require better treatment in the future because effluent impacts could be less obvious.
4. Dilution of persistent contaminants in a resource such as Lake Michigan would be inconsistent with attempts to set limited use zones which should be as small as practicable.
5. Return of more fish to the outer harbor before sediments have reduced metals and toxic substances content would expose more pollution-intolerant benthos and fish to greater concentrations of these materials for longer periods of time. Biomagnification of these substances would be greater than occurs now which could impact the viability of the fishery and pose public health concerns.

#### Water Quality

538 The assessment of water quality, especially for the outer harbor is inconclusive and extremely difficult to follow because discussions and tables are located in various portions of the EIS volumes. We are particularly concerned with the lack of uniform water quality values and uniform assessment of various parameters. For instance, Tables V-1, Jones Island Appendix; 5-7, Combined Sewer Appendix; and 8a Water Quality Appendix present "existing" water quality values, but not for all parameters. Tables V-1 and 8a do not even reflect the same existing values. The data are not clearly stated as being predicted or measured when referring to existing conditions. For a study of this magnitude, only measured values which are currently valid, should be used. The final statement should reflect a change to make these tables consistent and valid.

539 It is necessary to relate these existing (and future) water quality conditions to the Wisconsin Water Quality Standards and the International Joint Commission (IJC) water quality objectives for Lake Michigan. This is particularly important for a metal such as cadmium since Tables 8a and 5-7 show that existing levels exceed the IJC objective by a factor of 6.5. Complicating the problem of data interpretation is the fact that the analytical limit of detection is a higher concentration than the recommended objective of the IJC, but lower than the Wisconsin Water Quality Standard. These issues need to be portrayed to clearly highlight residual problems with and without the alternatives and with and without pretreatment and side-treatment of toxic materials. This information is also necessary to extend the impact analysis from percent changes in loadings to actual effects to aquatic biota.

540 Based on our review, there appears to be immediate concern with cadmium and copper levels in the outer harbor. Lead methylation potential and hexavalent chromium values are absent from the current assessment and should be included in the final statement. Discussion of these parameters as well as others requested in our effluent quality comments should be included in the final document. Heavy metals should receive as detailed an assessment as conventional pollutants.

541 Determination of residual water quality problems with and without instream measures is necessary to determine adherence to full fish and aquatic life criteria in the inner harbor and tributary streams. Serious problems could be realized regarding fishery contamination if these sediments are not removed. The statement should address what water quality conditions, including metals and toxic substances, are attainable with and without instream measures and indicate variances, where they may exist, to fully protect water quality standards.

(542) Parks and Recreation

Numerous parks have been identified in the environmental impact statement that would be adversely affected by the proposed project. Potential impacts include the direct physical disruption of parkland and related recreational facilities. Such disruptions could have the additional adverse effect of diminishing the ability of the local park and recreational systems to deliver much needed recreation services. In this respect, all aspects of the proposed project should be closely coordinated with the appropriate park and recreation officials. To minimize the adverse effects to park and recreational resources, we suggest the following mitigation measures be considered for each affected park site and provided, if appropriate.

1. Vehicular and pedestrian access should be maintained. The potential for temporary entrances at new locations should be discussed with local park and recreation officials.
2. Barriers and/or buffers which minimize adverse noise impacts from construction equipment should be provided.
3. Disruption of utilities should be avoided. For example, the loss of water service might cause the closing of a swimming pool. Loss of gas or electricity could cause the closing of an entire recreational complex.
4. Vegetation in the area of construction should be protected from damage by heavy equipment. Trunks of trees should be protectively wrapped (2 by 4 lumber may be wired together and wrapped around trees for protection). Low branches which become damaged should be properly pruned. Small shrubs which might be lost should be temporarily transplanted and returned to their original location after construction.
5. All areas should be restored to the preconstruction condition. Areas left bare by construction should be reseeded or sodded. All trees and shrubs lost or damaged should be replaced with landscaping material of at least equal size, value, and utility.
6. Soil compacted as a result of heavy machinery should be scarified or otherwise loosened to promote healthy plant growth.
7. All debris and surplus materials from construction should be removed from the area as construction progresses and not as a last minute cleanup effort. All possible precautions should be taken to prevent soil poisoning by spills of toxic materials such as oils, fuels, and solvents.

8. The feasibility of coordinating project construction with park-related construction activities should be investigated. The potential for development of bicycle/pedestrian lanes along disrupted areas should be discussed with park officials.
9. Park and recreation officials should be contacted about project scheduling. If possible, construction activities should be planned to coincide with low usage periods when the least interference to delivery of recreational services would occur.
10. The State Liaison Officer who is responsible for administration of the Land and Water Conservation Fund program in Wisconsin is Mr. Paul N. Guthrie, Jr., Director, Office of Intergovernmental Programs, Department of Natural Resources, Box 7921, Madison, Wisconsin 53707. His office should be contacted to determine if any Land and Water Conservation Fund-assisted parks would be converted to other than public outdoor recreational uses either temporarily or permanently. Temporary conversions require use permits while permanent conversions require replacement of parkland. Section 6(f) of the Land and Water Conservation Fund Act states:

No property acquired or developed with assistance under this section shall, without the approval of the Secretary, be converted to other than public outdoor recreation uses. The Secretary shall approve such conversion only if he finds it to be in accord with the then existing comprehensive statewide outdoor recreation plan and only upon such conditions as he deems necessary to assure the substitution of other recreation properties of at least equal fair market value and of reasonably equivalent usefulness and location.

Affected Environment

(543)

The proposed program will have no significant impact on the mineral resource potential of the area. For completeness, we recommend that a statement to this regard be incorporated in a subsection of Chapter 4, Affected Environment.

544

Also, it should be noted that there are 12 Bureau of Land Management islands located in the Milwaukee River in the study area. Any improvements to water quality would benefit uses of these areas.

Summary Comments


The Department of the Interior is cognizant of the extreme complexities which have resulted from litigation regarding the Milwaukee sewerage facilities. However, there are several concerns regarding fill activities, effluent quality, residual water quality



in the downtown area, and sensitive area development such as wetlands in the service area, which need increased effort to minimize long-term efforts. Our main concern is that the present proposals, which lack instream measures and toxic substance removal and/or treatment, would result in little or no long-term improvement at a very high price. Continued introductions of increased pollutant loadings without a well defined long-term strategy for minimizing zones of degradation and establishing maximum pollutant loadings in permits improve the existing condition.

We appreciate the opportunity to provide these comments in a spirit of constructive coordination and look ahead to further opportunities to improve the water quality and fishery of Lake Michigan for future generations.

Sincerely yours,

A handwritten signature in cursive script, reading "Sheila D. Minor".

Sheila D. Minor  
Regional Environmental Officer



# United States Department of the Interior

FISH AND WILDLIFE SERVICE

IN REPLY REFER TO:

GREEN BAY FIELD OFFICE (ES)

Univ. of Wisconsin--Green Bay  
Green Bay, Wisconsin 54301

June 17, 1980

Mr. Eugene Wojcik  
U.S. Environmental Protection Agency  
Region V  
230 South Dearborn Street  
Chicago, Illinois 60604

Dear Mr. Wojcik:

545

This updates remarks made by Tim Kubiak, of my staff, at the April 22, 1980 meeting concerning preparation of an Environmental Impact Statement (EIS) for upgrading of the Jones Island and South Shore wastewater facilities of the Milwaukee Metropolitan Sewerage District. The meeting was called to discuss alternative sites for treatment plant expansion, including filling of up to 40 acres of Lake Michigan.

Based on our current information we would oppose the proposals to fill approximately 10 acres of Lake Michigan at Jones Island and 30 acres of Lake Michigan for the South Shore plant.

The littoral zone of the lake, less than 30 feet deep, has long been known to be the most productive portion of the lake from the fishery standpoint. Almost all fish inhabit this zone at least sometime in their life. In addition, the nearshore area is used as spawning sites by many Great Lakes fishes. Existing records indicate that whitefish, for instance, spawn in the shallow waters of the entire lake. Population increases of whitefish, lake perch, lake herring, lake trout and smelt are taking place because of fishery management programs and reduced pollution into the lake. To sustain these higher populations, potential spawning areas, such as the Milwaukee Harbor and the South Shore site, must be protected.

We usually recommend denial of a permit for non-water dependent structures because they are unacceptable uses of public waters unless it can be demonstrated that the proposed use is in the best public interest and that no alternative sites are available. In this instance, the wastewater facilities need not be located in Lake Michigan because the City has either bought or identified land for this purpose.

Dredging in Lake Michigan could cause serious pollution problems. Jones Island, in particular, presents problems because of the known, highly polluted sediments in the inner harbor area. In addition, impacts of dewatering fill areas have not been analyzed. Analysis of fill material, in conjunction with sediment quality would be needed to adopt appropriate effluent limitations for the WPDES permit.

Because of, the lack of water dependency, the presence of alternative upland sites, potentially adverse impacts on water quality, and the loss of significant aquatic habitat, we would oppose proposals to fill 10 acres at Jones Island and up to 30 acres at the Shore South site. I suggest that EPA develop in more detail, the upland alternatives.

I suggest another meeting be held sometime in July to discuss other aspects of the Master Facility Plan. I will withhold additional scoping comments until we are provided more information on service areas, construction sites, environmentally sensitive areas, effluent impacts and compliance with State water quality standards and the 1978 International Joint Commission Water Quality Agreement.

I appreciate your invitation to provide early input in development of the Project and EIS. Please notify me of your selection for a scoping meeting date.

Sincerely yours,

*R. A. Hoppe*  
Richard A. Hoppe  
Field Supervisor

cc: Dottie Harrell, WDNR, Madison, WI  
Paul Scott Hausman, WDNR, SE District, Milwaukee, WI  
Bruce Leon, EcoSciences, Inc., Milwaukee, WI  
Thomas Brennan, MMSD, Milwaukee, WI  
William Krill, MMSD, Milwaukee, WI  
Jim D'Antuono, CoE, St. Paul, MN



United States  
Department of  
Agriculture

Soil  
Conservation  
Service

4601 Hammersley Road  
Madison, Wisconsin 53711

December 31, 1980

Howard S. Druckenmiller, Director  
Bureau of Environmental Impact  
Department of Natural Resources  
Box 7921  
Madison, Wisconsin 53707

Re: Draft Environmental Impact Statement for the Milwaukee Water  
Pollution Abatement Program

Dear Mr. Druckenmiller:

The following comments on the above-mentioned draft are for your consideration:

- 550 1. Silty loam is listed as a soil textural class (page 4-23). We suggest  
that "silt loam" be used in its place.
- (551) 2. The "C" factor for corn is too high for Wisconsin conditions.
- (552) 3. The Soil Conservation Service does not designate land for preservation  
(page 5-39). We do, however, have a statewide list of soils which meet  
the national prime farmland criteria.
- 553 4. Construction activities which produce sediment to other lands, streams,  
lakes, etc., are mentioned several times in the draft. We suggest that  
good conservation practices which meet the Milwaukee County Soil and  
Water Conservation District Technical Guide be utilized. The draft is  
not specific on the sediment reduction methods. Vegetated areas should  
be restored to permanent vegetation by seeding and mulching or sodding  
immediately after construction is completed.
- 554 5. Conservation practices, where needed and acceptable, are also recommended  
to reduce the amount of runoff from land disposal areas.
- (555) 6. We assume that alteration of the creek channels, flood plains, and  
drainage patterns will be restored to the existing or designed conditions  
after construction (See Appendix III, page IV-15).
- 556 7. A large volume of earthfill is discussed in Appendix III (page I-4).  
Pollution control facilities for the borrow area were not mentioned.  
We suggest that these facilities be included in the construction plans.

We appreciate the opportunity to review this draft environmental impact statement.

Sincerely,

*Cliffon A. Maguire*  
Cliffon A. Maguire  
State Conservationist

cc: Norman Berg, Chief, USDA, SCS, Washington, D.C.  
Office of Coord. Environ. Activities, Office of Secy., USDA, Washington, D.C.  
Gene Wojcik, Chief, EIS Sect., Water Division, EPA, Chicago, IL



The Soil Conservation Service  
is an agency of the  
Department of Agriculture

SCS-AS 1  
10-79



UNITED STATES DEPARTMENT OF COMMERCE  
The Assistant Secretary for Policy  
Washington, D.C. 20230

JAN 16 1981

Mr. Gene Wojcik  
Chief, EIS Section  
Water Division  
U.S. Environmental Protection  
Agency, Region V  
230 South Dearborn Street  
Chicago, Illinois 60604

Dear Mr. Wojcik:

This is in reference to your draft environmental impact statement entitled, "Milwaukee Water Pollution Abatement Program." The enclosed comment from the National Oceanic and Atmospheric Administration (NOAA) is forwarded for your consideration.

Thank you for giving us an opportunity to provide this comment, which we hope will be of assistance to you. We would appreciate receiving five copies of the final statement.

Sincerely,

*Robert T. Miki*

Robert T. Miki  
Deputy Assistant Secretary for  
Regulatory Policy (Acting)

Enclosure Memo from: Mr. Eugene J. Aubert  
Environmental Research Laboratory  
NOAA

RECEIVED  
JAN 21 AM 11:33



U.S. DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
ENVIRONMENTAL RESEARCH LABORATORIES  
Great Lakes Environmental Research Laboratory  
2300 Washtenaw Avenue  
Ann Arbor, MI 48104

December 22, 1980

TO: PP/EC - Joyce Wood  
FROM: RD/RP24 - Eugene J. Aubert  
SUBJECT: DEIS 8011.09 - Milwaukee Water Pollution Abatement Program

We have reviewed the subject DEIS and have the following comments.

546 Our major general criticism of the draft EIS relates to its lack of an evaluation of the effect of the pollution abatement program on Lake Michigan. Although the program will have immediate local effects it could also have a significant, though perhaps subtler, impact on the main lake. This relates to near shore pollution in the immediate vicinity of Milwaukee as well as to long-term effects on the Lake Michigan ecosystem. For the near shore areas, potential problems relate to bacterial contamination and nutrient enrichment whereas on the whole-lake scale, the effect of persistent bioaccumulating toxicants could be particularly important. Since no evaluation was made of the effect of the pollution abatement program on these waters, the question of the whole-lake ecosystem impact is unanswered. One area where this seems particularly relevant is the positioning of the outfall of the Jones Island plant. Whether it is discharged to the outer harbor or directly to the lake could have greatly differing impact on the whole-lake ecosystem. These impacts should be evaluated.

547 I have a concern with the NEPA process that goes beyond the analysis presented or perhaps required in this DEIS. The planned expenditure of \$1.8 billion for the Milwaukee Water Pollution Abatement Program represents a lot of money. The DEIS takes the perspective of the single problem and project. What is lacking is the big picture--from the viewpoint of the health of the Lake Michigan ecosystem. Relative to the marine pollution problems of Lake Michigan are the stresses from Milwaukee covered by this DEIS the most critical in terms of effects on the health of the Lake Michigan ecosystem. If we had a limited budget to improve the health of the Lake Michigan ecosystem and identified and ranked projects in priority order by a criteria of incremental cost-effectiveness, would the Milwaukee Water Pollution Abatement Program be within or outside the budget mark? While I recognize that court actions have taken place and directives prepared, I have a philosophical concern about this NEPA process. We cannot afford a goal of zero discharge. The lakes have an assimilative capacity. Are we getting the best "bang-for-the-buck" by undertaking this system component - The Milwaukee Water Pollution Abatement Program, cost \$1.8 billion?



10TH ANNIVERSARY 1970-1980  
National Oceanic and Atmospheric Administration  
A young agency with a historic  
tradition of service to the Nation

Aside from these general comments, some specifics are listed below:

- 548 - The mathematical modeling methods used to predict water quality impacts in Appendix VII were relatively crude and did not make use of the state-of-the-art techniques. For example, phosphorus loading plots could be used to support the rather tenuous conclusions made regarding Big Muskego Lake (App. VII, p. 16, last full paragraph). Other examples of such off-handed judgements abound and leave the reader with little confidence in the validity of the analysis.
- 549 - In contrast, the level of modeling in Appendix V seems much more sophisticated. However, in this case the lack of even a brief description of the techniques precludes a critical evaluation of the results. A brief description or references to other publications is necessary to judge whether the ultimate conclusions have validity.



DEPARTMENT OF HEALTH & HUMAN SERVICES

Public Health Service

Centers for Disease Control  
Atlanta, Georgia 30333

(404) 262-6649  
December 19, 1980

Mr. Gene Wojcik  
Chief, EIS Section  
Water Division  
Environmental Protection Agency  
Region V  
230 South Dearborn Street  
Chicago, Illinois 60604

Dear Mr. Wojcik:

We have reviewed the Draft Environmental Impact Statement (EIS) for the Milwaukee Water Pollution Abatement Program. We are responding on behalf of the Public Health Service.

The EIS does not consider reducing per capita water use in conjunction with any of the alternatives discussed. Local codes should be reviewed and revised to require water saving devices in all new construction and in the replacement of existing fixtures. The final EIS should address this issue.

Thank you for the opportunity of reviewing this draft statement. We would appreciate receiving a copy of the Final EIS when it becomes available.

Sincerely yours,

Frank S. Lisella, Ph.D.  
Chief, Environmental Affairs Group  
Environmental Health Services Division  
Bureau of State Services

CHESTER A. GERLACH

STATE REPRESENTATIVE  
21st Assembly District

112 North State Capitol  
Madison WI 53702  
Telephone (608) 266-5810

20 Menomonee Avenue  
South Milwaukee, WI 53172  
Telephone (414) 764 2082



WISCONSIN LEGISLATURE  
ASSEMBLY CHAMBER  
MADISON  
53702

CHAIRMAN  
Assembly Committee on Audit

CO-CHAIRMAN  
Joint Committee on Audit

VICE-CHAIRMAN  
Committee on Transportation

MEMBER  
Committee on Energy  
Committee on Financial  
Institutions

9 January 1981

Mr. Gene Wojcik, Chief, EIS Section  
United States Environmental Protection Agency  
250 S. Dearborn Street  
Chicago, IL 60604

Dear Mr. Wojcik:

I am writing to express the concern I have relative to the Environmental Impact Statement on the Milwaukee Water Pollution Abatement Program. Since the South Shore Wastewater Treatment Plant is located in my district, I will confine my thoughts to the proposed expansion of this facility.

I do not support a northward expansion of the South Shore Wastewater Treatment Plant. With odors being a problem from the present facility, the potential for greater odors in the nearby residential areas would seem to increase if the plant expands towards these homes. It would seem that an important component of any expansion plans, regardless of the direction, would be the control, if not the total elimination, of obnoxious plant odors.

A second reason for my opposition to northward expansion is the visual effect of having sewerage plant so close to private residential properties along the shoreline in South Milwaukee. I believe that a sewerage plant presents an unsuitable shoreline facility when it borders so close to private residential property.

Another issue which emerges in the expansion proposals, is the safe handling and use of chlorine during unloading, and also during the treatment process. With news of major chemical spills appearing more frequently in the media, the use of such a potentially deadly chemical so close to homes, health care facilities, stores, and other places of business raises serious questions about the overall safety of the Metro operation, and about plans for evacuation and clean up in the event of a spill. Before any expansion plan is approved for South Shore, the questions raised about chlorine safety must be addressed. Expansion in any direction would pose serious threats to the entire 21st Assembly District in the event of chlorine mishandling of spillage.

Regardless of what expansion plan, if any, is utilized, all sludge lagoons presently in existence at South Shore must be closed down and filled in. In the

Gene Wojcik  
Page 2

January 9, 1981

past the lagoons have been one of the largest sources of odors in the southeast section of South Milwaukee. The closing of the lagoons, along with strict enforcement of air quality standards for other industries in the surrounding area, would be a major step in alleviating the reoccurring air pollution problem in the areas of South Milwaukee and Oak Creek which surround the South Shore facility.

In summation, South Shore must not be expanded without first considering the impact upon all residents, both those living in the Metro District, and those residing outside of the district in South Milwaukee. High air quality around any new or expanded facility, along with the closing of the sludge lagoons and control of other air pollution sources must be a key component to the Pollution Abatement Program. With air quality, another major component must be chemical safety. Proper handling procedures must be guaranteed, and safety and evacuation plans must be developed.

I believe the issues outlined in this letter were not fully addressed in the preliminary EIS. I do feel that they must be analyzed in the final draft, and included in any recommendation for implementing the Pollution Abatement Program. I trust that my concerns will be considered by the EPA, and that the welfare and safety of my constituents will be foremost in your recommendations.

Sincerely,

*Chester A. Gerlach*  
CHESTER A. GERLACH  
State Representative  
21st Assembly District

cc: Tom Wolf  
Senator William Proxmire  
Senator Robert Kasten  
Representative Clement Zablocki  
Mayor Chester Grobschmidt, South Milwaukee  
Mayor Don Hermann, Oak Creek

bjw

1. January 1981

WISCONSIN LEGISLATURE  
ASSEMBLY CHAMBER  
MADISON  
53702

John McGuire  
Region V Administrator  
U.S. Environmental Protection Agency  
230 South Dearborn St.  
Chicago, IL 60604

Howard S. Druckenmiller  
Director, Bureau of Environmental Impact  
Department of Natural Resources  
P.O. Box 7921  
Madison, WI 53707

Re: Comments on the Draft Environmental Impact  
Statement prepared by DNR and U.S. EPA on  
the Milwaukee Metropolitan Sewerage District  
Water Pollution Abatement Program

Dear Gentlemen,

559

These comments are submitted to assist the agencies in improving the final Environmental Impact Statement on the Milwaukee Metropolitan Sewerage District (MMSD) Water Pollution Clean-up Program.

Several general comments are in order. The agencies should be able to present far more important information on far less paper in the final EIS. It is truly surprising that so little valuable information or analysis was presented in the massive (whether measured by weight or number of pages) volumes that comprised the draft EIS.

The organization of the draft EIS is appalling. The table of contents is several dozen pages inside the draft and is difficult to find. We did not find a single cross reference between the draft and the ten (10) appendixes. The final EIS should clearly cross reference, by page, to other portions of the document to enable citizens to utilize the information that is presented.

In addition to the length and disorganization of the draft, it is vague and poorly written. We wondered why many of the tables were presented twice. We also believe that many of the tables could be presented in a more concise form. The number of uninformative pages in the EIS is so great as to discourage most citizens from

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attempting to read the document. For example, we suggest that 40 pages of tables in Appendix X regarding fiscal and economic impacts be eliminated (tables 22-50) as they are mere filler. The total household costs by community could be more simply presented in one or two tables instead of 40 pages.

We also recommend that you eliminate Appendix 1 Notices of intent. This is filler. Surely a very short summary will do on this topic.

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The draft EIS makes very few recommendations. It generally presents selected facts and discusses factual conclusions which flow from assumed facts. It should be unnecessary for us to advise the agencies that impact statements must be analytic rather than encyclopedic. It is through the impact statement that environmental concerns are integrated into the very process of agency decision-making. We are unaware of any exception to this legal mandate. This EIS comes nearly a year after the decision it analyzes. However, changes would be required in the Master Facilities Plan adopted by the MMSD on June 5, 1980 if the EIS disclosed unacceptable impacts, whether environmental or economic.

The EIS should contain a discussion of the environmental consequences of the proposal and of alternatives. Worst case analyses are usually included in impact discussion, but not in this draft. In fact, the draft consistently avoids a discussion of the worst case impacts. We do not believe this provides the full disclosure required by law.

We would direct your attention to the discussion, or lack of discussion, of the worst case basis in the following areas:

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a) fiscal impact upon low income persons and renters,

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b) solids disposal and the impact of heavy metals therein on the alternatives,

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c) groundwater quality and impacts upon the quantity of groundwater.

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d) odor problems at the South Shore plant that do exist,

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e) secondary impacts of migration from urban city to suburban areas,

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f) the industrial pretreatment program for removal of toxic substances,

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g) what happens beyond the 20 year planning period in terms of impacts, and

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h) what are the worst case energy impacts and costs over the real life of the project.

We have mentioned only a few of the areas where a discussion of the worst case basis is lacking and necessary in the Final EIS.

(353) We are disturbed by the limitation in the analysis to a 20 year time frame. This is certainly not realistic. It appears that the authors of the EIS feel themselves bound by federal sewage construction grant program planning time frame of 20 years. The EIS is not an application for State or Federal wastewater construction grants. This time period may be useful for other purposes, but the proposal under consideration commits the MMSD and people of the Milwaukee area to several alternatives far beyond the 20 year period.

(352) We are especially concerned about the lack of innovative technology and the energy requirements the proposal commits MMSD to for period beyond 20 years. The time frame must be extended to the real life of the new facilities in the analysis of alternatives and impacts in the final EIS.

The draft EIS contains basic inconsistencies, some of which have been seen before at the MMSD. For example, the draft EIS goes to some length to explain that MMSD is not responsible for water quality. That is, it is not a legally designated water quality agency. This is true and MMSD is under no legal obligations to correct water quality problems. Yet, in the discussion of the need for interceptor sewers water quality concerns over a handful of allegedly failing septic systems is presented as justification for these multi-million dollar projects. More comments will be made below on the interceptor discussion and appendix VIII, but our general comment is quite simple: be consistent.

(347) Our last general comment is regarding the time period allowed for public comment. It may be that the agency has received very few comments from the public on the draft EIS, whether at the public hearing or in writing. We believe our comments on the problems with the readability of the EIS suggest one reason for low public interest in the draft. However, the short time period for review of the draft has made public participation all the more difficult. We recognize that the agency extended the time period for public comment by two weeks, but it is still not enough time considering the length of the EIS.

We hope that agencies will provide additional time for public comment on the final impact state. The time period for public comment should consider the magnitude of the document and the proposal it analyzes.

The time for comments does not permit us to list each detailed comment, but we submit for your consideration the following specific comments on the draft:

1. 5. 7. 3 Areas of Controversy draft at 1-22.

The draft states that "The ultimate acceptability of district-wide financing will, in all likelihood, be reserved in the court."

(565) As long as the draft is speculating, we would respectfully suggest that citizens be aware that the legislature is likely to resolve this issue when it considers measures to reform the present structure of the City & County Sewerage Commission.

(566) The draft (draft at 3-1) emphasizes that the interceptors are intended to permit suburban communities to grow to SSWRPC projected population levels. The EIS, however, fails to analyze whether the SSWRPC projections are accurate.

(567) The EIS (draft at 5-5) leaves the reader with the impression that water quality in Little Muskego Lake would noticeably improve if the discharges from the municipal treatment plant ended. This is not accurate. The evidence presented by the DNR at hearings and in the EIS on the proposed Little Muskego Lake Rehabilitation project that the lake receives nutrient loading from nonpoint sources far in excess of levels necessary to produce nuisance plant growth and eutrophication. The 200 plan, also available to the agencies also indicates the magnitude of the nonpoint problem. The final EIS should be careful not to misstate the benefits that can be expected from the MMSD population clean-up program.

#### Appendix X Fiscal/Economic Impacts

(497) The fiscal impacts are very conservative. The 6% interest rate assumed on county bonds to finance the capital constructions is clearly not accurate or reasonable. Recent municipal bond sales have been nearly 9%. The impact of the higher interest rate is profound and should be discussed as a worst case impact. For example, if a 9% effective interest rate will result in 26% increase in the debt service for WPAP. In addition the EIS does not consider the impact of future County capital debt.

(495) When examining the possible innovative alternatives the EIS does not consider the benefits and impacts of construction of a treatment tunnel underlying the impervious Marquette Shale. Such a treatment tunnel may be used to generate electrical power, avoid possible contamination of groundwater, and provide Milwaukee citizen's with a facility which will serve it better in the long run (beyond the 20 year planning period). The EIS should examine such innovative alternatives.

(501) Finally, the EIS projections of available grant funds does not mention the impact of Public Law 96-483 which recently amended the Clean Water Act. Public Law 96-483 provides that federal grant assistance shall not be used after November 15, 1981, for the construction of any portion of a publicly owned wastewater treatment works (POTW) designed to serve a major industrial user. Surely this will have a significant impact upon expected federal grant monies.

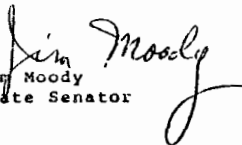


Draft EIS Comment  
11 January 1981  
Page 5

We hope these comments will assist the agencies in presenting a far better final EIS.

Sincerely,

  
THOMAS J. CRAWFORD  
Vice Chairman of Environmental Resources

  
Jim Moody  
State Senator



HISTORIC PRESERVATION DIVISION

January 10, 1981

Mr. Gene Wojcik, Chief  
EIS Section, Region V  
Environmental Protection Agency  
230 South Dearborn Street  
Chicago, IL 60604

Dear Mr. Wojcik:

We have read the Draft Environmental Impact Statement for the Milwaukee Metropolitan Sewerage District Water Pollution Abatement Program. Those sections of the report concerning archeological and historical sites contain some inaccurate data, as well as a number of typographical and factual errors. But more importantly, the report fails to adequately reflect the large amount of work that has already been done to meet the federal requirements regarding historic preservation. The following comments primarily address this last issue in an attempt to show those areas where the program is in compliance with the federal laws and where it is not.

As you are aware, the EPA, as the Water Pollution Abatement Program's lead federal agency, has the responsibility to ensure that the program is in compliance with Section 106 of the National Historic Preservation Act (PL 89-665) and the Procedures for the Protection of Historic and Cultural Properties (36 CFR Part 800). Each of the WPAP's activities is in a different stage of the compliance process. Barring any alignment changes, all necessary work has been completed for the Interceptor Alignments; a Memorandum of Agreement (MOA) is being developed for the Jones Island WWTP; and some preliminary inventory work has been done for the South Shore WWTP, the CSO Abatement program, and the Solid Waste Management programs. Little or no analysis has been undertaken to determine the program's Secondary Growth Impacts. Regrettably, the report does not discuss these individual activities in an orderly and consistent manner.

Chapter 4 purports to describe those elements of the human and natural environment within the planning area that could be affected by or place limits on planning for the MPAP. The planning area, as shown in Figure 2.1, includes all of Milwaukee County as well as portions of southern Ozaukee County, southeastern Washington County, and eastern Waukesha County. Yet, in that section of Chapter 4 concerning Archaeological and Historical Sites (4.2.10), only the Jones Island planning area is considered and the data used is long out of date. We recommend that this section be rewritten to include the entire planning area and to reflect the more current information contained in the Master Plan Inventory and other reports prepared by Great Lakes Archaeological Research Center, Inc. for MMSD. Furthermore, we recommend that those responsible for rewriting this section contact our office to obtain the results of the recently completed historical and

Mr. Gene Wojcik

-2-

January 10, 1981

architectural survey of the city of Milwaukee, and the preliminary survey of the remainder of Milwaukee County and the industrial survey of the Menomonee River Valley.

570 Chapter 5 is supposed to describe the environmental impacts that may result from the program activities discussed in Chapter 3. It is also supposed to list those steps that have been taken, or will be taken, to avoid or mitigate any adverse impacts. The section on Archaeological and Historical Sites (5.2.13) fails to adequately meet these objectives. Only two of the five activities discussed in Chapter 3 that may have an impact on historic and cultural resources have been addressed: the Jones Island WWTP and the CSO Abatement Program. Those activities which were omitted, but which should be included in the revision of this section, include the South Shore WWTP, and the Interceptor Alignments.

There is a general problem with the language in Section 5.2.13. The discussion of Jones Island, while generally correct, contains a number of misstatements. The present status of the Jones Island project, as I understand it, is as follows: In the course of the Phase I inventory of the Jones Island Planning Area, the plant itself was found to be a significant engineering structure. The plant was determined eligible for inclusion on the National Register by the Secretary of the Interior on September 11, 1979. In accordance with 36 CFR Part 800 (not 44 CFR Part 800 as cited in the report) the EPA has prepared a Preliminary Case Report and submitted it to the Advisory Council on Historic Preservation for their comments. A Memorandum of Agreement will be drawn-up, to be signed by the relevant parties, outlining those steps which will be taken to mitigate the adverse impacts to the Jones Island plant.

The Phase I inventory also indicated that, though a significant amount of development has occurred in the vicinity of the Jones Island WWTP, it was possible that significant archeological deposits could be present in the proposed expansion area. Controlled test excavations were recommended. The excavations, carried out in the summer of 1980, recovered only a small amount of historic material. In view of the expense and technical problems involved, the investigating archeologist and the SHPO recommended that no further work be done.

571 The discussion of the CSO Abatement Program in Section 5.2.13, like that for the Jones Island WWTP, is generally correct, but again the language used is somewhat confusing. In discussion with the MMSD, it was generally agreed that to initiate intensive archeological surveys or to design specific mitigation measures before a final alternative has been selected would be premature. We have recommended that when a final alternative has been decided upon, a copy of the project plans be submitted to our office for review. Based on our review, and in consultation with the MMSD and EPA, we will recommend actions we believe necessary for the final alternative to comply with Section 106 and 36 CFR Part 800. This compliance strategy is discussed fairly well in Section 5.2.13 and in the opening paragraphs of Section 5.13 of Appendix V, but the latter goes on to evaluate the individual CSO alternatives and draws conclusions regarding the potential impact that these alternatives might have on historic and archeological resources. We feel that at this time there is little basis upon which to make such evaluations and disagree with a number of the conclusions made by the authors of this section.

THE STATE HISTORICAL SOCIETY OF WISCONSIN

810 STATE STREET MADISON, WISCONSIN 53706 RICHARD A. FINNEY DIRECTOR

January 10, 1981

For example, we do not believe that the visual impact that the pumping stations and dropshaft facilities may have on National Register properties are necessarily "a tangential impact which would not directly affect these structures from any architectural or historical perspective." An adverse affect to a National Register property, as defined in 36 CFR Part 800.3(b), can include the "introduction of visual, audible, or atmospheric elements that are out of character with the property or alter its setting." Thus the statement in Appendix 5 contradicts the federal regulations. Without further specifics on the location and appearance of the structures, there is no basis upon which to evaluate their visual impact.

The statement we most strongly disagree with is contained in the concluding paragraph of Section 5.13, Appendix V:

"However, after a preliminary analysis none of the proposed alternatives appeared to disrupt any identified sites or would have any long-term impacts on archaeological or historical sites. If archaeological remnants are discovered during excavation, the construction process would have to be halted until appropriate investigations could be made by an archaeological specialist."

This statement assumes that because there are no known historical or archeological sites in the immediate construction area, the project will have no impact on historical or archeological resources. Yet, it is very probable that there are many prehistoric and historic archeological sites in the CSO planning area that have not been identified and remain to be discovered. Only after a final alternative has been adopted and an appropriate survey made of the historically and archeologically sensitive areas will it be possible to determine the "long-term impacts on archaeological and historical sites." Those properties identified in the survey will have to be evaluated in terms of their eligibility for inclusion in the National Register, and for those determined eligible, a MOA will be needed describing the steps to be taken to avoid or mitigate any adverse affects. If, after all the actions necessary for compliance with Section 106 have been completed, previously unidentified resources are discovered, construction must halt until the requirements of 36 CFR Part 800.7 have been fulfilled.

572 Although Appendixes III and IV give a great deal of consideration to the potential effects that the expansion of the South Shore WWTW and the Solid Waste Management alternatives could have on water quality, aquatic biota, endangered species of plants and animals, air quality, etc., nothing is said about the potential affect these projects could have on historic and cultural resources. An archeological survey has been made for one area north of the existing South Shore WWTW, but the draft EIS has not demonstrated that all the areas potentially affected by expansion of the plant have been adequately inventoried. Because the landfill alternative discussed for the Solid Waste Management project has a very great potential for destroying historic and archeological sites, it is imperative that the proper compliance procedures be initiated as soon as possible.

573 Finally, the authors who prepared the analysis of Secondary Growth Impacts (Appendix IX) dismissed the need to consider impacts on historical and archeological resources because: "The regional land use plan prepared by SEWRPC considered

January 10, 1981

these EPA concerns and other issues related to secondary impacts." and "The planned sewer system in Milwaukee is intended to support the Regional Plan." (page III-2, Appendix IX). This would certainly be an acceptable reason if SEWRPC's regional plan gave adequate consideration to the identification and preservation of the region's historical and archeological resources. However, we do not believe that it does. In our comments on SEWRPC's 1978 Open Space and Recreation Plan we stated that the document did not "plan for or identify all historic properties in your area." We went on to point out that while they had identified 697 historical resources in the seven county region, our files contained over 3100 properties. Since 1978 this total has grown to well over 10,000 properties. We reject the authors' reliance on the regional plan as having any validity whatsoever.

We strongly believe that the question remains to be answered concerning how secondary growth will affect the regions' historic and archeological resources and how these affects can be mitigated.

The complexity of this project has always been overwhelming. No more so than now when faced with the problem of commenting on this huge document. We would be more than happy to discuss these comments with a representative from your office or the MMSD. If there are any questions, please contact me at (608)262-2732.

Sincerely,

Richard W. Dexter  
Compliance Coordinator

RWD:cmh

cc: Patrick Steele, Advisory Council

# SOUTHEASTERN WISCONSIN REGIONAL PLANNING COMMISSION

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January 12, 1981

Mr. John McGuire  
Regional Administrator  
U.S. Environmental Protection Agency  
230 S. Dearborn Street  
Chicago, Illinois 60604

Mr. Howard S. Druckenmiller  
Director  
Bureau of Environmental Impacts  
Wisconsin Department of Natural Resources  
P. O. Box 7921  
Madison, Wisconsin 53707

Gentlemen:

Pursuant to Mr. McGuire's Notice of Public Hearing dated November 3, 1980, and the subsequent requests made by the U.S. Environmental Protection Agency (EPA) and Wisconsin Department of Natural Resources (DNR) staff representatives at the public hearing held on the draft Environmental Impact Statement concerning the Milwaukee Metropolitan Sewerage District (MMSD) water pollution abatement program, the Southeastern Wisconsin Regional Planning Commission (SEWRPC) staff has reviewed the draft documents dated November, 1980, and has prepared the comments set forth below. It is respectfully requested that these comments be considered in the preparation of the final Environmental Impact Statement (EIS) and that this letter be entered into the formal record of the public hearing.

1. The Regional Planning Commission is gratified to note the extensive use of SEWRPC data in the preparation of the EIS. More importantly, the Regional Planning Commission is gratified at the basic endorsement in the EIS of the regional plan elements as the basis for the delineation of population and economic activity levels, land use patterns, and sanitary sewer service areas used in the analyses of secondary impacts.

- (574) 2. It is noted that much of the facility plan is predicated on the assumption that 50 percent of the infiltration and inflow will be eliminated from the sanitary sewers in the District service area. The Commission staff believes that this assumption is unrealistic, and has so indicated to the MMSD staff on a number of previous occasions. Thus, it is recommended that the EIS be revised to address the important implications of any failure to achieve the target reduction of 50 percent in clear water infiltration and inflow.

3. The SEWRPC staff notes that there has been substantial public concern expressed about the potential for groundwater pollution associated with the set of alternatives which involve "deep tunnels" for conveyance and storage of wet weather flows from the combined and separate

Messrs. John McGuire and Howard S. Druckenmiller  
January 12, 1981  
Page 2

sewer service areas. Commission analyses to date have indicated that with proper design, construction, and operation, the quality of the groundwater could be protected with these alternatives. Moreover, there appear to be no other practical alternatives which have been identified to resolve surface water pollution and sewage conveyance capacity problems in both the separated and combined sewer service areas tributary to the Milwaukee Metropolitan Sewerage District sewage treatment plants, nor have other alternatives been shown to afford a higher degree of protection against groundwater pollution.

- (575) In order to address this matter more fully however, it is recommended that the EIS be expanded to compare the groundwater pollution potential of all practical alternatives. It is further recommended that either the final EIS itself—or the preliminary engineering studies undertaken to refine the selected alternative pollution abatement plan—provide additional groundwater hydrology and water pollution analyses. These analyses should include, but not necessarily be limited to: (1) an identification of the number, location, and condition of all wells which could be influenced by the construction and operation—both short-term and long-term—of subsurface conveyance and storage facilities; (2) a quantification of the potential for these wells to induce exfiltration from the proposed sub-surface facilities; (3) preparation of appropriate detailed groundwater hydrology analyses which set forth the anticipated characteristics of groundwater movement under existing and forecast future conditions; and (4) an identification of fail-safe remedial measures to assure protection of groundwater and existing water supplies.

- (576) 4. In Appendix V to the draft EIS relating to the control of combined sewer overflows; is a discussion concerning water quality standards. It is noted that the text does not clearly distinguish between adopted DNR water quality standards, and the recommendation for changes in those standards as these recommendations are set forth in the adopted regional water quality management plan. Therefore, it is recommended that page 5-41 of Appendix V be revised to reflect this distinction. The SEWRPC staff has taken the liberty of providing a revised version of this page, modified to reflect the proper significance of those water use objectives and supporting standards which are recommended in the adopted Section 208 plan. The recommended changed wording is attached as Exhibit A.

- (577) 5. With respect to the Appendix IX to the draft EIS concerning secondary growth impacts, and the related discussions in the main body of the EIS itself, the Commission staff notes two topics of concern. First, the general concerns regarding adherence to the recommendations of the adopted regional plan are addressed in a letter dated October 10, 1980, to Mr. Michael T. Llewellyn of the DNR staff. A copy of the letter is attached as Exhibit B. With regard to the secondary growth impacts of the proposed trunk sewer element of the Milwaukee Pollution Abatement Program, the Commission staff has provided herewith as

Exhibit C, suggested wording revisions to pages 2-13 and 2-18 of Appendix IX to the EIS. Secondly, with respect to the Franklin Northeast trunk sewer itself, the Commission staff has included here-with as Exhibit D a table documenting quantitatively that the planned population to be served by the year 2000 in the Franklin Northeast trunk sewer service area could not be accommodated by the developable acreage which would be served under the alternative to upgrade six existing pumping stations; and, as Exhibit E, a letter dated July 18, 1980, with a supporting table describing the adverse effects upon the longstanding local planning efforts of the City of Franklin in seeking to implement the adopted regional plans. Exhibit F, also attached, is a table demonstrating, on the basis of long-adopted and technically sound local neighborhood plans, the existing, planned incremental and total populations which could be accommodated in areas tributary to the six pumping stations. Accordingly, it is recommended that the Franklin Northeast trunk sewer be constructed as recommended in the adopted regional plans and as approved by the Milwaukee Metropolitan Sewerage District Commissioners in their June 5, 1980 adoption of the facility plan. As identified in the enclosed exhibits, the construction of this trunk sewer--and of the trunk sewers recommended in the regional water quality management plan--is fundamental to the implementation of important adopted regional plan elements, if secondary impacts of anticipated development in the Milwaukee Metropolitan area are to be minimized.

- 578 6. With regard to solids management, it is noted by the SEWRPC staff that Appendix IV to the draft EIS relating to solids management presents a preliminary finding that land disposal and re-use of all MMSD sewage sludge on agricultural land is the most desirable and cost-effective means of sewage sludge management. The appendix further computes a cost for the provision of the land disposal alternative in the event that a short-term or long-term interruption in the agricultural land application alternatives should come to pass. The EIS analysis also assumes that the site preparation and other related costs would be considered only at the time of discontinuation of the land application system. The Commission staff believes that the text of this appendix is not sufficiently detailed, and does not present a discussion of the alternatives sufficient to provide a clear understanding of the rationale for selection of the recommended actions. It appears that the appendix follows very closely the analytic approach which was applied in the solids management portion of the facilities plan prepared by the MMSD. Because of changing cost bases, and inconsistent comparisons in various stages of screening and analysis, that facilities plan--and therefore the parallel EIS analysis--is not considered sound by the Commission staff. Accordingly, it is recommended that this section of the EIS be substantially revised and rewritten to provide consistent and comparable costs for comparison of the alternatives, to consider more explicitly and more adequately the advantages of continued production of Milorganite at the Jones Island plant and the difficulty of utilizing agricultural land disposal for all sewage sludge generated by the MMSD, and to more

adequately address the time lag and cost difficulties associated with site preparation in the event that a landfill sludge disposal option were required to be implemented as a backup system to the recommended alternative.

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7. The air pollutant emissions data presented in Appendix V to the draft EIS relating to combined sewer overflow abatement appear to be incorrect. It is recommended that these values be checked. The correct totals for 1985 from all inventoried emission sources in Milwaukee County should be as follows:

Particulate Matter	13,633 tons
Sulfur Dioxide	178,437 tons
Carbon Monoxide	161,147 tons
Nitrogen Dioxide	67,008 tons
Hydrocarbons	60,703 tons

This would logically result in changes in the computed values on page 5-94 of the draft EIS, changes in the values on page 8-71, and changes in computed values in Table 8-24. It is believed that these errors are primarily attributable to use of the 1982 area source emissions in Milwaukee County, rather than the 1985 forecast emissions total for Milwaukee County for point, line, and area sources together.

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8. Depending upon the specific wetlands concerned, the EIS consideration of wetlands as disposal sites for sewage effluent may be in conflict with the adopted regional plan recommendations concerning preservation and protection of primary environmental corridors, particularly with respect to the protection and preservation of wildlife habitat. Decisions regarding the suitability of wetlands for disposal of effluent should consider not only the groundwater and surface water flow characteristics of the wetland, but also the presence of sensitive plant and wildlife species, the sensitive "natural scientific" areas designations which are utilized by SEWRPC in its identification of high-value areas of state or regional significance, and the existing or anticipated use of these wetlands for recreational or wildlife purposes. It is requested that the EIS be modified to reflect the problems associated with any of the eight unnamed sites--which are mentioned only generically in the draft EIS--after the Commission staff has been given an opportunity to review these sites and offer further comment.

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9. The Commission staff notes that the draft EIS properly notes the possibility of a significant increase in ammonia discharge to the outer harbor, in the event that the Milorganite production is discontinued at the Jones Island plant. Since the consideration of this matter by the DNR and MMSD is continuing, it is recommended that the final EIS incorporate appropriate discussion of this matter, and include consideration of the potential for sidestream treatment to reduce the ammonia discharge, as well as a careful evaluation of the

Messrs. John McGuire and Howard S. Druckenmiller  
January 12, 1981  
Page 5

potential impacts upon water supply intakes in Lake Michigan, in the event an outfall relocation were considered for purposes of reducing the ammonia concentrations in the outer harbor.

For your use and convenience, we are enclosing as Exhibit C a copy of an internal SEWRPC staff memorandum which offers other comments on editorial, typographic or other relatively minor observations.

We trust these comments will prove helpful to you, your staffs and consultants in the timely development of a final EIS and your eventual approval of a sound, environmentally responsible and implementable approach to the important water pollution problems which face the Milwaukee metropolitan area.

Should you or your staff have any questions concerning these comments, please do not hesitate call.

Sincerely,

  
Kurt W. Bauer  
Executive Director

KWC/lb  
Enclosures

cc: Mr. Gene Wojcik, EPA  
Mr. Jay Hochmuth, DNR

Revision of Page 541

Exhibit A

The predicted water quality conditions are also compared to the recommended water use objectives and supporting water quality standards which were presented in the 208 plan by SEWRPC for other waters of the region which would be expected to meet full warmwater fishery and recreational use objectives. These planning standards are different from existing DNR standards and would not become enforceable unless and until DNR adoption and formal promulgation for a specific body of water. These standards for temperature, pH, dissolved oxygen, fecal coliform, residual chlorine, un-ionized ammonia-nitrogen, and total phosphorus were recommended to support limited recreational use and limited fish and aquatic life, limited recreational use and warmwater fish and aquatic life, and recreational use, and warmwater fish and aquatic life classifications. Again, temperature and pH levels under any alternative are expected to remain about the same as Existing and would probably not violate the standards under any classification. Although the mean dissolved oxygen level measured in the Inner Harbor is greater than 5 mg/l, this does not satisfy the warmwater fishery and aquatic life standard of 3 mg/l, since both these standards are based upon minimum rather than average dissolved oxygen levels. The most important factor affecting dissolved oxygen levels in the Inner Harbor is the presence of in-place pollutants in the bottom sediments, as discussed below. The fecal coliform standard of 200 MFFCC/100 ml which applies to both the recreational use and limited recreational use classifications would technically be violated under all alternatives, although the Modified Total Storage alternative comes very close to satisfying the standard. The most stringent un-ionized ammonia-nitrogen standard of 0.02 mg/l, which supports a warmwater fish and aquatic life classification, would be satisfied under all alternatives. The total phosphorus standard of 0.1 mg/l, which is designated for the recreational use objective, would be violated under all alternatives, indicating that algae levels may be expected to remain relatively high in the Inner Harbor. Thus, it would not be expected that any CSO abatement alternative would meet the water quality standards associated with the full warmwater fishery and recreational uses, as a benchmark of desirable water quality conditions.

In addition to the DNR water quality standards and the 208 plan recommended water quality standards, Quality Criteria for Water (EPA, 1976) sets forth criteria for metal concentrations. Maximum metal concentration criteria identified from Quality Criteria for Water to support warmwater fish and aquatic life (based primarily on fathead minnow toxicity studies) are:

# SOUTHEASTERN WISCONSIN REGIONAL PLANNING COMMISSION

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EXHIBIT B

October 10, 1980

Mr. Michael T. Llewellyn  
Planning Analyst  
Water Quality Planning Section  
Wisconsin Department of  
Natural Resources  
P. O. Box 7921  
Madison, Wisconsin 53707

Dear Mr. Llewellyn:

This is to acknowledge receipt of, and to respond to, your letter of July 24, 1980, requesting Commission staff comment on the draft document entitled "Secondary Growth Impacts," an appendix to the environmental impact statement (EIS) being prepared on the Milwaukee Metropolitan Sewerage District Water Pollution Abatement Program, the appendix having been prepared by the firm of Real Estate Research Corporation, as a sub-contractor to the prime contractor ESEI/EcolSciences, Inc. Pursuant to your request, the Commission staff has reviewed the draft document in light of the questions which were raised in your letter of July 24 and has the following comments to offer for your consideration:

1. Question 1(a) of your letter asks whether the Commission staff agrees with the concept indicated in the draft document that secondary impact can be defined in terms of deviations from the adopted regional plans. The Commission staff does agree with that concept. The adopted regional plan elements have been specifically designed to preserve and protect the natural resource base of the Region, to provide the highest level of environmental quality practicable, and specifically to meet established air and water quality objectives and standards. Reports documenting Commission plan elements, moreover, specifically demonstrate through quantitative and qualitative analyses the extent to which not only the recommended plan elements, but alternatives thereto, meet the natural resource base and environmental quality objectives. Accordingly, the Commission staff believes that adverse secondary impacts may indeed be expected in those cases where pollution abatement facilities and measures and related land use development depart from recommendations in the adopted regional plans.
2. Question 1(b) of your letter asks whether the Commission recommendations for construction of intercommunity trunk sewers would change

Mr. Michael T. Llewellyn  
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October 10, 1980

if there were a shortfall in the forecast population levels upon which the pertinent regional plan elements are, in part, based. In considering this issue, it must be understood that most of the major trunk sewers recommended in the adopted regional plans are needed to provide for abandonment of inadequate, malfunctioning, or undersized sewage treatment plants, both public and private; elimination of malfunctioning private onsite sewage disposal systems; elimination of sewage holding tanks; elimination of sewer surcharging and basement flooding; and the relief of overloaded trunk sewer conveyance systems. The regional plans recognize the critical importance of the public health hazard and water pollution impacts of these types of waste water management problems in a highly urbanized metropolitan area. Accordingly, for such facilities it is highly unlikely that the regional plan recommendations would be changed in the event of a population shortfall. In the Milwaukee area, such trunk sewers include the following: Northeast Side Relief system, Cernantown, Underwood Creek, Root River, Hales Corners, Franklin-Muskego, Oak Creek-North, and Franklin-Northeast trunk sewers. For the Northridge and Mitchell Field-South trunk sewers, the Commission staff could envision the possibility of staging or delaying construction in the event of a population shortfall. It is noted that the facilities plan recommends that the construction of the two trunk sewers be deferred, but that the EIS secondary growth appendix does not address these two sewers. However, as described in the attached public hearing statement—which relates to the Franklin Northeast trunk sewer as an example—the Regional Planning Commission staff believes that the promotion of a sound urban development pattern in the Milwaukee Metropolitan area will require the eventual construction of these facilities.

The Commission further notes that a shortfall in the forecast population on the regional level may not necessarily be attended by a shortfall in subregional areas due to market forces causing an internal redistribution of population. It is also important to realize in this respect that the so-called "population shortfall" may be reflected in declining household sizes, and with little or no shortfall in the forecast number of households. The housing required to accommodate the growing number of households—albeit smaller households—will still require sanitary sewer service; and these housing units should be placed in areas recommended for development in the Commission's normative regional land use plan.

3. Question 1(c) of your letter asks whether the use of a 10-year market analysis—as set forth in the EIS secondary growth appendix—is compatible with the 20-year planning horizon of the regional water quality management plan, and the ramifications attendant to a 10-year market analysis approach. The Commission staff rejects the marketing analysis approach for two reasons. First, the Commission seeks to guide, shape, and redirect over time the market forces and thereby alter the impact of the operation of the urban land market

on regional settlement patterns in accordance with its normative plans. This is quite different than to simply react to those forces as they currently exist. Accordingly, a conflict is inevitably inherent in evaluating the regional plan against the current land and housing market conditions. Secondly, the Commission staff believes that the marketing techniques as used in the environmental impact assessment rely heavily on subjective assessments of the personal opinions—often ill-informed and unsubstantiated with quantitative data—which are expressed during interviews, and upon attitude surveys which may have little or no relationship to the real behavior which will occur in the land development market. Such an approach is a tenuous approach at best, and certainly not as sound technically as the comprehensive approach used in the regional plan preparation.

4. Question 2 of your letter asks whether the consultant has correctly presented the assumptions and substance of the regional plans and whether there are any major concerns on the part of the Commission staff regarding the definition of such terms as "urban revitalization."

The Commission staff believes that the consultant did adequately understand most of the basic concepts underlying the adopted regional plans and in particular the adopted regional land use plan. There seems to be a lack of understanding, however, concerning the details of the regional land use plan and the approach to be taken in interpreting the plan, particularly when comparing local plans and zoning ordinances to the regional land use plan. In this specific respect the analytical procedures used by the consultant need much to be desired. For example, the analyses in the report appear to have relied very heavily on the comparison of the Commission's 1" = 8,000' scale map presenting a graphic summary of the regional land use plan to local plans and/or zoning ordinances. This is a very crude approach and has led to some erroneous conclusions. The published regional land use plan map at a scale of 1" = 8,000' does not attempt to identify all existing or proposed local or community, commercial or industrial sites. Rather, the plan map identifies broad areas of urban development identified as either predominantly low density, medium density, or high density residential development. The text of the plan report, however, includes a set of standards that indicates that within these broad density categories there will be given amounts of supporting commercial and industrial land use. Yet, the consultant in the making of a gross comparison between the regional land use plan map and various local zoning ordinances concludes that there are many discrepancies or conflicts between the local zoning ordinances and the plan map because such ordinances identify and map local commercial and industrial areas. Clearly, the existence of local industrial areas—as, for example, in the Village of Menomonee Falls—within the planned urban service area is not at all a discrepancy or conflict with the adopted regional land

use plan since that plan indeed explicitly recognizes that there will be such local commercial and industrial areas.

In addition, the consultant in several instances identifies a discrepancy between local plans and the regional land use plan because local zoning ordinances call for new single-family residential development on 20,000-square foot lots which the consultant concludes is of a low density rather than a medium density character. On the contrary, 20,000-square foot lots represent the very low end of the Commission's medium density residential development range, and when combined with higher density residential developments in scattered locations throughout a community, will result in an overall population and dwelling unit density when development is complete that falls within the Commission medium density range. Clearly then, there is no conflict between, for example, the residential zoning in the Village of Menomonee Falls and the Cities of Muskego and Franklin with respect to the adopted regional land use plan. Again, we believe that these erroneous conclusions in the consultant's report result from the relatively crude technique used to compare local zoning ordinances against the regional land use plan, as well as a failure to fully grasp and comprehend the full range of development permitted within the various categories of development identified in the regional plan. If such an analysis is to be presented in the report, it should be done with greater precision and detail, and should be checked by the Commission staff before being released. This will avoid confusion among local officials who believe they have already taken steps to ensure conformity of local zoning ordinances to the adopted regional land use plan.

5. Question 3 of your letter requests Commission staff reaction to the conclusions and mitigating measures discussed in the Appendix, including the statement that "the attempt to control development by limiting the 208 plan approved service area does not appear likely to succeed in this case." The Commission staff is firmly convinced that the sewer service area development and refinement process established under Section NR 110.05(4) of the Administrative rules is the most effective tool to guide urban land use development devised to date anywhere in the United States. The judgment of the consultant that this approach will not be effective and successful is at best premature, and cannot be supported by the Commission staff. In this respect we would note that the Commission's role in the process is an advisory one and the decisions ultimately rest with the Department of Natural Resources, since the Department must approve not only the individual sewer extensions, but also the regional plan or any revisions to it which provide the basis for the sewer extension review by the Commission. Contrary to the consultant's conclusion, these decisions will have to be made collectively by many interests, just as the original plan development decisions were made.



6. Question 4 in your letter asks whether the Commission staff has any site specific information that would be helpful to the consultant in corroborating or refuting the secondary growth analyses attendant to each trunk sewer. You indicate, for example, you would be interested to know if the Commission staff is aware of any subdivision plats that are not accounted for in the consultant's analysis of housing unit data. From the material presented by the consultant, there is no way the Commission staff can determine what particular development commitments may have been taken into account by the consultant in a particular community. In addition, communities are continually in the process of reviewing and approving subdivision plats so that data used by the consultant represent the situation only at a given point in time and may be quickly outdated. The Commission staff does conduct an annual inventory of approved subdivision plats and certainly that inventory may be made available to the consultant in the Commission offices if it will be helpful to him.

7. Question 5 of your letter requests Commission staff comments on the consultant's conclusions concerning the secondary impacts of each particular intercommunity trunk sewer. Such comments are generally addressed in items 1 and 3 above. With regard to the Menomonee Falls-Germantown trunk sewer, however, the Commission staff disagrees, for several reasons, with the consultant's conclusions regarding the secondary impacts. First, the definition of secondary impacts as being those which result from conflict with City of Milwaukee population projections is not consistent with the consultant's initially stated and fundamental premise that secondary impacts are to be defined as departures from Commission adopted plans. Moreover, the Commission staff was surprised to read in the consultant's report that the City of Milwaukee Department of City Development's forecasts of future population levels are not in accord with the population allocations set forth in the adopted regional land use plan. At the time the Commission was completing that plan there was explicit agreement between the Department of City Development staff and the Commission staff as to the allocation of plan growth, particularly in the Granville area of the City of Milwaukee. Since the Menomonee Falls-Germantown trunk sewer is proposed to serve development that is in full accord with the adopted regional land use plan, there can by definition be no adverse secondary impacts.

With respect to the consultant's suggestion that appropriate institutional measures be put into place within the Village of Germantown that would ensure constraining the location of urban development to areas called for in the regional land use plan, it should be noted that over the last 24 months the Commission staff and the Village of Germantown have completed a new local land use plan that is fully consistent with the adopted regional land use plan. Furthermore, the Village of Germantown has placed into effect a new comprehensive zoning ordinance designed to ensure that new urban development

is placed only in those areas where the regional and local land use plans call for such development. Accordingly, we believe that the necessary institutional measures have already been taken and there should be no reason to anticipate any adverse secondary impacts as the Germantown trunk sewer connection is effected.

With regard to the Hales Corners trunk sewer, the analysis of the consultant suggests that the proposed relief sewer would provide for development beyond that envisioned in the regional land use plan for the New Berlin area, which result the consultant believes would create excess capacity elsewhere in the MMSD planning area. Yet, the consultant does indicate that this would not occur if a growth management mechanism were in place to contact the placement and timing of development. In this respect, the Commission staff is confident that sanitary sewer service areas can and will be established which will ensure conformance of development with the regional plan. It should also be noted that the Commission staff does not believe that a "local" alternative providing for the expansion of the Regal Manors sewage treatment plant would assure any more effective growth management than would timely construction of the proposed trunk sewer. In any event, the Commission staff is convinced that the sewer service area refinement process is the most practical means to the achievement of an orderly growth management process. Clearly, the Commission would conform to the principles and objectives of its own planning programs, in a refinement of the New Berlin sewer service area; and the Commission staff must disagree with the consultant's conclusion that this process would result in adjustments which are of significance at the regional level.

With regard to the Franklin-Northeast trunk sewer, the Commission staff has repeatedly documented its judgment and the Commission's position. The population densities utilized in the environmental impact statement to analyze alternatives to the proposed trunk sewer are unacceptable, and pre-empt the well developed and effective local planning process. Therefore, it is again recommended that this trunk sewer be constructed as proposed in the adopted regional plans.

With regard to the proposed Oak Creek trunk sewer, the Commission staff considers the situation to be parallel to the Franklin-Northeast trunk sewer situation, in terms of directing planned development to appropriate areas, and in terms of supporting long-standing local plans and commitments. Unlike the Franklin-Northeast trunk sewer, the Oak Creek-North sewer includes significant land for industrial development, and may be amenable to staging during the plan period.

8. Question 6 of your letter asks how significant might be the discrepancy between local zoning and the Commission recommended population densities. The Commission staff is not greatly concerned about the

Mr. Michael T. Llewelyn  
Page 7  
October 10, 1980

immediate discrepancies, viewing these instead as indicative of the need for additional technical assistance and plan implementation efforts with the various involved local units of government. If such local zoning were prepared subsequent to and with total disregard to this Commission's recommended plans and population densities, then the Commission staff would indeed be concerned. However, this has not been the case in the past, as Commission work efforts have resulted in satisfactory progress in modification of local zoning. The above-noted effort resulting in the comprehensive rezoning of the Village of Germantown stands as a good example of the process of changing local zoning to properly reflect local and regional land use plans.

We trust these comments are responsive to your letter of July 24, 1980. Should you have any further questions or comments regarding this matter, please do not hesitate to call.

Sincerely,

Kurt W. Bauer  
Executive Director

KWB/ea

Enclosure

4/15/80  
H/8

PUBLIC HEARING STATEMENT

DRAFT FACILITIES PLAN PREPARED BY THE  
MILWAUKEE METROPOLITAN SEWERAGE DISTRICT

Franklin High School  
City of Franklin  
7:00 p.m.  
April 15, 1980

Good evening.

My name is Lyman F. Wible and I am the Chief Environmental Planner for the Southeastern Wisconsin Regional Planning Commission. I am appearing here tonight on behalf of the Commission and at the specific request of Franklin Mayor Theodore J. Fadrow. Mayor Fadrow has asked that the Commission comment for the public hearing record as to the relationship between the draft facilities plan proposal to not construct at this time the Franklin Northeast trunk sewer, and the plan recommendations prepared and adopted by past actions of the Regional Planning Commission. My comments here tonight will be related solely to that particular relationship. The Commission is currently in the process of reviewing the remainder of the draft facilities plan and, like the Milwaukee Metropolitan Sewerage District, is most interested in learning of the public reaction to that plan.

Over the past two decades the Commission has prepared and adopted several regional plan elements which address the promotion of sound land use development in the northeast portion of the City of Franklin. These include the regional land use plan, first adopted in 1966 and redrafted in 1977; the comprehensive plan for the Root River watershed adopted in 1966; the regional sanitary sewerage system plan adopted in 1974; and the regional water quality management plan adopted in 1979. Each of these regional plan elements, which were prepared in cooperation with the local units of government and which were the subject of many public meetings and hearings, recommends that new urban development be encouraged to occur in approximately the northern two-thirds of the City of Franklin, particularly including the service area of the Franklin Northeast trunk sewer generally bounded on the east by S. 27th Street, on the

West by S. 51st Street, on the north by W. Grange Avenue, and on the south by W. Puetz Road. This portion of the City of Franklin lies immediately adjacent to the Cities of Milwaukee, Oak Creek, and Greenfield and the Village of Greendale; and urban development in this portion of the City of Franklin constitutes a logical incremental extension of urban development within Milwaukee County. The regional plan elements adopted to date specifically propose that new urban development in this portion of the City of Franklin be supported by the construction of a major new trunk sewer, long known as the Franklin Northeast trunk sewer.

For almost two decades now the City of Franklin has been cooperating in every way possible with the Regional Planning Commission in trying to implement the adopted regional plans. In the mid-1960s the Commission recommended that its constituent local units of government, particularly including those anticipated to experience significant amounts of urban growth, undertake detailed local planning efforts within the framework of the regional plans, in an effort to fully implement such plans. The planning tool recommended by the Commission for such local planning is known as the neighborhood plan. Within the framework of the regional plans, a neighborhood plan identifies very precisely how a community would ensure provision of (1) a full range of housing types and lot sizes, (2) a full complement of public and semi-public facilities needed by families within the immediate vicinity of their dwellings, and (3) ready access to the arterial street system as a means of access to those urban activities which cannot always be located within the immediate vicinity of a residential development. Preparation of such neighborhood plans would assist in assuring stability and the preservation of amenities in residential areas, as well as help to bring the size of the area in which a family lives into a scale within which the human individual can feel at home and within which he may take an active part in community affairs. More than any other local unit of government in the Southeastern Wisconsin Region, the City of Franklin has for over 10 years attempted to follow this regional plan recommendation by preparing and adopting detailed neighborhood unit development plans. All or portions of four delineated neighborhoods in the City of Franklin are affected by a decision as to whether or not to build the Franklin Northeast trunk sewer.

The draft of the facilities plan prepared by the Milwaukee Metropolitan Sewerage District recommends that rather than building the Franklin Northeast trunk sewer, six existing sewage pumping stations be retained and be maintained by the District. Under this proposal, new urban development would be constrained to specific areas tributary to these pumping stations, five of which serve the City of Franklin. The total area proposed to be served by the Franklin Northeast trunk sewer approximates 3.7 square miles in the City of Franklin. The total area tributary to the five existing pumping stations in the City of Franklin approximates 1.0 square mile. Thus, rather than permit full development of the Franklin Northeast trunk sewer service area as recommended in the adopted regional and local plans, the proposal in the draft Milwaukee Metropolitan Sewerage District facilities plan would confine and constrain development to about 30 percent of the total area. This proposal is directly contrary to the proposals contained in all of the regional plan elements cooperatively prepared and adopted to date.

The Commission recommends that the Milwaukee Metropolitan Sewerage District revise the facility plan so as to support instead the longstanding proposal to construct the Franklin Northeast trunk sewer. The reasons for the Commission's position in this matter may be summarized as follows:

1. Failure to construct the long planned Franklin Northeast trunk sewer would totally frustrate the proposals contained in the adopted regional land use plan and refined and detailed in a series of Franklin neighborhood plans to promote compact, contiguous development in areas adjacent to existing developed communities. If development must be constrained to the areas tributary to the five existing pumping stations, an incomplete urban development pattern will be fostered in this portion of the City of Franklin. Such an incomplete development pattern is inconsistent with sound regional and local planning and does not lead to the efficient provision of municipal services. To permit development of only scattered portions of what are intended to be fully integrated neighborhood units would represent the very antithesis of neighborhood planning. The neighborhoods within the Franklin Northeast trunk sewer service area

should be permitted to be fully developed. It is the single area of the City of Franklin where hope can best be held out for the rational extension of mass transit services in the reasonably foreseeable future, a consideration that should not be lightly regarded in times of rising energy prices and potential energy shortages.

2. Continued reliance on the existing pumping stations for sewer service would require the continued reliance on onsite sewage disposal septic tank systems for 110 existing buildings in the Franklin Northeast trunk sewer service area, including the very building in which we are meeting tonight. The soils in the City of Franklin are generally unsuitable for the safe, long-term operation of septic tank systems. The recently completed nonpoint source pollution abatement plan for the Root River watershed identified septic tanks as an important source of pollution in the watershed and recommended that steps be taken to eliminate the use of septic tanks to support urban development. Failure to build the Franklin Northeast trunk sewer would work against implementation of this plan recommendations.
3. Confinement of new urban development to the area tributary to the five existing pumping stations in the City of Franklin will not accommodate the planned population growth for this portion of the City of Franklin. The draft District sewerage facilities plan envisions that by the year 2005 there will be residing in this portion of the City of Franklin about 6,100 persons. In 1978, there were about 2,300 persons residing in this same area. Thus, a total increment of about 3,800 persons is envisioned in the facilities plan. Examination of the detailed neighborhood unit development plans prepared by the City of Franklin for the four neighborhoods with the Franklin Northeast trunk sewer service area indicates that development of only the lands tributary to the five existing sewage pumping stations will accommodate at most a population increment of about 2,800 persons. Thus, it would not be possible to accommodate

the planned population growth in this portion of the City of Franklin under the tentative proposal contained in the draft facilities plan to forestall building the Franklin Northeast trunk sewer.

In conclusion, the Commission recommends that the Milwaukee Metropolitan Sewerage District recognize the sound proposals contained in the adopted regional and local plans for this portion of the City of Franklin, and revise the sewerage facilities plan to provide for the construction of the long planned and badly needed Franklin Northeast trunk sewer.

Thank you.

\* \* \*

## EXHIBIT C

The type of development that is likely to be built in Germantown is single-family residences on sewer lots of 1/4 to 1/3 acre. There would be some multi-family projects as well. In the Northwest Side, development is likely to be a combination of single-family and multi-family development, leading to medium and high density residential use. All of the development would be served by sewers.

### Secondary Impacts

The level of population and housing units projected under an Action alternative is consistent with the Regional Plan.

It is ~~shown~~ in accord with the City of Milwaukee's more recently prepared forecasts for the Northwest Side. There is a difference of 20,000 people between the City of Milwaukee and SEWRPC projections for the Northwest Side in the year 2000. This number is about equal to the forecast increment for Germantown by 2000. Thus, these alternatives could have the effect of facilitating development in Germantown without allowing the Northwest side of the City of Milwaukee to develop to its full capacity, as envisioned in the City forecast. However, development in Germantown would essentially conform to the agreement achieved in the preparation of the regional land use plan for year 2000.

The regional plan specifically identifies policies of revitalizing the Central City and maintaining the existing population of the City. In the event of a population shortfall, these alternatives could lead to a pattern of development that is contrary to this policy. In addition, the pattern of development may leave a great deal of undeveloped land in the Northwest Side of Milwaukee while Germantown becomes more developed. On the other hand, a shortfall could also result in greater development pressures on Milwaukee rather than the Suburbs.

### Mitigation Prospects

Other alternatives which could mitigate some of the secondary effects include a smaller local plant expansion, a joint venture with Menomonee Falls, or a smaller connection to the 57" interceptor. These may suffice through the entire planning period for a lower population forecast, or at least until the 1990s. Germantown could consider implementing local growth controls which would reduce the overall level of development. Other institutional measures which could be considered include a more restrictive 208 plan service area boundary for the year 2000, staged service area boundaries for 1985, 1990, and 2000, and an MMSD-imposed continuation of the allocation system applied to Germantown. Some of the mitigative measures would require a major revision of SEWRPC's adopted regional plans, as well as the local plan developed by Germantown to implement the regional plan recommendations. Such revisions would preferably be made in the same mode of intergovernmental discussion as was the regional plan itself.

## EXHIBIT C

of vacant land. The northern half of New Berlin, within the Root River area, is developed more fully and has only a few vacant parcels left. The development within the southern half of New Berlin will proceed in a contiguous manner in accordance with local policies, which require developers to pay the full cost of sewers. This reduces the potential for leapfrogging.

Under No Action, once the remaining capacity at the existing Regal Manors Plant is used (612 more units can be accommodated), the development that is permitted would be confined to the Poplar Creek service area (outside the planning area) and the Wildcat Creek area in eastern New Berlin. Wildcat Creek now has capacity for more housing and the vacant land there could develop if additional capacity is not provided for southern New Berlin. Within the Poplar Creek and Wildcat Creek areas, development would be in a contiguous pattern.

### Secondary Impacts

The major secondary impact of an Action alternative is a greater level of development, at a faster rate than forecast in the Regional Plan. The EIS estimate shows a divergence of between 968 and 2,210, housing units from the SEWRPC plan by 1990. This excess development could occur in other southwest suburbs, including Greenfield and Franklin. These areas are presently served by sewers (or will probably be served to handle existing problems) and have vacant land for development.

### Effects of Population Shortfall

If there is a regional population shortfall, there could either be unused sewer capacity in New Berlin, or development could occur at the expense of other areas. The unused capacity in New Berlin would be at a local plant, or in the Hales Corners Interceptor (The Root River Interceptor is a relief sewer and its service area is substantially developed).

### Mitigation Prospects

Mitigation prospects are poor for an Action alternative because capacity may be provided all at once rather than in small increments. Though New Berlin controls the form and character of development, it does not have any mechanism to control the rate of development. Thus, since the market is strong, it is likely that if greater capacity is provided, a large number of housing units may be built. It would take the cooperation of New Berlin, SEWRPC, and DNR to keep the rate of development within that forecast by SEWRPC.

## EXHIBIT D

RPS/lb 300-300  
1/9/81  
SEWERS-F

CALCULATION OF NET RESIDENTIAL DENSITY WITHIN  
THE FRANKLIN NORTHEAST INTERCEPTOR AREA

## Alternative A

Total Population <sup>a</sup>				1975-2005 Incremental			
		2000	Household Size <sup>b</sup>	Households	Developable Acres In Area Tributary To Six Existing Pump Stations	Net Residential Acres	Households Per Net Residential Acre <sup>c</sup>
1975	2005	1975-2005					
3,789	9,138	5,349	3.00	1,783	340	241	7.4

## Alternative B

Total Population <sup>d</sup>			1978-2000 Incremental				
			2000 Household Size <sup>b</sup>	House- holds	Developable Acres In Area Tributary To Six Existing Pump Stations	Net Residential Acres	Households Per Net Residential Acre <sup>c</sup>
1978	2000	1978- 2000					
6,591	11,114	4,723	3.00	1,574	316	224	7.0

<sup>a</sup> Data taken from MMSD report, Franklin-Northeast Interceptor Facility Plan, Volume I, Planning Report, June 1980.

<sup>b</sup> Based upon planned household size included in SEWRPC Planning Report No. 25, A Regional Land Use Plan and A Regional Transportation Plan for Southeastern Wisconsin: 2000.

<sup>c</sup> SEWRPC recommended high density residential development range contains from 7.0 to 17.9 housing units per net residential acre; SEWRPC recommended medium density residential development range contains from 2.3 to 6.9 housing units per net residential acre. Franklin's current local development plans approximate 4.4 dwelling units per net residential acre.

<sup>d</sup> Data taken from Draft Environmental Impact Statement on the Milwaukee Water Pollution Abatement Program, Appendix IX Secondary Growth Impacts, November 1980.

Source: SEWRPC

## SOUTHEASTERN WISCONSIN REGIONAL PLANNING COMMISSION

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## EXHIBIT E

July 18, 1980

Mr. Fred J. Meinholz  
Group Administrator  
Facilities Planning/EIS  
Milwaukee Metropolitan  
Sewerage District  
735 N. Water Street  
Milwaukee, Wisconsin 53202

Dear Mr. Meinholz:

Over the past several months, the staffs of the City of Franklin, the Milwaukee Metropolitan Sewerage District, and the Regional Planning Commission have had discussions concerning the Franklin Northeast trunk sewer service area and the neighborhood plans prepared to date by the City of Franklin for that service area. In these discussions, we have indicated that we would provide copies of such neighborhood plans to you in order that you may properly take them into account in the completion of a detailed facility plan for the Franklin Northeast trunk sewer. Accordingly, and at the specific request of Mr. John M. Bennett, City Engineer, City of Franklin, the Commission staff is transmitting to you herewith the following materials:

1. A map of the City of Franklin at a scale of 1" = 2000' on which we have delineated the approximate boundary of the Franklin Northeast trunk sewer service area and the boundaries of the following five neighborhoods, all or parts of which comprise the entire trunk sewer service area: Xavierian Neighborhood, Pleasant View Neighborhood, Franklin Neighborhood, Riverview-North Neighborhood, and Riverview-South Neighborhood.
2. Copies of the detailed neighborhood land use plan maps for each of these five neighborhoods. Such plan maps identify the proposed future street locations, block and lot layouts, and proposed land uses for all of the lands comprising the neighborhoods. Those portions of the neighborhoods which would be ultimately served by the Franklin Northeast trunk sewer are identified in color on these neighborhood plan maps. Reports documenting the neighborhood plans for these five neighborhoods for the City of Franklin are in various stages of completion, it being intended that each neighborhood plan would be documented in a separate planning report. The Franklin Plan Commission has given preliminary approval to all five of the neighborhood plan maps being provided to you herewith.

PCE/as  
7/13/80  
E/12

ULTIMATE DEVELOPMENT WITHIN THE NORTHEAST TRUNK SEWER SERVICE AREA  
IN THE CITY OF FRANKLIN

Neighborhood	Single Family Units	Two Family Lots		Multi- Family Units	Total Units	Other Land Uses (Acres)			Total
		Lots	Units			Commercial	Industrial	Government- Institutional	
Xaverian.....	203	181	362	1,030	1,595	6.0	--	15.4	21.4
Pleasant View.....	429	21	42	--	471	60.4	--	16.2	76.6
Franklin.....	900	32	64	96	960	9.6	--	89.5	99.1
Riverview-North....	16	22	44	--	60	5.2	--	--	5.2
Riverview-South....	135	--	--	--	135	--	--	--	--
Total	1,583	256	512	1,126	3,221	81.2	--	121.1	202.3

Fred J. Meinholz  
Page 2  
July 18, 1980

3. A table identifying the number of residential units and the acreage of nonresidential land uses in the Franklin Northeast trunk sewer service area by neighborhood under ultimate development conditions.

On behalf of the City of Franklin, the Commission staff would request that the staff of the Milwaukee Metropolitan Sewerage District take into account in the detailed facilities planning process these neighborhood development plans. Should you have any questions concerning the plans being transmitted herewith, please do not hesitate to call.

Sincerely,

Kurt W. Bauer  
Executive Director

KWB/ea  
Enclosures

cc: Mr. John M. Bennett

EXHIBIT C

LFW/1b  
1/12/81  
HMSD-F

SEWRPC  
MEMORANDUM TO FILE

FROM: L.F. Wible and R.P. Biebel

DATE: January 8, 1981

SUBJECT: Review Notes on the Environmental Impact Statement for Milwaukee Water Pollution Abatement Program

The following observations were made during review of the EIS and are offered as the basis for use of the Commission staff in development of the proposed review letter which is intended to offer in proper context the most important comments of the Commission concerning this draft EIS.

A. The following comments are noted from review of the draft impact statement document itself:

1. Page 1-9: The SEWRPC air quality planning staff has noted a number of problems in the air quality emission loads calculation. (581)
2. Page 2-1: It would be useful to quantify the frequency of discharge of untreated sewage into the Milwaukee area surface water. (582)
3. Page 3-15: It is noted that the SEWRPC staff has previously submitted questions regarding the HMSD proposal to retain the School Sisters of Notre Dame sewage treatment facility. (583)
4. Pages 3-30 and 3-31: Suggested that the number of septic tanks which would be eliminated by all of the proposed trunk sewers be included in the description of the purpose of each trunk sewer as has already been done for the Root River interceptor but for none of the others. (584)
5. Page 3-44: A discussion of the Milorganite concerns expressed in the SEWRPC A-95 review letter of January 12, 1981 and discussed previously with DNR and HMSD staff should be incorporated. (585)
6. Page 3-51: It is noted that SEWRPC has never been formally contacted by the HMSD Commissioners or by their staff with a request to initiate analyses and studies on instream measures. All contacts have been very informal. (586)
7. Page 3-81: A footnote makes reference to later alternatives discussed in the EIS. It would be helpful to the reader if these two alternatives were identified by name. (587)
8. Page 3-91: The EIS indicates that it is based upon the assumption that six pump stations would be upgraded rather than the Franklin Northeast trunk sewer being constructed. This is in conflict with (588)

Based upon 4.4 housing units per net residential acre on an estimated 40 net acres of developable residential land. Population which could be ultimately accommodated in the area tributary to the existing six pumping stations based upon adopted local land use plans. It can be noted that the incremental population which can be accommodated in the area tributary to the six pumping stations is 3582 persons. This can be compared to an incremental population for the Franklin Northeast Sewer Service Area of 5349 as set forth in the HMSD facility plan.

Includes portions of the River View South Neighborhood.  
Includes portions of the Franklin Neighborhood.  
Includes portions of the Franklin Neighborhood.  
Includes portions of the Xaverian and Pleasant View Neighborhoods.  
Based upon planned household size included in Planning Report No. 25, A Regional Land Use Plan and a Regional Transportation Plan for Southeastern Wisconsin--2000.

Pump Station	Existing (1980)			Planned Increment			Total (Ultimate) Estimated Population
	Housing Units	Household Size	Estimated Population	Housing Units	Household Size	Estimated Population	
PR3	151	3.0	453	912	3.0	2736	3189
PR5	30	3.0	90	36	3.0	114	204
PR4	74	3.0	222	56	3.0	168	390
PR2	18	3.0	54	12	3.0	36	90
Village of Greendale	252	3.0	756	--	--	--	756
City of Greendale	590	3.0	1530	176 <sup>f</sup>	3.0	528	2058
Total	1115	3.0	3105 <sup>e</sup>	1194	3.0	3582 <sup>e</sup>	6687 <sup>f</sup>

ULTIMATE DEVELOPMENT WITHIN THE AREA TRIBUTARY TO THE SIX PUMP STATIONS IN THE NORTHEAST TRUNK SEWER SERVICE AREA



the SEWRPC recommendations and may be a result of a misunderstanding of technical data regarding population densities and developable land in the trunk sewer planning area. SEWRPC should again provide the data pertaining to this matter.

- 580 9. Page 3-92: The discussion of environmental consequences should be expanded to include the natural resource base impacts including woodlands and wetlands, wildlife habitat, etc.
- 589 10. Page 3-94: It is indicated that Tess Corners Creek with the abandonment of the Muskego Northeast wastewater treatment plant would be slightly lower in phosphorus and ammonia but otherwise similar to its present state. SEWRPC staff finds this generalization difficult to accept, since the pollutant mass loadings and the concentrations of nitrogen, phosphorus, ammonia nitrogen, and solids should all be essentially reduced by such an action. The conclusion of the report may reflect the fact that quality of the stream cannot always be judged by an instream concentration of a pollutant such as phosphorus which can be expected to be at low levels when high algae production is taking place.
- 590 11. Page 3-97: The groundwater discussion should be expanded to recognize the importance of septic tank problems on ground and surface water qualities, especially under the no action alternative.
- 591 12. Facing page from 4-22: It is noted that Figure 4.3 and numerous other figures in the EIS are cited as having come from MMSD. Many of these cases the MMSD source was SEWRPC--4.5, 4.6, 4.7, 4.8, and many others in the report fall into this category. Although a comment on this matter would seem self-serving to EPA or DNR, the failure to credit SEWRPC is not helpful in maintaining local support for the Commission's planning program.
- 592 13. Page 5-9: Typographical error is suspected in the third line from the bottom in the third column from the left. Should the value be 50.9?
- 593 14. Page 5-13: The draft EIS notes that additional analyses are being conducted regarding moving the outfall, changes in ammonia loading to the outer harbor and related water quality analyses.
- 589 15. Page 5-18: Tess Corners Creek is again noted to be expected not to be positively affected by the elimination of treatment plant.
- 590 16. Page 5-15 through 5-24: It is recommended that the septic tank benefits of all of these alternatives be noted concerning the reduction of septic tank effluents and related pollution.
- 581 17. Page 5-25: Air pollution loads are noted again.
- 581 18. Page 5-28: Also includes such data regarding air pollutant emissions.
- 594 19. Page 5-33 and 5-34: The groundwater impacts of the deep tunnel and related caverns are discussed in very brief form. This may not adequately address the subject.

- 595 20. Page 5-36: A reference to designating floodplains as SEWRPC primary environmental corridors implies that this in itself provides sufficient protection against development. It is noted that the effective prevention of development in the floodplains relies heavily upon regulatory actions of the DNR, local units of government, implementation of the sewer extension review process and associated sewer service areas, and support of the underlying regional land use plan, including the trunk sewer construction necessary to support the intended urban development in the desired areas as specified in that land use plan.
- 596 21. Page 5-37: The discussion of local alternative on this page does not note the benefits to the marsh after the sewage treatment plant discharge was eliminated.
- 597 22. Page 5-41: In the next to the last paragraph, the functions of the trunk sewers should be expanded to also include sewage treatment plant elimination, septic tank elimination, and cost and reliability advantages of eliminating pump stations.
- 577 23. Page 5-42: The discussion at the top of the page does not recognize that the alleged population differences between the Commission's plan and the recent population estimates was not reflected or carried over into the housing unit data. In other words, the discussion does not recognize that housing development may occur independent of the population departures from the planned data, since the SEWRPC housing unit forecasts have proven to be accurate.
- 598 24. Page 5-47: The numbers in the last full paragraph do not add up. More importantly, this entire section regarding future development and indirect impacts should be modified to some degree. See the comments below concerning the secondary impacts appendix.
- 599 25. Page 5-116: The discussion of aesthetics does not incorporate proper consideration of the obnoxious problems including not only aesthetics but odor, public health and safety which are related to malfunctioning septic tanks.
- 600 26. Page 5-130: The discussion of recreational impacts does not appear to properly credit the recreational benefits which would accrue from a water pollution abatement program in the Milwaukee area, and also appears to have been written more as an informational item concerning the development of recreational programs than as a meaningful analysis of recreational impacts. The section should be revised.
- 601 B. Concerning Appendix IV, "Solids Management", it should be noted simply that the document does not present adequate cost data to provide the reader with a meaningful opportunity to analyze and monitor the logic applied in the selection of alternatives; for example, it appears that the low cost benchmark alternative which was the basis for an early screening, did not survive screening to the final evaluations to be considered feasible. Accordingly, a number of "reasonably priced" alternatives may have been improperly eliminated. This cannot be determined with the data provided in the EIS. Moreover, because of the changed conditions and assumptions which occurred during the facilities planning analyses, the

SEWRPC staff could not conduct a complete review of this issue from the facilities planning documents themselves. Perhaps more importantly, it is noted that the evaluation of sludge management alternatives and related solids management equipment at Jones Island and South Shore are being further evaluated by the MWPAP. It is also noted that the supposed evaluation of the cost of providing flexibility for the land application alternatives is not understandable to the SEWRPC staff and, therefore, deserves substantial expansion and discussion if, indeed, it is a supportable analysis in the final EIS.

C. With regard to Appendix VI, "Local Alternatives", the following comments are noted:

- (602) 1. Page 1-3: It should be indicated that the MWPAP analyses evaluated not only the 208 recommended goals but also the adopted DNR rules for instream water quality standards.
- 603 2. Page 1-4: It should be noted that the final facilities plan, upon adoption and approval by all parties concerned, can serve as an amendment to the Section 208 plan. This standard requires inter-governmental agreement beyond that associated with simple DNR and EPA approval.
- 604 3. Page 1-9: Eight marshes near the planning area are indicated to be suitable for the application of effluent for disposal purposes. These eight should be identified within the draft EIS, since the Commission staff believes that certain wetlands in southeastern Wisconsin should not be used for wastewater treatment plant effluent disposal.
- 605 4. Page 4-13: With respect to this page, SEWRPC should note and recommend its adopted plan.
- 606 5. Page 6-11: It is noted that a proposed local alternative for the Regal Manors treatment plant would require the use of the same site as would another alternative for Muskego treatment plant local alternative land discharge. These two alternatives would appear to be mutually exclusive.
- 607 6. Page 6-13: Discussion of marshland disposal of effluent in the Vernon Marsh would not likely be acceptable, since the Vernon Marsh constitutes a valuable natural resource of importance scientific characteristics.
- 608 7. Page 6-21: The analysis refers to differing sewer service areas, and is indicative that the analysis was not rigorous. The engineering economics analysis should include the cost of providing wastewater management services to the same area over the same time period under various alternatives. Only by using such an approach can a number of hidden costs be considered.
- 609 8. Page 9-5: The second full paragraph should be supplemented, since substantially less than 4,000 feet of force main would be required to connect the School Sisters of Notre Dame sewage treatment facility

to the Metropolitan Sewerage District's system through the Mequon system when the City's sewer system is extended in accordance with local plans. The adopted SEWRPC plans should be noted and recommended with regard to this section.

- (577) D. With respect to Appendix IX, "Secondary Growth Impacts", substantial editing should be conducted for pages 2-13 and 2-18. Edited versions of these pages have been attached. In addition, selected data concerning the Franklin Northeast trunk sewer is attached. This entire section should consider our earlier review letter with regard to the general objections about methodology and the scale of the analyses, as set forth in our letter of October 10, 1980, to Mr. Michael Llewellyn of the DNR staff.
- E. With respect to the Combined Sewer Overflow-Appendix V, the following is noted:
  - 610 1. Page 4-3: It is suggested that the discussion of PRM 75-34 should clarify whether the conclusions were developed in the report or were made by the EIS staff.
  - 611 2. Page 4-23: In the discussion of a no action alternative it should be noted that a broader no action alternative is included in the main body text of the EIS in order to properly reflect the effects of inaction with respect to the separate sewer overflows.
  - 612 3. Page 4-35: It is recommended that the first partial paragraph be expanded to clarify that the flows noted were used by MMSD in the development of the facilities plan as adopted June 5, 1980.
  - 613 4. Page 4-64: It is recommended that the introductory paragraph be expanded to tell which alternatives were selected for this discussion and why they were selected. Typographical error is also noted in the third from last line on this page.
  - 614 5. Page 4-85: It is suggested that the summary be expanded to in fact summarize the alternatives very briefly and to include the costs of those alternatives.
  - 615 6. Figure 5-2 preceding page 5-4: This diagram is noted to be an important diagram in understanding analyses conducted by the EIS consultant.
  - 616 7. Page 5-8: It is suggested that additional notations be added to this page to identify the source of each assumed pollutant concentration presented on this page.
  - 617 8. Page 5-19: It is suggested that the discussion be expanded to include a description of the basis or assumptions which underlie the selection of the sinking factor ratio applied in the translation of pollutants from the water column to sediments.
  - 618 9. Page 5-40: It may be appropriate to note the potential implications for other hazardous materials which are associated with solids, along with the discussion of lead and zinc.

- 576 10. Page 5-41: It is recommended that this page be edited as shown on the attached copies.
- 619 11. Page 5-44: The second paragraph notes 76 to 82 percent of the organic pollution in the inner harbor sediments is contributed by CSO discharges. It is suggested that this discussion be expanded to explain the basis for this conclusion.
- 620 12. Page 5-45: The first full paragraph, the words "metals in storm water" are apparently intended, or a typographical error must be present.
- 621 13. Page 5-47: The last paragraph uses the term "oxidative assimilation". This term should be defined or preferably a more descriptive phrase used.
- 622 14. Page 5-48 and 5-50: Discussion of sediment scour and water quality should be expanded to include quantification, if possible.
- 623 15. Page 5-51: It is suggested that some basic hydraulics could be applied to verify the suggestion that diffusion apparatus would require large space and would pose a hazard to commercial shipping.
- 624 16. Page 5-54: Item No. 3 at the top of the page discusses a seasonal loading analysis but does not address the question of whether or not the spring thaw was assumed to be included within that analysis. Below, on the same page, begins the discussion of the outfall location analysis. It is noted that the discussion does not include or address the water supply intakes as such. It is recommended that this section be expanded to assure adequate consideration of the water supply intakes in Lake Michigan.
- 625 17. Page 5-72: It should be possible to add a note concerning the cost implications for disposal of the inner harbor sediments if they were technically classified as heavily polluted.
- 626 18. Page 5-87: This table would be more useful if the costs were normalized to reflect a cost per percentage point of load removal.
- 627 19. Page 5-89: It is noted that the implementation of nonpoint source controls may be more difficult than point source controls. It is suggested that the report reflect this fact.
- 628 20. Page 5-90: The air pollution emission loads noted in this section are the subject of a memorandum prepared by Mr. Wilson and attached hereto.
- 629 21. Page 5-98: The CSO discussion of long-term impacts and groundwater should be expanded to address the construction period conditions and to address the contingency that there would be some unknown and improperly abandoned wells in the area and to address the anticipated impacts of future withdrawals from the aquifers.

- 630 23. Page 5-107: In the assumptions it appears that the assessed equalized value of the CSSA is three "billion", not three "million" dollars.
- 631 24. A general comment concerning this appendix is that it seems not to comment or highlight the importance of the assumed 50 percent reduction in infiltration and inflow and the potential effects of this assumption or failure to achieve this level of control upon the CSO alternatives.

F. With respect to Appendix VIII, "Interceptor Alignment", the following is noted:

- 632 1. Page III-14: The reports note that none of the alternatives would affect public health. It is also noted that alternative 9--which is the alternative incorporating continued use of the existing six pumping stations--would not affect water quality. The analysis should look closer at the condition of the existing 110 septic tanks and the onsite system serving the high school in order to better assess the public health and water quality impacts. The analysis here also appears to be unduly optimistic about the impacts of Alternative 6. For example, the impact on noise is noted to be the least. It seems that the noise associated with six pumping stations in residential areas should be considered as an impact. The discussion of land use is deferred to the Secondary Impacts chapter.
- 633 2. Page IV-18: The last paragraph indicates that a new alternative involving upgrading the Wildwood pumping station was developed by the EIS team. This alternative is not given an evaluation in this Appendix. It is noted that the alternative is discussed in more detail in the Secondary Impacts Appendix.
- 634 3. The Root River sewer route which was selected in the facility plan is a modification which was not evaluated in the EIS. The wetlands along the route and in the area should be discussed.

G. With respect to EIS Appendix II, "Jones Island", and Appendix III "South Shore", the following items are noted:

Jones Island

- 635 1. Pages I-3, III-29, VI-91: The report highlights the energy considerations noting a reduction in energy use of over 80 percent compared to existing operation. SEWRPC staff review of the solids management energy analysis in the facility plan indicated that analysis was very sensitive to assumptions regarding the gas turbine efficiency and use allocation. The question regarding the gas turbine energy use was raised in a more general way in the SEWRPC facility plan review letter within the context of the selection of a solids management plan.

- 634 2. Page III-26: Table III-7 should be modified to indicate the time period of loading such as "estimated average annual" or "1978 annual".
- 635 3. Page IV-77: The statements on the plant outfall are too generalized here. However, if backed up by hard data, they make a strong case for the need for improved treatment to avoid degradation of the outer harbor. Additional "hard" data are included on pp. VI-107, VI-108, and VI-109.
- 636 4. Page V-97: Air quality data is presented which should be reviewed in the context of the the Air Quality staff comments on data accuracy.
- (637) 5. Page VI-108: Consideration should be given to expanding Table VI-1 to include metals data similar to the table developed for South Shore in Appendix III.
- (638) 6. Pages VI-112 and VI-114: Consideration should be given to quantifying air pollutant changes similar to the analysis done for South Shore in Appendix III.
- (639) 7. Page VI-124: Table VI-3 and text seem to highlight "water quality consequences" by stating the changes in loads. It is suggested that the changes or effects of these loads on water quality be given more emphasis. However, this may not be practical when only dealing with the loading from one source.

There are discussions regarding the major issues such as ammonia nitrogen discharge levels, landfilling in the lake, and type of disinfection. However, no special comments by SEWRPC appear to be warranted.

#### South Shore

- 640 8. Page III-32: It is noted that the discharge of ammonia nitrogen in the effluent of the South Shore plant is 4,500,000 pounds per year, or about 16 mg/l. Little discussion is included of this. Because of the discharge point, it likely has been assumed that this is not a problem.
- 641 9. Page IV-51: At the public hearing, the practice of chlorinating was questioned several times. Cost comparison on page VI-51 indicates major saving by using chlorine over ozone. It would be helpful to briefly go over the steps which can be taken to reduce public safety problems with transport and handling of chlorine, as well as to discuss the effect of the chlorine as a pollutant.
- 642 10. Page V-74: Air quality data is included here which should be reviewed in context of the memorandum from the Air Quality staff.
- 643 11. Page VI-83: Table VI-1 should be modified to clarify time period or to state that the loads are estimated average annual loads.
- 644 12. Page VI-83: The rationale for the substantial reduction in cadmium should be stated.

- (645) 13. Page VI-84: The air quality impacts should be given a dimension or percent notation.
- (646) 14. Page VI-84: Table VI-2 and the text discuss "water quality consequences" by stating changes in loads to the surface water. It is suggested that the impact of these loads on the quality be given more emphasis. It is suggested that Table VI-2 include metals in the evaluation.

# City of Milwaukee

Department of Public Works  
Bureau of Engineers

January 7, 1981

Mr. John McGuire  
Regional Administrator  
United States Environmental  
Protection Agency (Region V)  
230 South Dearborn Street  
Chicago, IL 60604

Attention: Mr. Gene Wojcik

Gentlemen:

The Public Improvements Committee of the City of Milwaukee has directed me to transmit comments to you relating to the Draft Environmental Impact Statement (DEIS) on the Milwaukee Metropolitan Sewerage District's (MMSD) Water Pollution Abatement Program (WPAP).

Prior to the adoption of the WPAP by the MMSD on June 5, 1980, we publicly stated that we approved in principle and concur with the need for the facilities outlined in the WPAP, or the "Master Facilities Plan" as it is more commonly called. We stated that while we believe said Plan represents a cost-effective solution to the problems of water pollution, we had concerns over the ability of local taxpayers to bear the cost of this program. We also stated that we were not at all certain that this ambitious program could be implemented unless large amounts of federal and state aid were forthcoming.

After reviewing said DEIS, our position has not changed. However, said document indicates that the solution recommended by your agency and the Wisconsin Department of Natural Resources (WDNR) for the combined sewer overflow (CSO) problem and for elimination of bypassing from separated sewers might be different than the In-line Storage Alternate which is the recommended solution in the WPAP. While we can agree with two of your alternatives, (Modified CST/In-line and Modified Total Storage), we cannot concur with the third alternative of complete sewer separation. It was our understanding that the MMSD plan called for partial separation only; that is, the construction of new storm sewers which would accept street runoff via catch basins but would not require any work on private property. We believe that complete sewer separation would have devastating effects upon the environment in the combined sewer area,

Herbert A. Goetsch  
Commissioner of Public Works  
Donald D. Roethig  
Deputy Commissioner of Public Works  
Edwin J. Laszewski, P.E.  
City Engineer  
Charles E. Joers  
Assistant City Engineer

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DEPARTMENT OF PUBLIC WORKS

Mr. John McGuire  
Page 2  
January 7, 1981

both in the public way and on private property, let alone the ability of citizens living in this area to pay for building sewer separation on private property. Considering the values of many of the structures within the CSO area and assuming that the work on private property is not grant-eligible, it is not inconceivable to us that many properties would go tax delinquent rather than paying for the needed plumbing work on private property. In total, we do not believe that complete sewer separation is a viable solution to the CSO problem.

We also have some technical comments about the DEIS, which are as follows:

1. In paragraph one, on Page 1-1, the statement is made that the treatment plants must be improved to meet effluent limits established by the U.S. EPA and the WDNR, in order that the receiving waters of said plants meet water quality goals set up by the EPA and WDNR. A similar statement is made with respect to CSO abatement on Page 3-45 (Section 3.9.1). However, even if the treatment plants meet the effluent limits, this will not guarantee that the receiving waters will meet the water quality goals because of other sources of pollution such as street drainage and point and non-point pollution from sources outside of the MMSD service area. We therefore suggest that the portion of this statement concerning receiving water be deleted.
2. On Page 1-7 in Section 1.4.2, Wastewater Treatment, we suggest that a statement be made to indicate why the Hales Corners and Menomonee Falls treatment plants were excluded from the DEIS.
3. In Table 1.4 on Page 1-14 in the Complete Sewer Separation Section, it should be mentioned that work will be required on private property.
4. In Table 1.4 on Page 1-14 in the Modified Total Storage Section, the flow from the separate-sewered area should be mentioned.
5. In the footnote for Table 1.4 on Page 1-14, the words "rest leader" should be corrected to read "roof leader."
6. On Page 1-16, Section 1.5.4.2, Areas of Controversy, deals with lakefill for expansion of both the Jones Island and South Shore treatment plants. The idea of lakefill has come under criticism from both the WDNR and local residents, which may prevent the MMSD from

expanding the above-mentioned plants by filling the lake. We believe that the possible increase in costs for alternative expansion plans should be discussed.

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7. On Page 1-16 in Section 1.5.3.3, Areas of Controversy, the problem of ground water contamination is discussed, and the conclusion is that there would be no contamination if the proper construction methods were used. Does the term "proper construction methods" include tunnel lining and if so, what is the difference in cost between lining and not lining the tunnels?

655

8. On Page 3-14 in Section 2.3.1.1.7, Thienaville, the following corrections should be made:  
.36MGD =  $.02m^3/sec.$ , not  $.2m^3/sec.$  and  $.59MGD = .03m^3/sec.$ , not  $.3m^3/sec.$

656

9. On Page 3-41 in Section 3.6.3, MMSD's Recommended Plan, the first paragraph should explain that the MMSD's Recommended Plan will necessitate the expansion of the Jones Island Wastewater Treatment Plant not only on the 9.5-acre lake fill, but also on the 10 acres to the south of the existing plant.

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10. It appears that the material on Page 3-56 and part of Page 3-57 should follow the material on Page 3-53.

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11. On Page 3-86, the EPA alternatives to correct the CSO and eliminate bypassing from separated sewers are discussed. We recommend that Alternatives 2 and 3, listed on this page, indicate how the flow from the separated sewers will be handled.

659

12. On Page 3-92 and Page 8-4, Appendix VI, the value .46 MGD ( $.02m^3/sec.$  not  $.01m^3/sec.$ ) is given as the existing average daily flow, but on Page 3-14 the average daily flow is given as .24MGD. Which figure is correct?

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13. On Page 4-52 in Table 4.21, no information is shown for the City of Franklin.

661

14. On Page 5-108 in Table 5.53, under Worst Case Negative, the following corrections should be made:

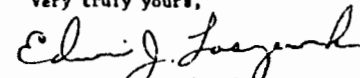
- A. Gross Output: Positive value should be \$4,544,452 instead of \$544,452.
- B. Employment (man years): Negative value should be 72,197 not 72,192.
- C. Employment (man years): Net Impact value should be -17,100, not 17,100.

662

15. On Page 7-6 (Appendix VI) in Section 7.4, Final Alternative, the third sentence of paragraph one should read "Furthermore, the City of South Milwaukee."

I would be pleased to discuss these comments further with you if you so desire. I can be reached by telephone at 414-278-2400.

Very truly yours,

  
Edwin J. Gzowski, P.E.  
City Engineer

JY/m  
EJL:RE:dr

ROBERT A. ANDERSON



**PRESIDENT OF THE COMMON COUNCIL**  
City of Milwaukee

January 6, 1981

U.S. Environmental Protection Agency  
Region V  
270 South Dearborn Street  
Chicago, Illinois 60604

Attention: Mr. Gene Wojcik, Chief, EIS

Gentlemen:

You have invited comment on the Draft Environmental Impact Statement for the Milwaukee Water Pollution Abatement Program.

I have been an advocate of a deep tunnel for treatment and hydro-electric power generation, and I did write a letter to the Sewerage Commission offering that suggestion.

568 The construction of a treatment tunnel at a depth of 600 feet, underlying the impervious Maquoketa shale, and under Lake Michigan to the south shore sewage disposal plant site would not require concrete lining because there would be no "ex-filtration." In contrast, the Metropolitan proposes spending \$600,000,000 for concrete lined twenty-foot diameter tunnels in the relatively shallow limestone rock below the county stadium for sewage storage only.

The Jones Island Plant could be phased out and that valuable Lake Front property appropriated for other good use. The \$400,000,000 proposed to be spent for expansion of the Jones Island and South Shore facilities could be applied to oxygenation and treatment in the tunnel.

Hydro-electric power generation could be accomplished at the South Shore site by the construction of a pumped storage reservoir to generate peak power. This could complement the hydro-electric power plant at Ludington, Michigan, and satisfy the market for peak hydro power.

The present plan provides for "swimmable and fishable" water when it is completed. Such mediocre standards have been set by your agency, whereas the Water Pollution Control Act calls for the elimination of the discharge of pollutants by 1985.

U.S. Environmental Protection Agency  
Attention Mr. Gene Wojcik

-2-

January 6, 1981

1663

The solids handling part of the problem, so basic to any plan, is not covered by the Environmental Impact Statement. Supplemental Impact Statements are promised for 1982 and 1983. The omission now of this vital part of the EIS appears to negate the entire voluminous document.

From the above it is apparent that Milwaukee is in the middle of a limited research program struggling to get answers instead of studying comprehensive alternative designs which could be more cost effective.

Sincerely yours,

*Robert A. Anderson*  
ROBERT A. ANDERSON  
President of the Common Council  
City of Milwaukee

RAA:cj

Village of **Elm Grove**

13600 Juneway Boulevard  
Elm Grove, Wisconsin 53122  
782 6700

January 8, 1981

*GW*  
Gene Wojcik  
Chief, EIS Section  
United States Environmental Protection Agency  
Region V, 230 South Dearborn Street  
Chicago, Illinois 60604

Re: SWEE

Dear Mr. Wojcik:

The Village of Elm Grove, WI., wishes to submit this letter as comment on the November 1980 Environmental Impact Statement, Milwaukee Metropolitan Sewerage District, Water Pollution Abatement Program.

The MMSD Water Pollution Abatement Program is an enormous and complex project. It has been made even more difficult by the imposition of various court order time tables and standards of sewerage treatment. Perhaps because of this, and because of certain political decisions made by the MMSD Commission, there are certain omissions to the Environmental Impact Statement about which we must make comment.

664 The Statement does not address the issue of whether or not it is economically desirable for a community such as Elm Grove to associate itself with this project. It appears very realistic that a municipality might be able to build its own sewerage treatment plant or for a number of municipalities to build a mini-regional plant more economically than the respective share of current project costs.

Weight is added to this position by the decision of the Milwaukee Metropolitan Sewerage District to spread the abnormally high cost of the local problem of unique Milwaukee/Shorewood clear water entry in combined storm and sanitary sewers, district-wide, which might amount to one-half of the total project.

Some municipalities in the District such as Elm Grove have taken significant steps to separate clear water from the sanitary sewers at their own expense. Although all clear water has not been eliminated and never will be, at least initial steps have been taken while other areas in the City of Milwaukee and Village of Shorewood have seen fit to ignore this issue for many years. Now with court-ordered improvements, Elm Grove and other suburban communities

are being forced to share in the cost of the solution to Milwaukee and Shorewood problems as well.

Since the City of Milwaukee controls the appointment of a majority of the members of the MMSD Commissions, it is obvious that they would make no other decision as a cost-saving move for the City of Milwaukee.

665

Common sense indicates that for long-term operation and maintenance costs, there should be a total separation of storm and sanitary sewers in the combined Sewer area. The fiscal impact of total sewer separation, if financed by City of Milwaukee and Village of Shorewood, was evaluated under the assumption that only those property owners living in the CSO area should pay for the costs of separation. The result is that the costs to those property owners is astronomical. The combined sewer problem is a community problem for the City of Milwaukee and Village of Shorewood and should be evaluated in terms of spreading that cost among all property owners in those two communities.

665

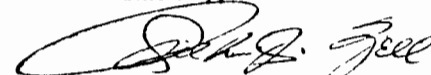
We believe that the Milwaukee Metropolitan Sewerage District has historically, and should continue to be, involved in the construction and operation and maintenance of Waste Water Treatment plants and interceptor sewers. They should not involve themselves in the financing of local sewer construction, rehabilitation, or maintenance in any way. The local sewers were constructed and maintained by local governments. If they are faulty and need repairs, those repairs should be made and financed by those same local governments.

The end result of the actions being taken by the MMSD Commission is a form of regional government. This is counter to most concepts of American government and certainly counter to our concept of local autonomy, but with full cooperation in our fair share in the Water Pollution Abatement program.

Finally, it must be pointed out that many citizens and most of the communities within the Metropolitan Sewerage District took the time to submit oral and/or written comments on the District's Facility Plan; to date, no written response has been received by us on these comments even though it is our understanding that funds have been set aside to investigate and respond to these comments.

Therefore, we object to the findings of this Environmental Impact Statement. We are at this time considering alternatives to our existing association with the Milwaukee Metropolitan Sewerage District Water Pollution Abatement Project.

Sincerely,



Elm Grove Sewerage Commission  
Wm. J. Zell, President

WJZ/bg



City of Muskego

1132 58200 RACINE AVENUE • MUSKEGO, WISCONSIN 53150

21 JAN 15 PM 3 30  
January 12, 1981

Mr. Charles H. Suffin  
Environmental Protection Agency  
Region V  
230 South Dearborn St.  
Chicago, Ill 60604

Re: MMSD Environmental  
Impact Statement

Dear Mr. Suffin:

We have reviewed the Draft Environmental Impact Statement for the Milwaukee Water Pollution Abatement Program and wish to comment on same.

665 Both the MMSD facilities plan and the EIS fail to completely address one of the most important issues of the proposed program, which is district wide financing. The MMSD has historically constructed and operated the wastewater treatment facilities and the interceptor sewers (MIS). The recommendations of the facilities planning report for district wide financing present a total deviation from past MMSD practice. The idea of MMSD assuming the responsibility for all communities sewer repairs and rehabilitation and for operating and maintaining a storm sewer system in Shorewood and Milwaukee is very disturbing. This would be another step towards regionalized government which historically has proven to be ineffective and not sensitive to the local communities needs. The present practice of each community constructing, operating and maintaining their own sanitary sewer and storm sewer systems has been accepted by the connected communities and to our knowledge has never been questioned. The current financing of new local sewer systems and sewer repairs is controlled by elected officials who are accountable to the taxpayers. The recommended plan has no procedures for accountability by the Sewage Commission to our local taxpayers. Since the majority of communities connected to the MMSD are not represented, and the MMSD is not accountable for its expenditures or procedures, it would be a grave mistake to place additional local facilities under the control of MMSD. The present overwhelming objections by the majority of connected communities to the district wide financing of the CSO project, and the sewer rehabilitation, leads us to believe we are not alone in our quest to maintain local control of our sewer systems. We have no objections to paying our share of regional treatment facilities or interceptor costs and any associated operation and maintenance costs.

We feel the correct solution to the CSO problem is total separation of the clearwater sources from the sanitary sewers. The overall present worth cost analysis indicated the cost difference is insignificant and therefore should not be used to select an alternative. Any solution to the CSO problem which would leave known sources of clearwater (roof drains, sump pumps,

City of Fine Residential, Industrial and Recreational Facilities

Page 2

MMSD Environmental Impact Statement

666 cooling water, catch basins) connected to the system, obviously deserves closer scrutiny. It seems very unequitable to require our citizens to pay for the removal of their clearwater connections to the sewer system and also for local storm sewer projects and then to ask them to help pay for the construction, operation, and maintenance of a sanitary and storm sewer system in Milwaukee and Shorewood where any type of clearwater connection to the system is allowed. Neither the facilities plan, or the EIS, discussed what the cost benefit is to Shorewood or Milwaukee of not having to construct, operate or maintain a storm sewer system. We find it very important to note that the complete sewer separation alternative is the least costly alternative for operation and maintenance and uses the least amount of energy. At the current rate of inflation and skyrocketing energy costs the future costs for operation and maintenance and energy could create a significant impact on the users.

All of the deep storage solutions to the CSO problem have many possible problems which could affect the cost effectiveness analysis. The vast quantities of excavated material with no disposal sites, the extra pumping costs, the possible irreparable damage to the ground water quality, the uncertainty of construction costs, the treatability of the salty cold spring runoff, and the solids removal problems all indicate that complete sewer separation is the most logical solution. Regardless of the court decisions, the sewer separation could begin immediately and could be staged over any number of years. The many past years of sewer system neglect and age of the system would dictate that the new sanitary sewers are required.

When we accepted the area wide planning report prepared by the Southeastern Wisconsin Planning Commission, it was stated that Muskego would connect to MMSD and contract for treatment of its wastewater. The City would then be responsible for construction of its local sewers and the interceptor sewer to the Milwaukee County line for connection to the MMSD system. The adopted report clearly stated that the financing of local sewers and interceptors outside of Milwaukee County would be the responsibility of each individual community. There was no indication that district wide financing of the entire project might become a reality. If such was the case at the time of SEWRPC's report the City would probably have constructed a permanent treatment facility at the Northeast treatment facility site. We are not aware that SEWRPC has been requested to change the findings of their planning report, and if not, the MMSD should follow SEWRPC's recommendations.

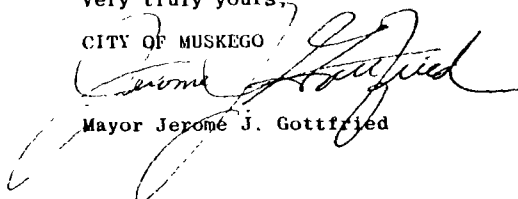
667 The EIS did not address the public participation program of MMSD or the responsiveness of MMSD to major questions and issues raised during the facilities planning process and public hearings. We have appeared at the public hearings and have written statements to the MMSD asking specific questions regarding their proposed plan. To date, we have received no replies to any of our questions. The Final Facilities Plan failed to address our questions, and many of the other communities questions, and yet the EIS made no mention that there was a total lack of

responsiveness or communication between ourselves and the MMSD. The public participation program has turned into an expensive advertising campaign to sell the facilities plan and promote the MMSD. We understood that the program was meant to inform the public and to be responsive to the major issues raised by the public at the public hearings. We would certainly hope that the EPA is not satisfied with the lack of responsiveness on the part of the MMSD. One of the main reasons the City has joined in the lawsuit by the suburban communities was the MMSD Commissioners unwillingness to discuss the major issues concerning the project. Now it appears that our questions and concerns might never be addressed, and the project will proceed regardless of negative public comments.

The City of Muskego is very anxious to eliminate its existing treatment facilities and help to reduce pollution in southeastern Wisconsin. We however, are not anxious to commit ourselves to a project with negligible water quality benefits, enormous costs and a completely unequitable method of cost distribution. We welcome any effort by the State and Federal agencies to bring the scope of the project within affordable limits and to insure that each user will pay his fair and equitable share of the costs. We would hope that the attached list of questions can be addressed in more detail in the Final EIS.

Very truly yours,

CITY OF MUSKEGO

  
Mayor Jerome J. Gottfried

JG.kj

cc: SEWRPC - Mr. Kurt Bauer  
WI DNR - Mr. Jay Hockmuth  
ESEI - Mr. Tom Meinholz  
MMSD - Mr. Tom Wolf

MILWAUKEE METROPOLITAN SEWERAGE DISTRICT  
DRAFT ENVIRONMENTAL IMPACT STATEMENT  
ISSUES TO BE ADDRESSED IN FINAL EIS

The following questions and issues should be addressed in the Final Environmental Impact Statement prepared under the direction of the Environmental Protection Agency.

668

1) With the present costs of sewer construction decreasing, and the local labor force badly in need of work, wouldn't the complete sewer separation alternative provide the largest overall benefit to the water quality and local economies?

669

2) Examining the problems and cost overruns of the Chicago TARP project, wouldn't the sewer separation project be dealing with a more finite problem and be less subject to major problems and cost overruns?

670

3) What are the impacts of continuing with the present MMSD commissioner appointments and lack of representation of the majority of connected communities? Will this current imbalance of representation possibly jeopardize the ability of the project to proceed?

671

4) Since the present CSO level of protection required by the DNR and the Federal Court does not provide an acceptable cost benefit will the EPA participate in funding any portion of the project?

672

5) What will be the ultimate disposal of the excavated material from the CSO storage projects? What are the costs involved with the disposal of such material?

673

6) What is the long term effect of storing raw sewage and industrial wastes within an aquifer used for drinking water? Will the cone of depression caused by the drawdown from existing and proposed wells in the area of the storage tunnels increase exfiltration possibilities? If contamination of the water table occurs what are the long term effects on the future water supplies?

367

7) What effort will be made to eliminate the current practice of subsidizing the wet industries who don't pay their full share of construction and treatment costs?

674

8) Why were there no costs assigned to additional operation and maintenance at the treatment facilities caused by the CSO in any of the storage alternatives? Items such as

increased grit handling, solids handling, increased BOD removal, chlorination, phosphorus removal, pumping costs, etc., were not given a cost for the storage alternatives.

367

9) What provisions are being made to require pre-treatment by industries to remove excessive metals which have a significant effect on the future of the agricultural spreading of sludge?

CITY OF MUSKEGO

January - 1981



## Germanantown...village on the grow!

N122 W17177 FOND DU LAC AVENUE • GERMANTOWN, WISCONSIN 53022

PHONE: 881-1811 • 877-2177

January 12, 1981

Mr. Charles H. Suffin  
Environmental Protection Agency  
Region V  
230 South Dearborn Street  
Chicago, Illinois 60604

RE: MMSD Environmental Impact  
Statement

Dear Mr. Suffin:

We have reviewed the Draft Environmental Impact Statement for the Milwaukee Water Pollution Abatement Program and wish to comment on same.

665

Both the MMSD facilities plan and the EIS fail to completely address one of the most important issues of the proposed program, which is district wide financing. The MMSD has historically constructed and operated the wastewater treatment facilities and the interceptor sewers (MIS). The recommendations of the facilities planning report for district wide financing present a total deviation from past MMSD practice. The idea of MMSD assuming the responsibility for all communities sewer repairs and rehabilitation and for operating and maintaining a storm sewer system in Shorewood and Milwaukee is very disturbing. This would be another step towards regionalized government which historically has proven to be ineffective and not sensitive to the local communities needs. The present practice of each community constructing, operating and maintaining their own sanitary sewer and storm sewer systems has been accepted by the connected communities and to our knowledge has never been questioned. The current financing of new local sewer systems and sewer repairs is controlled by elected officials who are accountable to the taxpayers. The recommended plan has no procedures for accountability by the Sewage Commission to our local taxpayers. Since the majority of communities connected to the MMSD are not represented, and the MMSD is not accountable for its expenditures or procedures,

Mr. Charles Suffin  
January 12, 1981  
Page 2

it would be a grave mistake to place additional local facilities under the control of MMSD. The present overwhelming objections by the majority of connected communities to the district wide financing of the CSO project, and the sewer rehabilitation, leads us to believe we are not alone in our quest to maintain local control of our sewer systems. We have no objections to paying our share of regional treatment facilities or interceptor costs and any associated operation and maintenance costs.

We feel the correct solution to the CSO problem is total separation of the clearwater sources from the sanitary sewers. The overall present worth cost analysis indicated the cost difference is insignificant and therefore should not be used to select an alternative. Any solution to the CSO problem which would leave known sources of clearwater (roof drains, sump pumps, cooling water, catch basins) connected to the system, obviously deserves closer scrutiny. It seems very unequitable to require our citizens to pay for the removal of their clearwater connections to the sewer system and also for local storm sewer projects and then to ask them to help pay for the construction, operation, and maintenance of a sanitary and storm sewer system in Milwaukee and Shorewood where any type of clearwater connection to the system is allowed. Neither the facilities plan, or the EIS, discussed what the cost benefit is to Shorewood or Milwaukee of not having to construct, operate or maintain a storm sewer system. We find it very important to note that the complete sewer separation alternative is the least costly alternative for operation and maintenance and uses the least amount of energy. At the current rate of inflation and skyrocketing energy costs the future costs for operation and maintenance and energy could create a significant impact on the users.

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All of the deep storage solutions to the CSO problem have many possible problems which could affect the cost effectiveness analysis. The vast quantities of excavated material with no disposal sites, the extra pumping costs, the possible irreparable damage to the ground water quality, the uncertainty of construction costs, the treatability of the salty cold spring runoff, and the solids removal problems all indicate that complete sewer separation is the most logical solution. Regardless of the court decisions, the sewer separation could begin immediately and could be staged over any number of years. The many past years of sewer

system neglect and age of the system, would dictate that the new sanitary sewers are required.

When we accepted the area wide planning report prepared by the Southeastern Wisconsin Planning Commission, it was stated that Germantown would connect to MMSD and contract for treatment of its wastewater. The Village would then be responsible for construction of its local sewers and the interceptor sewer to the Milwaukee County line for connection to the MMSD system. The adopted report clearly stated that the financing of local sewers and interceptors outside of Milwaukee County would be the responsibility of each individual community. There was no indication that district wide financing of the entire project might become a reality. If such was the case at the time of SEWRPC's report the Village would probably have constructed a permanent treatment facility at the present treatment facility site. We are not aware that SEWRPC has been requested to change the findings of their planning report, and if not, the MMSD should follow SEWRPC's recommendations.

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The EIS did not address the public participation program of MMSD or the responsiveness of MMSD to major questions and issues raised during the facilities planning process and public hearings. We have appeared at the public hearings and have written statements to the MMSD asking specific questions regarding their proposed plan. To date, we have received no replies to any of our questions. The Final Facilities Plan failed to address our questions, and many of the other communities questions, and yet the EIS made no mention that there was a total lack of responsiveness or communication between ourselves and the MMSD. The public participation program has turned into an expensive advertising campaign to sell the facilities plan and promote the MMSD. We understand that the program was meant to inform the public and to be responsive to the major issues raised by the public at the public hearings. We would certainly hope that the EPA is not satisfied with the lack of responsiveness on the part of the MMSD. It now appears that our questions and concerns might never be addressed, and the project will proceed regardless of negative public comments.

The Village is presently reviewing the local alternatives presented in the MMSD Facilities Plan and evaluating various local alternatives which were not discussed in the facilities plan or the EIS. Because the cost differences between the regional

alternative and our local alternative were so slight, further study should have been undertaken at the time the facilities plan was drafted. The water quality limitations of the Menomonee River were overstated by the facilities plan and further contact with DNR has indicated that a facility discharging to the Menomonee River would meet the standards. The recreational benefits of a constant base flow and high quality effluent in the Menomonee River were also overlooked in the past studies. If our cost projections for a future local treatment facility are favorable, we will request a revision of SEWRPC's 208 area wide plan. If our requests are granted, we will then proceed with the planning, and obtain approvals for our own permanent treatment facility.

If the results of our appeal for approval of a local alternative are negative, we will connect to the MMSD system. We would hope that for the sake of all the communities served by this project that the State and Federal agencies will be able to bring the scope of the project within affordable limits and will insure that each user will pay his fair and equitable share of the costs. We would hope that the attached list of questions can be addressed in more detail in the Final EIS.

Very truly yours,

VILLAGE OF GERMANTOWN

  
Robert R. Packee  
Village President

RRP:mmw

ccs: SEWRPC - Mr. Kurt Bauer  
WI DNR - Mr. Jay Hockmuth  
ESEI - Mr. Tom Meinholz  
MMSD - Mr. Tom Wolf

MILWAUKEE METROPOLITAN SEWERAGE DISTRICT  
DRAFT ENVIRONMENTAL IMPACT STATEMENT  
ISSUES TO BE ADDRESSED IN FINAL EIS

The following questions and issues should be addressed in the Final Environmental Impact Statement prepared under the direction of the Environmental Protection Agency.

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- 669 2) Examining the problems and cost overruns of the Chicago TARP project, wouldn't the sewer separation project be dealing with a more finite problem and be less subject to major problems and cost overruns?
- 670 3) What are the impacts of continuing with the present MMSD commissioner appointments and lack of representation of the majority of connected communities? Will this current imbalance of representation possibly jeopardize the ability of the project to proceed?
- 671 4) Since the present CSO level of protection required by the DNR and the Federal Court does not provide an acceptable cost benefit will the EPA participate in funding any portion of the project?
- 672 5) What will be the ultimate disposal of the excavated material from the CSO storage projects? What are the costs involved with the disposal of such material?
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9) What provisions are being made to require pre-treatment by industries to remove excessive metals which have a significant effect on the future of the agricultural spreading of sludge?

VILLAGE OF GERMANTOWN

January - 1981



Mayor

RECEIVED

JAN 15 PM 3:28

16500 West National Avenue  
New Berlin Wisconsin 53151  
414 786-8610

January 12, 1981

Mr. Charles H. Suffin  
Environmental Protection Agency  
Region V  
230 South Dearborn St.  
Chicago, Illinois 60604

Re: MMSD Environmental Impact Statement

Dear Mr. Suffin:

We have reviewed the Draft Environmental Impact Statement for the Milwaukee Water Pollution Abatement Program and wish to comment on same.

Both the MMSD facilities plan and the EIS fail to completely address one of the most important issues of the proposed program, which is district wide financing. The MMSD has historically constructed and operated the wastewater treatment facilities and the interceptor sewers (MIS). The recommendations of the facilities planning report for district wide financing present a total deviation from past MMSD practice. (665) The idea of MMSD assuming the responsibility for all communities sewer repairs and rehabilitation and for operating and maintaining a storm sewer system in Shorewood and Milwaukee is nothing more than a method to subsidize the lack of adequate preventive maintenance by these communities in the past. The present practice of each community constructing, operating, and maintaining its own sanitary sewer and storm sewer systems has been accepted by the connected communities and to our knowledge has never been questioned and should be continued. The current financing of new local sewer systems and sewer repairs is controlled by elected officials who are accountable to the taxpayers. The recommended plan has no procedures for accountability by the Sewerage District to the local taxpayers. Since the majority of communities connected to the MMSD are not represented on the Commissions, and the MMSD is not accountable for its expenditures or procedures to anyone, it would be a serious mistake to place additional local facilities under the control of MMSD. The present overwhelming objections by the majority of communities to the district wide financing of the CSO and the sewer rehabilitation projects, leads us to believe we are not alone in our

- 2 -

quest to maintain local control of local sewer systems. Despite the historical statements by District officials, the local communities have never objected to paying their share of district treatment facilities or interceptor costs and any associated operation and maintenance costs. However, New Berlin and the other communities do object to paying the costs of rehabilitating the local sewers of Milwaukee and Shorewood.

A study by the New Berlin auditors revealed that the plans adopted by MMSD would result in New Berlin paying 52 million dollars over the planning period while receiving only 11 million dollars in services. The residents of New Berlin cannot afford to subsidize Shorewood and Milwaukee to the tune of 41 million dollars and there simply is no reason why such a subsidy should be required.

We feel the correct solution to the CSO problem is total separation of the clearwater sources from the sanitary sewers. The overall present worth cost analysis that we did the cost difference is insignificant and therefore should not be used to select an alternative. Any solution to the CSO problem which would leave known sources of clear water (roof drains, sump pumps, cooling water, catch basins) connected to the system, obviously deserves closer scrutiny. It seems very inequitable to require our citizens to pay for the removal of their clearwater connections from the sanitary sewer system and then require them to help pay for the construction, operation, and maintenance of a sanitary sewer system, in Milwaukee and Shorewood where any type of clearwater connection to the system is allowed. We find it very important to note that the complete sewer separation alternative is the least costly alternative for operation and maintenance and uses the least amount of energy. Considering the current rate of inflation and ever increasing energy costs, the operation and maintenance of the presently proposed system will create a significant impact on the users.

All of the deep storage solutions to the CSO problem have many possible problems which could affect the cost effectiveness analysis. The vast quantities of excavated material with no disposal sites, the extra pumping costs, the possible irreparable damage to the ground water quality, the uncertainty of construction costs, the instability of the salty cold spring runoff, and the solids removal problems all indicate that the proposed solution should be rejected and another method be found to collect and treat the districts sewage. We suggest that complete separation is probably the best. Regardless of the court decisions, that sewer separation could begin immediately and could be staged over any number of years. The many past years of sewer system neglect and age of the system, would dictate that the new sanitary sewers are required.

When the area wide planning report prepared by the Southeastern Wisconsin Planning Commission was presented, it was stated that New Berlin would connect to MMSD and contract for treatment of its wastewater. The City would then be responsible for construction of its local sewers and the Interceptor sewer to the Milwaukee County line for connection to the MMSD system. The adopted report clearly stated that the financing of local sewers and interceptors outside of Milwaukee county would be the responsibility of each individual community. There was no indication that district wide financing of the entire project might become a reality. If such was the case at the time of SEWRPC's report the City would have vigorously objected. You are no doubt aware that New Berlin requested to be allowed to divorce itself from the district by constructing its own plant in the southeast corner of the City. The Facility Plan did not adequately address itself to this proposal and what was discussed led us to the conclusion that MMSD deliberately misrepresented the facts and deliberately omitted certain cost/benefit comparisons because it realized that including them would be detrimental to its position of creating a regional system.

We request that prior to any approvals being given to any MMSD plan, EPA require that MMSD do what it should have done initially; namely, investigate all alternatives on the unbiased basis of what is best for the general public not on the basis of self-indulgence and self-perpetuation.


667

The EIS does not seem to address the public participation program of MMSD or the responsiveness of MMSD to major questions and issues raised during the facilities planning process and public hearings. Many appeared at the public hearings and presented written statements to the MMSD asking specific questions regarding the proposed plan. To date, few if any replies have been received. The Final Facilities Plan failed to address many questions, of the communities and yet the EIS made no mention that there was a total lack of responsiveness or communication between the communities and the MMSD. The public participation program has been turned into an expensive advertising campaign to sell the facilities plan and promote the MMSD. We understood that the program was meant to inform the public and to be responsive to the major issues raised by the public at the public hearings. We would certainly hope that the EPA is not satisfied with the lack of responsiveness on the part of MMSD. One of the reasons New Berlin has joined in the lawsuit by the suburban communities was the MMSD Commissioners unwillingness to discuss the major issues concerning the project. Now it appears that our questions and concerns might never be addressed, and the project will proceed regardless of negative public comments.

The City of New Berlin is very anxious to eliminate its existing treatment facilities and help to reduce pollution in southeastern Wisconsin. We however, are not anxious to commit ourselves to a project with negligible water quality benefits, enormous costs, unsound environmental projections, and a completely unequitable method of cost distribution. We welcome any effort by the State and Federal agencies to bring the scope of the project within affordable limits and to insure that each user will pay his fair and equitable share of the costs.

Very truly yours,

CITY OF NEW BERLIN

  
John C. Malone,  
Mayor

JJM:ed  
SEWRPC - Mr. Kurt Bauer  
WI DNR - Mr. Jay Hockmuth  
ESEI - Mr. Tom Meinholz  
MMSD - Mr. Tom Wolf



STATEMENT OF THE CITY OF SOUTH MILWAUKEE  
TO THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
AND THE  
WISCONSIN DEPARTMENT OF NATURAL RESOURCES  
MILWAUKEE WATER POLLUTION ABATEMENT PROGRAM  
ENVIRONMENTAL IMPACT STATEMENT

Officials of the City of South Milwaukee and its residents have a deep and sincere interest in Milwaukee's Water Pollution Abatement Program even though the City itself is not a participating member of the Metropolitan Sewage District. This concern is caused by the location and proposed expansion of the South Shore Wastewater Treatment Plant which is located immediately adjacent to the City of South Milwaukee.

Since construction of the South Shore Wastewater Treatment Plant in 1968, numerous operating problems have created very severe and unwanted impacts on residential properties in our city. The most significant problem encountered is the presence of very strong and objectionable odors which have denied full use of property to many residents.

We have expressed our concern about odors continually over the years and fully anticipated and hoped that the problem would be corrected as a part of the Water Pollution Abatement Program.

To determine for ourselves that the odor problem and other concerns were fully addressed in the Environmental Impact Statement, our City officials and affected residents reviewed and read the Statement in its entirety from the front cover to the back cover and identified each statement or section in which odors, noise, property values, South Shore Plant Expansion and South Milwaukee's Sewage Treatment Plant were addressed. A summary copy of all excerpts relating to these areas is attached to and included as a part of this statement. A summary of these excerpts relating to odors is as follows:

EXCERPT FROM ENVIRONMENTAL STATEMENT RELATING TO ODORS

PAGE

- 1-17 "With the rehabilitation and the expansion of the facilities the solids should be properly treated, and all solids handling processes would be enclosed. As a result, odor problems should be minimized."
- 3-27 "Inefficient feeding, inadequate mixing, and poor temperature control of the anaerobic digester have led to incompletely processed sludge reaching storage lagoons. Severe odor problems have resulted. The new heating system currently being installed should improve digester performance and alleviate the odor problems."
- 3-35 "18. Odors. The perceived odors from the construction or operation of an alternative."
- 4-1 "These discussions are followed by descriptions of the human or man-made environment. Included in this section are the topics listed below.

Land Use  
Population  
Industry and Employment  
Municipal Revenues and Expenditures  
Sewerage System Costs  
Noise  
Odors  
Public Health  
Transportation, Traffic and Access  
Archaeological and Historical Sites  
Recreation  
Energy Consumption  
Resource Consumption

These descriptions present those aspects of the environment of the planning area that could be affected by or that place limits on planning for the MUPAP. The discussion in Chapter 5, Environmental Consequences, builds on the information in this chapter."

4-59 4.2.7 Odors

"Odors cannot be quantitatively measured. The perception of odors is subjective, and it can change the longer an individual is exposed to an odor. To assess any odor problems associated with the sewerage system

of the planning area, the EIS relied on records of public complaints." "None of the facilities, except the South Shore WWTP, has been cited for odor problems. In an independent survey of odor complaints between January, 1977 and April, 1978, of the 963 complaints that were registered the South Shore WWTP received 167, the second highest number in the survey. The cause of the odors at the South Shore WWTP is poor sludge digestion which allows unstabilized sludge to be pumped to outdoor storage. Since residential areas are located to the north and west of the WWTP, odors from this inadequately treated sludge have been a nuisance. In addition, the two other most frequently cited sources of odors are located within one half mile of the WWTP, and may account for some odors attributed to the South Shore WWTP."

"In addition to the treatment facilities, the rivers in the Inner Harbor area have been cited for odors."

#### 5.2.9.1 No Action Alternative

"The No Action Alternative could increase odor problems in the planning area. Raw or inadequately treated wastewater would be periodically discharged into the area's water. These discharges would continue to create unpleasant odors from the rivers of the planning area." There have also been complaints about odors from some of the large wastewater treatment plants in the planning area."

5-120 "During a general odor survey, the South Shore WWTP received the second highest number of complaints. Odor problems occur at this WWTP because the digester system has been operating inefficiently, allowing inadequately digested sludge to reach the storage lagoons. Because of the facility's location near a residential area, these odor problems are a nuisance. Attempts have been made to alleviate the problem by using odor masking devices and abandoning the lagoons nearest residential areas. However, some odor problems remain.

It is also possible that an animal reprocessing plant located near the WWTP is a source of some of the odors attributed to South Shore."

5-121 "Odors might occur at WWTPs. Since the Jones Island WWTP is located in an industrial area, its expansion and upgrading would probably not increase odors. The South Shore WWTP is located near residential areas and has been cited for nuisance odors. With the upgrading of this facility additional sludge lagoons at that site would be abandoned. This action and improvements in operations should minimize the odor problems from this facility. As has been stated, the South Shore WWTP may not be the only source of odors in this area. If this is the case, elimination of the sludge lagoons at South Shore would not affect nuisance odors in the area."

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The above excerpts do not, in our opinion, identify or quantify the source of odors, the impact that noxious odors are having on the owners and residents in the City of South Milwaukee, nor do the plans for expansion of the South Shore Treatment Plant include definitive plans to eliminate the odor problem. The impact statement concludes that certain odors attributed to the South Shore Plant may actually be generated by other nearby industrial plants. If this were actually true, it is imperative that each odor source in this area be clearly identified so that the Department of Natural Resources could proceed with effective enforcement action. It is also possible that odors attributed to privately owned industrial concerns may in fact have been generated by the South Shore Wastewater Treatment Plant. The environmental impact review should be sufficiently complete and accurate to avoid attributing the odors to the wrong source.

The assumption that wastewater plant expansion including elimination of additional open lagoons will eliminate odors is without basis and promulgating a concept

that "minimization" of odors is an acceptable goal will not be accepted by the affected residents of South Milwaukee.

The environmental impact statement also fails to address the affects of noxious odors on health of residents in the affected areas. A statement prepared by Mrs. LaVon Smith, 3809 4th Avenue, South Milwaukee addresses this issue and it is imperative that both the Environmental Protection Agency and the Wisconsin Department of Natural Resources require a full review of the relationship between the presence of harmful odors or emissions and the effects on the health and well-being of affected residents.

The impact statement addresses the issue of property values in areas adjoining the South Shore Wastewater Plant on page 1-17 with the following statement:

"The issue of property value is more difficult to assess.

Records show that, historically, property values near the WWTP have not been depressed in comparison to other property in South Milwaukee. Therefore, there is no evidence to indicate that property values would be affected by the expansion of South Shore."

This statement is incorrect based on the actual experiences of property owners in the affected area. These experiences have been relayed to the Metropolitan Sewerage Commission at previous hearings and meetings, but such comments and experiences have been disregarded in the final reports and in the environmental impact statement. We request that the impact statement not be approved until this issue has been fully addressed.

The City of South Milwaukee's concerns over expansion of the South Shore Wastewater Treatment Plant were previously stated at the Public Hearing conducted on April 15, 1980 relating to the Master Facilities Plans.

The environmental impact studies have included two additional alternatives for plant expansion but do not conclude that lakefill expansion should be avoided.

A copy of the City's previous statement is included in its entirety and we request that all of these comments and concerns be given full consideration in your final evaluation.

*PRESENTED BY:*  
*CHESTER W. GROBSCHMIDT*  
*MAYOR*  
*CITY OF SOUTH MILWAUKEE*

Theodore J. Fadrow, Mayor, City of Franklin

Mayor Fadrow attended the afternoon session of EPA's public hearing on the Draft EIS (December 17, 1981). A summary of Mayor Fadrow's statement is presented.

- (672) Mayor Fadrow expressed three major concerns: 1) the potential for the contamination of the limestone and sandstone aquifers from deep tunnels, 2) the cost of the deep tunnels, especially in light of escalating costs for Chicago's deep tunnel project, and 3) the lack of benefit that deep tunnels would have for the City of Franklin and municipalities outside Milwaukee County.

(679) Mayor Fadrow pointed out that almost all residents of the City of Franklin use wells for drinking water, and that even slight contamination would be devastating to the community. He questions MMSD-EIS conclusions that the deep tunnels would not leak, pointing out that even the newest sewers have some leakage. Although the EIS indicated that groundwater pressure would not allow deep tunnel leaking, Mayor Fadrow asked whether, under three scenarios, sewage might in fact leak from the tunnels. Could sewage exfiltrate the tunnels if a nearby well depressed the water table below the level of the sewage in the tunnel? Could the sewage in the tunnels rise above groundwater levels due to a surcharge from combined sewer overflow or the failure of a control system, causing leakage? Could the water table drop after completion of the tunnels, causing exfiltration?

(680)

Mayor Fadrow went on to express his understanding that the Wisconsin Administrative Code states that no foreign substances may be added to the groundwater aquifer. He believes that DNR would not allow the tunnels to be constructed. He pointed out that Chicago's tunnel project was originally estimated to cost three billion dollars, but the cost to date has been eleven and one half billion, with the project not yet completed.

(681)

The Mayor's final comments raised questions about what benefit the deep tunnels would have for Franklin or any other communities downstream of the tunnels. He asserted that sewage from the City of Franklin will never be stored in the tunnels, and so the community will receive no benefit.

(438)

In closing, Mayor Fadrow asked who would bear the cost of redrilling wells in Franklin, should they become contaminated.

## PUBLIC WORKS INDUSTRY *Improvement Program*

2835 NORTH MAYFAIR ROAD • MILWAUKEE, WISCONSIN 53222 • TELEPHONE (414) 778-1050

LAWRENCE A. MICHAEL  
Executive Director

### PUBLIC HEARING

December 18, 1980

ENVIRONMENTAL IMPACT STATEMENT DRAFT ON THE

MILWAUKEE METROPOLITAN SEWERAGE DISTRICT'S

WATER POLLUTION ABATEMENT PROGRAM

Presentation By: PUBLIC WORKS INDUSTRY IMPROVEMENT PROGRAM  
LAWRENCE A. MICHAEL, EXECUTIVE DIRECTOR

Good afternoon. My name is Lawrence A. Michael, Executive Director of the Public Works Industry Improvement Program. I am here representing approximately 55 construction companies who perform work in southeastern Wisconsin, and also I am representing myself as a resident homeowner and taxpayer living in the City of Milwaukee.

During the limited time available today for oral comments, we wish to address two very significant and fundamental issues concerning the Milwaukee Water Pollution Abatement Program (M.W.P.A.P.) and your Environmental Impact Statement (E.I.S.) draft. Those issues are (1) the very real possibility of irrevocable contamination of sub-surface drinking water as a result of the proposed in-line storage of sewage, and (2) the total financial improbability of funding the program.

682

Concerning the contamination issue, we refer to your EIS Chapter 1 Executive Summary Section 1.5.3.3. wherein you state that there are a number of improperly abandoned wells and other isolated areas of low piezometric surface. These and other conditions could allow transmission of stored sewage to exfiltrate from the facilities potentially contaminating all three major aquifers, even the deep sandstone aquifer.

A representative of E.S.E.I. Ecoscience Environmental Group has confirmed to us that all improperly abandoned and unused wells may not, in fact, be located. Further, we agreed that certain improperly abandoned wells may be inaccessible for proper sealing as you dictate. Other professional engineers knowledgeable in this discipline have also made the same observations and confirmations.

It is obvious with reference to the afore-mentioned valid concerns, in your last sentence of Section 1.5.3.3. which reads and we quote,

"With proper construction and operating practices, the tunnel and storage facilities should not adversely affect the groundwater in the area."

We emphasize the words, should not.

683 Unless you can determine with absolute certitude that groundwater contamination will not occur, any deep storage plan must be disapproved in your final Environmental Impact Statement. Kevin J. Fay, Senior Project Manager of ESEI Ecolsciences Environmental Group, Mr. Michael O'Toole of the United States Environmental Protection Agency, and several other professional engineers have agreed with our position that the discipline of design engineering does not allow for confirming in fact that our groundwater will not be contaminated by the planned storage facilities. Your decision appears very clear on this issue and we ask that you choose an alternative that does not present this environmentally dangerous potential situation to our community. There are viable cost beneficial alternatives to in-line storage such as thorough rehabilitation of existing sewers, sewer separation, upgraded waste water treatment plants and strict enforcement of existing plumbing codes.

Concerning the financial aspects of the proposed Milwaukee Water Pollution Abatement Program, we are greatly concerned with the enormous financial burden that will be imposed on our taxpayers. We are disappointed that your Executive Summary does not make greater

reference to the negative fiscal and economic impacts on our communities.

684 Your Appendix X attempts to address the fiscal and economic impacts, however, substantial assumptions are made regarding anticipated federal and state financing. On Page 128 of Appendix X, you state and we quote,

"Households will be most burdened by the increase in taxes."

We submit that the enormous financial burden on local taxpayers is so significant that your final Environmental Impact Statement should disapprove the proposed Milwaukee Water Pollution Abatement Program on that basis alone.

756 On Page 18 of Appendix X, your most pessimistic funding proposition assumes 75% grant funding from sources outside our community for steps 1 and 2 of the construction grants process and 60% grant funding from sources outside our community for step 3. We respectfully submit that your assumptions of future federal and state funding that will be available throughout the proposed Milwaukee Water Pollution Abatement Program are dangerously high, and that the assumptions made in Appendix X concerning future funding have an apparent lack of concern for the economic welfare of the local taxpayers. We ask that you include in the final Environmental Impact Statement tables, analyses, and comments for all alternatives with the assumption that federal, state, and any other outside funding will not be available during the entire length of the Milwaukee Water Pollution Abatement Program. We

believe that the local taxpayer deserves to be informed and aware of what may lie ahead should outside funding cease to be available. Gentlemen, what will it cost?

We all favor clean water; however, any clean-up program must be economically practical and environmentally safe.

We also submit to you for the public record the following documents:

1. Report by the Comptroller General of the United States to the U. S. Congress, No. CED-80-40, dated December 28, 1979, titled "Large Construction Projects to Correct Combined Sewer Overflow Are Too Costly".
2. Report by the Comptroller General of the United States to the U. S. Congress, No. CED-80-86, dated July 2, 1980, titled "Many Water Quality Standard Violations May Not Be Significant Enough to Justify Costly Preventive Actions".
3. "Statement of Position" by The Associated Public Works Contractors and the Public Works Industry Improvement Program, dated November 1980, regarding the Greater Milwaukee Water Pollution Abatement Program.
4. Letter and attachment from the Associated Public Works Contractors dated July 15, 1980, and the attached report from Ralph E. Milaeger, Registered Professional Engineer.
5. Copies of oral presentations dated April 17, 1980, and April 22, 1980, from Lawrence A. Michael to the M.M.S.D.
6. Copies of pages IV and VI of the M.M.S.D. 1981 Budget Message.

We respectfully request that you address these items in your final Environmental Impact Statement.

Thank you very much.

BY THE COMPTROLLER GENERAL

## Report To The Congress OF THE UNITED STATES

### Many Water Quality Standard Violations May Not Be Significant Enough To Justify Costly Preventive Actions

Advanced waste treatment for municipal sewage may not be worth the tremendous costs--estimated by the Environmental Protection Agency at \$10 billion--unless it will make a substantial difference to water quality. In setting or revising water quality standards, States generally do not consider costs, and many standards are based on questionable data. A number of costly advanced waste treatment plants may have little effect on water quality.

This report presents a number of options to the Congress concerning the funding of advanced waste treatment projects. It also makes recommendations to the Administrator of the Environmental Protection Agency to help improve the way water quality standards are set and implemented and the procedures used in assessing the need for advanced waste treatment.



CED-80-86  
JULY 2, 1980

REPORT BY THE

# Comptroller General

OF THE UNITED STATES

PERMANENT PUBLIC WORKS CONTRACTORS  
OF GREATER MILWAUKEE, INC.  
2835 North Mayfair Road  
Milwaukee, Wisconsin 53222

70 U.S. Senate

## <sup>Seattle</sup> Large Construction Projects To Correct Combined Sewer Overflows Are Too Costly

Progress in stemming pollution and flooding caused by combined storm sewer and sewage systems has been slow. Neither the Federal Government nor local communities can supply the enormous funds required for the large construction projects usually needed. The Environmental Protection Agency estimates that almost \$26 billion will be needed to curb pollution caused by sewer overflows and at least \$62 billion to prevent flooding.

New techniques are needed if cities are to solve their problems soon. A concept known as best management practices offers promise. Under this concept, a community attempts various inexpensive measures before considering costly solutions.

GAO makes recommendations to the Congress and the Environmental Protection Agency to encourage use of low cost techniques.



CED-80-40  
DECEMBER 28, 1979

### GREATER MILWAUKEE WATER POLLUTION ABATEMENT PROGRAM

### STATEMENT OF POSITION

### ASSOCIATED PUBLIC WORKS CONTRACTORS AND PUBLIC WORKS INDUSTRY IMPROVEMENT PROGRAM

November 1980

ASSOCIATED PUBLIC WORKS CONTRACTORS  
of Greater Milwaukee, Inc.  
2835 North Mayfair Road  
Milwaukee, WI 53222  
(414-778-1050)



November 1980

### INTRODUCTION

Greater Milwaukee has engaged in an extraordinary public works project with the purpose of abating water pollution. Along with this undertaking has come:

- \* A financial burden so great that Milwaukee County may be forced into bankruptcy.
- \* A distinct possibility that the citizens of our local communities may be faced with untold tax increases along with the loss of many services now provided.
- \* Expenditures for consulting costs alone exceeding \$4,000,000 per month.
- \* A very real possibility of irreversible contamination of subsurface drinking water.
- \* A level of controversy so great that lawsuits have erupted on the federal, state and local level.

Notwithstanding the above, the planning, design and construction of this large scale Water Pollution Abatement Program continues on a daily basis.

### PURPOSE

To identify the problems facing our community under the ongoing Pollution Abatement Program.

To offer for consideration reasonable and practical alternatives and solutions to these problems.

### CURRENT STATUS

Greater Milwaukee is presently faced with clean water requirements from both regulatory agencies and under court orders. The re-

quirements impose both very stringent clean water quality standards and extremely short time tables for completion of the necessary pollution abatement facilities.

Faced with these requirements, the Milwaukee Metropolitan Sewerage District has officially adopted, on June 5, 1980, a Master Facilities Plan for our community's Water Pollution Abatement Program.

### FINANCIAL PROBLEMS

The cost of the program in 1978 dollars has been estimated between \$1.6 billion and \$2.5 billion (without the costs of inflation or interest expenses). Both a Federal Court Order and our own State of Wisconsin Court Stipulation require that significant portions of the proposed program must be completed by July 1, 1986. The requirement to have the program completed in the near future compresses the dollar expenditures and also increases the costs of the total program. Without the court ordered and regulatory agency demanded completion dates, the clean up program could be spread over a greater number of years and the fiscal integrity of our community can be maintained.

To accomplish the proposed plan, estimated expenditures in current dollars are approximately \$300 million dollars per year for a 10-year period. Adequate funding for the program is unavailable and, in fact, funding has been interrupted by both lawsuits and reluctance on the part of public officials to continue funding such a financially disastrous program. It is apparent that the program now under way is a total financial impossibility for our community. The costs are most significantly understood when translated to cost per day. Currently, this program will cost our community \$822,000 per day. Even with full funding and appropriations through grants from federal and state agencies, our community cannot afford the local share of the program

costs. The single, most disquieting fact is that planning and design expenditures are continuing on a day-to-day basis with full knowledge that the planned program will not be funded or completed.

Efforts are continuing in order to develop more federal and state financing; however, both governmental bodies have mandated that all future spending must be curtailed. Also, the General Accounting Office, in a report to the United States Congress, dated December 28, 1979, has made it very clear that large scale construction projects to correct water pollution problems are too costly to build (report #CFD-80-40 -- Milwaukee and 14 other major cities are included in the report as examples). Lastly, the resultant effect on the water quality of our rivers, streams and Lake Michigan is insignificant when compared to the total cost of the proposed clean-up program.

#### TECHNICAL PROBLEMS

The planned facilities include conventional construction such as new sewer systems, rehabilitated sewers and upgraded waste water treatment plants. Of greatest concern and controversy is the planned "in-line storage tunnels."

Our subsurface drinking water is presently uncontaminated. It is planned that our sewage will be stored in tunnels to be constructed 300 feet below ground, 20 feet or larger in diameter and approximately 90,000 feet in length (17 miles). Professional engineers are on record stating that the proposed tunnel facility can cause irreversible contamination of our subsurface drinking water supplies. By comparison, the Chicago area ground water is already contaminated to a depth of approximately 900 feet. Should ground water contamination occur here because of this deep storage tunnel, the health hazards and resultant lawsuits could be devastating to our communities.

The deep tunnel storage plan also requires that the enormous amount of stored sewage must be pumped and conveyed to our wastewater treatment plants. Ever increasing operational and maintenance costs will require tremendous and wasteful energy demands. Will we and future generations have the necessary energy available and at what cost to our community?

Since this in-line deep storage is unique, the planning, design and construction of the facility will be besieged with unknown and differing subsurface conditions. No consultant, no contractor and no engineer can state with certitude whether such a facility can, in fact, be built and operated successfully and safely. No one can accurately predict what the final cost might be.

#### IMMEDIATE COURSE OF ACTION

Elected and appointed officials recognize the apparent impossibility of funding the Master Facilities Plan, as adopted. Further, the Milwaukee County Executive has made it very clear, in a letter to the Governor, dated September 3, 1980, that the future funding of the Water Pollution Abatement Program by the County of Milwaukee could lead to our community's financial ruin.

The proposed Program is not financially feasible. It is incumbent upon all elected and appointed officials in the State of Wisconsin to unite in the effort to solve this crisis. The solution is not limited to securing additional state and federal funding for continuation of the Master Facilities Plan.

Our elected and appointed officials, along with the taxpayers, must determine a viable solution. That solution is a water pollution abatement program that our community can reasonably afford and control

without placing our community and taxpayers in economic jeopardy. Prudent expenditures on an annual basis will then dictate the type and nature of a water clean-up program that should be undertaken immediately. Should that amount of expenditure not allow our community to meet federal or state ordered deadlines, our elected and appointed officials, with total citizen support, must make a determined effort to seek legislative and judicial relief from the present standards, time tables and court orders.

SUMMARY

To continue with the proposed water clean-up program in its present form, is not in the best interest of this community. We must:

- \* Avoid a potential fiscal catastrophe for Greater Milwaukee and the State of Wisconsin.
- \* Avoid a forced mass exodus of responsible businesses and taxpayers out of our area.
- \* Avoid excessive and unnecessary expenditures for planning and design of facilities that may not be built.
- \* Avoid any possibility of irreversible contamination of existing subsurface drinking water.
- \* Avoid wasteful costs to the taxpayer through unnecessary litigation.

We must unanimously support our public officials in the selection and implementation of an economically feasible and environmentally safe water pollution program including the necessary legislative modifications and judicial relief.

**ASSOCIATED PUBLIC WORKS CONTRACTORS**  
OF GREATER MILWAUKEE, INC.

JOHN DRAKE  
Executive Director

2836 N. MAYFAIR ROAD  
MILWAUKEE, WIS 53222  
TELEPHONE: 778-1600

July 15, 1980

Dear Sir:

We have enclosed a report by Mr. Ralph E. Milaeger, P.E. in regard to possible pollution of both the limestone and sandstone strata where many residences and industries in the Milwaukee area obtain their water supplies. Mr. Milaeger is a respected, registered professional engineer and his corporation has installed wells for many years in the Milwaukee area. Mr. Milaeger is the most knowledgeable person we have in the Greater Milwaukee Metropolitan Area in regard to this problem.

The Master Facilities Plan, which was approved by the Metropolitan Sewerage District Commissioners on June 5, 1980, includes the possible construction of 90,000 lineal feet of 240 inch diameter inline storage tunnel. This structure would store and convey sanitary sewerage with all the pathogenic bacteria which is the product of a large metropolitan area. We think it would be a tragic error to construct this tunnel and endanger the water supply which serves 40% of our community.

Our Association represents 25 public works contractors and 80 associated members. We believe our members have the expertise and experience to make an intelligent appraisal and judgment in regard to the selection of alternates which can be used to solve our pollution problems. It is our carefully considered judgment that the construction of this proposed inline storage tunnel would be a bad choice. We are aware of numerous reasons in addition to the possible contamination of our underground water supply which would lead us to this conclusion.

If you are as concerned with this problem as we are and would care to discuss this matter in detail, we will be pleased to meet with you and provide all the exact, detailed information which has caused our concern.

Sincerely yours,

ASSOCIATED PUBLIC WORKS CONTRACTORS

John Drake  
Executive Director

JD:gs  
Enc.

DANGER OF WELL CONTAMINATION  
FROM  
IN-LINE "WASTE WATER" STORAGE

There are many deep wells located in or near the proposed MMSD gravity tunnels for handling and storing waste water outflows during wet weather. Some of the more important industrial deep wells are:

Red Star Yeast	Milwaukee Tallow & Grease
Krause Milling	Kurth Malting
Babcock & Wilcox	Froedert Malting
Schlitz Brewery	Milwaukee County Zoo
AMPCO Metals	Zinn Malting
Pabst Brewery	

The water production from these wells is used in the manufacture of food products, such as malt, yeast and beer.

The Niagara limestone formation varies in thickness from 200 to 350 ft.; having its upper horizon 35 to 150 ft. below ground surface. The wells vary in depth from 1000 to 1800 ft.

The transmissability of ground water through the Niagara formation depends upon the inter-connecting of horizontal and vertical cracks and crevices. As a result, the water production can vary from less than 50 GPM to over 200 GPM, depending upon the quantity of intercepting fissures.

In many of these nearby industrial wells, the Niagara Limestone is not cased off, and therefore, contributes its water production to the well. Since this upper water is under less piezometric head than the lower sandstones (800 to 1700'), the water moves downward in the bore hole and enters the sandstones, especially during the times that the wells are not being pumped.

Therefore, any waste water pollution that would enter the limestone formation, could also contaminate the lower sandstones. These lower sandstones are known as the St. Peter and Mt. Simon formations and are the principal water source for the municipalities of Waukesha, New Berlin, Franklin and others.

Standard specifications for allowable leakage for sewer and water construction in Wisconsin, is 200 gallons per inch diameter per mile per day. Since this project encompasses 90,000 ft. of 240 inch inline storage, the allowable infiltration would be 800,000 gallons per day. Since the above figures are predicated on a static head of 10 ft., this proposed tunnel project could have hydro-static heads many times that number depending upon the static water level of the Niagara limestone at each leakage point.

Non-filterable viruses and pathogenic bacteria are easily transmitted through the fissured limestone, and especially would travel toward a pumped well, at a rate directly proportional to the "cone of pressure relief" surrounding it. It would be difficult, if not impossible, to monitor the static head on the deep tunnels during wet weather, because of:

1. Unpredictable fluctuation in static water levels (ground water table) during or immediately after a severe rainfall.
2. Not knowing pumpage records or water levels fluctuation in nearby wells immediately after a rainfall.
3. Not knowing the actual leakage at the area near a well, which would vary the static head outside the tunnel.

Furthermore, records show that there are numerous old wells in the downtown area that have not been in use for many years and have not been properly abandoned. These wells would be a notorious source for vertical migration of pollutants.

Since there are areas where the Niagara limestone has little or no water throughout its depth, there is a possibility of the waste water in the tunnels being under a hydro-static head of 250 ft.

Door County is an excellent example of the Niagara limestone transmitting effluent from septic tanks and causing unsafe water samples. The upper horizon of the limestone in this area can be as high as 5 ft., and the rock formation creviced. This condition has made it necessary to steel case and cement grout (1 1/2" thick minimum) every residential well at least 100 to 150 ft. from ground surface throughout the entire Door County area.

The economic and pathogenic risk involved resulting from the possible pollution of many industrial wells and possibly thousands of residential wells, precludes the feasibility of the deep tunnel storage as a solution to the MMSD's waste water treatment problem.

Ralph E. Milaequer  
Registered Professional  
Engineer - No. E2721

Wayne Caskey, Chairman  
Milwaukee Metropolitan  
Sewerage District  
735 North Water Street  
Milwaukee, Wisconsin 53202

April 17, 1980

RE: Milwaukee Metropolitan Sewerage District  
Water Pollution Abatement Program - Public Hearings -  
Oral Address Given for Public Record on Wednesday,  
April 16, 1980 at MECCA Convention Center,  
Milwaukee, Wisconsin

Dear Mr. Chairman and Commissioners:

My name is Lawrence A. Michael and I live at 6914 West Locust Street in the City of Milwaukee. I am here representing myself and my family as taxpayers, and also as constituents of the elected officials who appointed you.

It is unfortunate that you individuals have become the target for the understandable objections, frustrations, and complaints of our local taxpayers. The true culprits are not only the oppressive federal court order, but also the existing, unreasonable federal and state clean water requirements. I ask that my fellow taxpayers and voters go to their legislatures to obtain more reasonable legislation concerning our environment. We all favor cleaning up our environment, but any clean-up project must be economically practical and economically feasible.

With respect to the immediate decisions that you must make this coming June, I ask that you consider the economical impact on our community of one very basic issue. That issue is to forego any further expenditures to consultants, which you have stated has already exceeded \$50,000,000, and begin maximizing use of the available local Wisconsin construction employers and local Wisconsin labor forces for the conventional construction work in your master plan. Begin now to construct those projects in your plan that can be built by Wisconsin people and defer those portions of your plan that call for deep storage chambers and enormous 20-foot diameter sewers.

Wayne Caskey, Chairman  
Page 2

April 17, 1980

It is economic reality and economic fact that your total ten-year plan will greatly exceed any local, state, and federal money that may become available to our community. Your proposed plan is not a \$1.6 billion plan, but rather an undetermined multi-billion dollar plan.

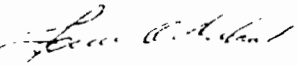
The question before us right now is not what happens if we run out of funding, but rather what happens when we run out of funding. At whatever point our community runs short of funds, we could at least have in existence needed functioning and useful rehabilitated sewer lines, useful new separated sewers, useful upgraded waste water treatment plants, and useful near-surface storage facilities. Our community does not need useless large caverns and useless deep storage chambers, which your plan contemplates.

Do not make Milwaukee another Chicago.

I urge you to be responsible to the true needs of this community. Have the courage to fight political pressures and special interest pressures to do otherwise, and respond to our community's needs by exercising your authority in the most financially and economically responsible manner.

Keep up your good work, and thank you very much for your consideration.

Very truly yours,

  
Lawrence A. Michael  
6914 West Locust Street  
Milwaukee, Wisconsin 53210

ADDRESS GIVEN TO THE MILWAUKEE METROPOLITAN SEWERAGE DISTRICT  
COMMISSIONERS - PUBLIC MEETING APRIL 22, 1980  
NICOLET HIGH SCHOOL  
GLENDALE, WISCONSIN

Mr. Chairman and Commissioners:

My concerns and comments regarding your proposed Master Facility Plan lie in two areas:

First, the total economic impracticality of certain parts of the proposed plan and second, the possible disastrous environmental implications of those very same parts of the plan. I am referring to the proposed enormous storage caverns under County Stadium and the proposed 20-foot diameter deep storage tunnels.

You advise us that your proposed plan has a price tag of \$1.6 billion. Chicago's deep storage plan was originally estimated at \$1.2 billion. That project is now far less than one-half completed and recent cost estimates are \$11 billion with additional future funding uncertain. Neither your estimated costs nor Chicago's estimated costs include the additional operating and maintenance expenses.

It is a fact that a project of the magnitude and nature you propose has never been successfully completed in this country or anywhere else in the world! No consultant, no contractor, and no engineer can tell us for certain whether such a project can, in fact, be built and operated successfully and safely. No one can predict what the final cost might be.

Environmental engineers have already advised us that any deep storage of polluted water will cause irreparable damage to the subsurface drinking water in an undetermined widespread area. Do not embark on an unproven construction project that has the distinct possibility of exhausting all financial funding. Do not embark on a construction project that can cause irrevocable and uncontrollable environmental damage to widespread subsurface water supplies.

You will solve nothing by diverting the polluted water from our rivers and lakes into deep storage caverns and tunnels. Illinois' lawsuit against the City of Milwaukee for polluting Lake Michigan will be dwarfed by the potential lawsuits arising from contamination of subsurface water supplies.

CONTINUED ON PAGE 2

## MMSD 1981 BUDGET MESSAGE

Each court order requires an elimination of all overflows and bypassing in the separated sewer systems owned and operated by municipalities within the District by mid-1986. Treatment plants must be completed by this date in order to handle existing plus added loadings.

The budgetary impact of the stay is a deferral of \$6.3 million for CSO abatement and \$4.8 million for South Shore expansion. All other expenditures must be made in order to comply with the Dane County Circuit Court Order.

In terms of policy, when the Federal Court Order is overturned, the Commissions will be faced with a new set of less stringent requirements. Numerous options currently infeasible because they do not meet the Federal Court Order will become viable, many of them less costly than those now recommended. An amended facilities plan and EIS will have to be prepared and the Commissions will have greater discretion in selecting pollution abatement facilities than they have now. In the unlikely event that the Federal Court Order is upheld the Commissions will be faced with the requirement to meet the Federal Court Order and will lose virtually all discretionary power over facility selection.

In either case, the Commissions still are faced with the enormous task of securing more outside aids or other sources of relief from the crushing fiscal burden of the Water Pollution Abatement Program. /L

The estimation of aids has been complicated by the impoundment of FY 1980 grant monies by the administration and the uncertainty over appropriations and release of FY 1981 grant monies.

The following assumptions were made in regards to grant funds:

- o All existing grant awards would be honored and revenues would be received normally.
- o FY 1980 impounded funds will be released by EPA in August of 1980.
- o The Wisconsin fund will be the only source of intergovernmental funding for construction projects.
- o EPA grant monies will be available for planning and for design work started after the Master Facilities Plan and the EIS are approved.

For a variety of reasons presented on Table II below the District does not expect to receive the full theoretical 75% funding which EPA grants provide. These reasons include: use of Wisconsin Fund which provides 60% funding; ineligibility of some project costs for funding; projects ineligible for grants altogether; projects theoretically grant eligible but for which the availability of grant funds is questionable; and finally a projected lag until 1982 of grants earned in November and December of 1981.

IV

Page 2

You have alternatives! Those alternatives are conventional construction techniques that are more certain in cost, more certain in efficiency, and more certain in safety. Do not destroy our community financially. Do not destroy our community environmentally.

The owners and operators of the ship Titanic insisted that it was unsinkable. Do not have your engineers telling us that deep storage plans will not sink our community.

I ask that you exercise your authority with wisdom and responsibility when you make your final decision on June 5.

Thank you.

RESPECTFULLY SUBMITTED,

LAWRENCE A. MICHAEL  
MILWAUKEE CITY RESIDENT  
AND TAXPAYER

## *MMSD 1981 BUDGET MESSAGE*

Recent actions by the Administration and Congress have resulted in a release of EPA Construction Grant Funds for states which have used their FY 1979 allocation. Wisconsin has received approximately \$21 million and the District has been awarded \$13.5 million in grants as a result of this action. Sources at EPA and DNR estimate another release of funds in September. With that release, sufficient funds should be obligated to the District to cover all grant related activities undertaken in 1980.

A possibility still exists that EPA grant funds for FY 1981 will be severely reduced because, nationwide, expenditures are running far under appropriations. Wisconsin is one of a handful of states which is successful in using its allocation.

With this uncertainty, it is estimated that sufficient EPA Construction Grant funds will be available to satisfy the revenue estimate contained in this budget. It must be realized, however, that this is based on preliminary information and is sensitive to budget actions in Washington.

Should those funds not become available in 1981 or should cutbacks in FY 1981 appropriations reduce the amount offered to the District, the Commissions will be faced with the task of ordering projects in priority fashion, doing those most critical in terms of the compliance schedule with local monies deferring others and possibly seeking a supplemental appropriation from Milwaukee County.

Even with full appropriation of EPA Construction Grant by Congress, there will still be a shortage of grant funds. The simple fact is that the District is fast approaching the day when the allocation of EPA and DNR grant funds for the entire State of Wisconsin will not be enough to meet the needs of the Water Pollution Abatement Program. It is incumbent upon all members of the community to convince our representatives in Madison and Washington of these dangers and seek full restoration of authorized grants and supplemental appropriations to help finance this extraordinary public works project.

### CONTEXT FOR BUDGETING

The 1980 and 1981 Budgets fit into the long-range financial program. Note that the past cost, as well as future costs, are reconciled to portray total project costs to project future cash requirements and to show how the individual projects relate to the total Water Pollution Abatement Program. Where specific projects cannot yet be identified, they are projected as "unscoped" projects. This is a means for projecting pre-conceptual costs. Finally, revenues beyond 1981 are not projected on a project-by-project basis since this degree of revenue-projection detail is not yet possible. Instead, future revenues are estimated at 75% of the total annual budget but no more than \$60 million, which is the current estimate of total annual grant funds available to the District.

The court-imposed timetable for pollution abatement essentially established the District's Capital Budget as it dictates what must be accomplished and when. Nevertheless, the court order does not eliminate the need for capital budgeting, but instead introduces a special set of problems which policy underlying the Capital Budget must address.



Lawrence A. Michael

Mr. Michael had submitted a written statement during the morning session of EPA's public hearing, but he introduced additional questions in the evening section. Mr. Michael questioned why the EIS did not give more consideration to the rehabilitation and reconstruction of sewers to eliminate infiltration and inflow, rather than planning to treat large quantities of rainwater contaminated by sewage and stored in a cavern that might pollute groundwater.

Mr. Michael asked how the EIS had determined that it would cost \$26.88 million annually to operate and maintain a completely separated system (page 1-14 of the Main text). More generally, he requested information about the determination of operation and maintenance costs for all alternatives, when present expenses are only \$5 million per year for the entire Milwaukee Department of Public Works.

Mr. Michael expressed concern about the fallibility of the storage cavern proposal. Also, he asked why the EIS had not discussed the possibility that federal and state funding may not be available to Milwaukee for the Water Pollution Abatement Program. What consequences would 0% funding have?

Mr. Michael specifically noted that the Fiscal/Economic Appendix shows that the average annual charge to households would rise from \$92 to \$232 as a result of the MWPAP. Mr. Michael believes that residents of the City of Milwaukee could not handle that

increase.

He further remarked that Tables 12 and 13 of the Fiscal/Economic Appendix show that the county debt limit would be exceeded with this project. Governor Dreyfus is submitting legislation in January to balance Wisconsin's deficit. The entire balance of the Wisconsin Fund will be removed. Therefore, what are the realistic costs to the community?

Michael noted that other municipal programs will also need funding and requested that the EIS include a list of other projects that Milwaukee County wants to fund - social services, medical services, law enforcement, the court and correctional systems, parks, and highways.

In closing, Mr. Michael recommended that the EPA and DNR disapprove the Master Facilities Plan, and instead recommend another, viable alternative.

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Statement

I am an associate professor of environmental and water resources engineering at Marquette University. I have now almost twenty years of experience in pollution abatement research and served as a consultant on water quality management problems to several industries and government agencies including Wisconsin Department of Natural Resources, Upper Mississippi River Basin Commission, NASA and Ontario Ministry of Environment.

I have also been involved with the MSD Master Faculty Plan and served for some time as a Chairman of the Jones Island Subcommittee of the Citizen's Environmental Assessment Committee.

687 My comments on the EIS of the Milw. Wat. Pollution Abatement Program (MWPAP) will be critical but, I do not want to downgrade the work of several hundreds engineers and staff workers of the program. However, there are several parts of the Master Plan that must be criticized, they are either unnecessarily costly or environmentally detrimental to receiving waters.

First, let me characterize the water quality problem facing Milwaukee. Water quality of streams of Milwaukee has been bad since the last century. Every summer the waters in the Inner Harbor become anoxic, odorous -- due to the production of hydrogen sulphide and other gases --, and aesthetically displeasing. This situation in the Inner Harbor has not improved. For example, studies by Rexnord, Inc. during the 1977 period showed frequent anoxic conditions usually following overflow from combined and storm sewers. Sediment and its organic content

2

in the harbor is blamed for the problem but it must be realized that the source of this organically rich sediment is the city and its sewer systems. Soils from the upper watershed contain only about 1 to 3 percent of organics, while the solids from the combined sewer overflows are more than 50 percent organic, and solids from storm sewers are about 20 to 30 percent organic. Furthermore, city solids contain high amounts of some very dangerous pollutants such as lead cadmium, and above all, PCB's that are non-existent in soils of the upper watershed. Obviously, there are no fish living in the Inner Harbor and recreational uses of the harbor are not only severely restricted, they are dangerous to human health.

The waters of the Outer Harbor are presently a mixture of treated and untreated sewage from the Jones Island treatment plant, inflow from the Inner Harbor, and influx of Lake Michigan water. It has been estimated that on an average the mixture ratio is 3 parts of lake water vs. 1 part of inflow. However, it must be realized that the word "average" means that for 50 percent of the time the ratio is less, and often under prevailing western wind conditions the influx of lake water is minimal. Lake water can enter the harbor only through three small gaps in the breakwater.

The Outer Harbor water quality is better. Dissolved oxygen is generally above 5 mg/l, mostly due to suppressed deoxygenation rates of BOD and ammonia caused by chlorination of the effluent. BOD levels in the harbor are quite high, in the range of 15 to 20 mg/l near the outfall, to 3 to 6 mg/l near the flushing tunnel intakes. The trophic status of the Outer Harbor is hypereutrophic. Fish kills of migrant fish in the harbor are common. The Outer Harbor has heavy recreational use and represents also a very high potential aesthetical value to downtown, Summerfest, and Lake Drive. It makes me wonder how the boaters at McKinley Marina feel when they use and store their boats on this only marginally diluted sewage.

The EIS characterization <sup>of</sup> ~~and~~ present water quality is inadequate and  
 688 poor. Most of the tables and conclusions are based on average flows and  
 average conditions which are meaningless in any water quality evaluation.  
 They only mean that for 50 percent of the time the water quality will be  
 worse. Nowhere in the EIS was water quality characterized under adverse  
 hydrological conditions similar to Q7-10, which are mandatory for any water  
 quality evaluation. For example, average D.O. conditions are affected by  
 high D.O. concentrations at low temperatures in winter months, and statements  
 such as, "the mean dissolved concentration in the Inner Harbor is over three  
 times the minimum standards", are misleading and should be excluded from the  
 report. Beyond that, the D.O. conditions in the Inner and Outer Harbors are  
 not documented in the EIS at all. EIS also did not address the problem of  
 so-called, "flushing tunnels", by which sewage is recycled from the Outer  
 Harbor into the Inner Harbor.

The second problem that must be pointed out are some components of the  
 Master Plan itself and their environmental and economical impact. Rehabili-  
 tation of sewers and treatment plants is necessary, the proposed change from  
 Milorganite production to sludge digestion is environmentally detrimental.  
 Sludge solids contain high amounts of nitrogen. In Milorganite the nitrogen  
 689 is retained and used as a valuable fertilizer. In the sludge digestion process  
 the nitrogen is released from the sludge in the form of ammonia and since  
 the plant will not be designed to retain ammonia, it will be discharged  
 to the Outer Harbor. The concentrations of ammonia in the effluent will  
 increase from about 5 mg/l to close to 20 mg/l.

Why is ammonia such a problem?

1) Ammonia imposes a great oxygen demand on receiving waters. For every  
 pound of ammonia discharged into the harbor waters, 4.3 pounds of oxygen  
 are used from the harbor during summer months to oxidize it to nitrate nitrogen.

(690)

By comparison, one pound of  $BOD_5$  requires only about 1.5 pounds of oxygen  
 for its oxidation. The Dissolved Oxygen Demand on the Outer Harbor - -  
 and the flushing tunnels on the Inner Harbor - - will increase more than three  
 times. Presently, under adverse hydrological conditions, the D.O. standards  
 in the Outer Harbor are only barely met. Therefore, tripling the dissolved  
 oxygen demand will have detrimental consequences. The Total Oxygen Demand  
 in the effluent will increase from the present approximately 50 to 60 mg/l  
 ( $4.3 \text{ NH}_4^+ + 1.5 \times BOD_5$ ) to more than 130 mg/l, thus resembling only a slightly  
 diluted raw sewage. The statement in the EIS that aeration of the effluent  
 will alleviate the problem is false. The added 3 to 4 mg of  $O_2$ /l to the  
 effluent - - under this 80 mg/l of TOD increase - - will be used in a matter  
 of hours and will have almost no effect. The Master Plan, as well as the EIS,  
 did not address the effect of ammonia discharge on the D.O. levels.

2) Unoxidized ammonia is very toxic. The proportion of the unoxidized ammonia  
 increases with pH. At the pH values of 8 to 8.4 which are commonly measured  
 in the Outer Harbor, roughly 3 to 8 percent of ammonia will be in this toxic  
 form. Under low flow summer conditions and 5:1 dilution of the effluent by  
 lake water, (this ratio may be too optimistic reflecting average rather than  
 adverse conditions) toxic ammonium concentrations near the outfall will be  
 around 0.5 to 1.4 mg/l and further in the harbor - - assuming that 5:1 dilution  
 will take place - - the concentration of toxic ammonium may decrease to 0.1  
 to 0.28 mg/l but still an order of magnitude above the DNR standards. This  
 water again may be recycled by the flushing tunnels into the Inner Harbor,  
 thus affecting the entire harbor water body.

(691)

Table 8c in Appendix VII of the EIS is obviously in an order of magnitude  
 error. Harbor water pH is commonly more than 8.0 and dilution of 1 to 18 of  
 the effluent in the harbor is not available under low flow conditions and  
 typical summer temperatures are greater than  $15^\circ\text{C}$ .

692 3) Nitrogen is a fertilizer to algae. Under present conditions the Outer Harbor can be classified as hyper-eutrophic and nuisance problems from algal growths are common. It is not certain that these growths in the harbor are phosphorus limited and increased nitrogen loads could conceivably lead to increased eutrophication of the harbor. This problem, again, was not answered in the EIS.

Under these adverse water quality impacts of the Master Plan, it amazes me greatly that the Milwaukee Sewerage Commission in its Fall 1980 Report to the Public, makes the public believe that significant water quality benefits will take place when the plan is implemented. No mention of the serious ammonia problem was included in this P. R. document.

693 The problem of worsened water quality in the harbor could be alleviated if the present Jones Island outfall is relocated outside the breakwater. I was glad to notice that the EIS discussed this possibility. I would like to add that the benefits of the outfall relocation will not only be limited to the Outer Harbor. By the flushing tunnels much cleaner, mostly lake water will be delivered to the Inner Harbor and thus greatly improve the water quality in the Inner Harbor as well. The entire harbor would be less turbid and the water quality standards might be met. Neither the Master Plan, nor EIS propose such a solution. It must be pointed out that the Jones Island Subcommittee of the Citizens Environmental Assessment Committee rejected the increased ammonia load as socially unacceptable. This position was adopted by the entire Committee but ignored by the Sewage Commission.

The sludge digestion problem is not related to water quality only. It is an intention of the Master Plan to dispose the sludge on landfills. Roughly 500 acres of landfill area will be required. I, personally, do not object to disposal of sludge on agricultural lands although digested sludge has much lower fertilizer value than directly dried sludge products such as

395 Milorganite. There are also some problems with toxicity of the sludge that can be alleviated by proper pre-treatment of industrial sources, e.g. of cadmium. The environmental consequences of agricultural disposal are minimal, however, landfilling is more environmentally harmful. Landfills are odorous operations that can severely affect groundwater. Landfills also produce methane gas which is commonly disposed of by burning. This creates a fire hazard to nearby residential areas. Landfill sites are generally lost for most future uses since they cannot be built on nor can they be used for agriculture. Leachate must be pumped for a long time after landfill sites are abandoned. Several years ago the city of Milwaukee realized that there may not be enough landfill sites available for disposal of the city's refuse and built a refuse recycling plant - - the city should be commended for that. Now the Sewage Commission is looking for 500 acres for landfill. Due to public resentment for additional landfills, and their limited availability, this proposal should be reconsidered.

The last component of the Master Plan and the EIS to be discussed herein is the solution to the combined sewer overflow problem. The Master Plan is suggesting the following solution:

- - Building approximately 460 miles of new storm sewers. EIS cost, \$359 million.
- - Main storage consisting of deep tunnels and a large cavern located under County Stadium. EIS cost, \$322 million.
- - Near surface storage. EIS cost, \$77 million.

The total EIS estimated cost of the program is over \$750 million (this is higher than the Master Plan estimate) and this facility will be fully used only once in about 25 to 50 years. Most of that time it will be idle - - empty and collecting groundwater.

This is an extremely costly plan. Although this solution was more-or-less forced on the community by Judge Grady's decision, and, hopefully, it will be overturned by the U.S. Supreme Court, the engineering solution is questionable and extremely costly. The approach proposed by consultants, and adopted by the MSD, is a so called "end-of-the-pipe" solution that has been traditionally applied for thirty or more years to solve problems with urban runoff. The urban runoff problem is a problem of containment and disposing of rain water. In rural and suburban areas this problem is simple; water from roofs and driveways overflows onto adjacent soils and is disposed of by infiltration. This is not possible in urban centers where large areas are impervious and water must be collected by sewers. During overland flow, rainwater picks up pollution from these surfaces and before it reaches the surface water it becomes polluted. Pollution of urban runoff is comparable to, or greater than, treated sewage and the quality of combined sewer overflows is often worse than raw sewage. The modern, and also the most economical solution, is not to collect the runoff and store it in huge underground caverns and tunnels, but to simply reduce or even eliminate the runoff. The techniques used include disconnecting roof drains and letting them overflow on nearby pervious soils or infiltration beds, use of pervious pavements on parking lots and side streets, and use of cheaper surface storage rather than underground storage. Such techniques are now widely used, e.g., in Chicago.

Compare the following cost figure based on 5-inch design storm:

The EIS figures include the following cost per one acre/ft. of storage:

Near surface storage . . . . \$328,000/acre/ft.

inlive storage and cavern. . . \$220,000/acre/ft.

This cost is in addition to \$359 million for sewer separation.

This compares to:

695. Disconnecting of one average house roof (3000 sq.ft) may cost less than \$500 including infiltration bed. Equivalent storage and storm sewer cost in the Master Plan is greater than \$10,000 or more than twenty times more.

One acre of pervious pavement costs approximately \$40,000 to \$50,000. Equivalent storage and sewer cost in the Master Plan- \$200,000 to 300,000 or 4-8 times more. Note that full credit for repavement is given to pollution abatement. In a 10-20 year period a large portion of urban surfaces will be repaved any way.

One acre-ft. storage in surface earthen basins costs less than \$10,000 or twenty to thirty times less than that in the Master Plan.

Cost of 1 acre-ft. in concrete-lined surface basins is about 5 to 10 times less, etc.

flows is after

These alternatives were not investigated by the Master Plan nor by the EIS.

What are the water quality benefits or drawbacks of the master plan solution to the combined sewer overflow problem.

1) Some BOD reduction will be achieved - around 18% according to the EIS.

2) Lead load will increase by 5%.

3) Coliform would be reduced by 99%.

4) More frequent overflows would create resuspension of sediments in the harbor and subsequent dissolved oxygen problems.

The combined incline storage alternative proposed by the EIS is much better than the alternative in the Master Plan since it intercepts and treats most of the urban runoff and all combined sewer overflows. However, the cost of this alternative is higher. It seems to me that reducing or eliminating runoff

at the source by hydrologic modifications (disconnecting downspouts and pervious pavements) plus surface infiltration and storage, is a far superior solution.

The EIS and the Master Plan emphasize that there will be no infiltration of the overflow from the tunnels and caverns into the groundwater aquifer. This is true since the piezometric water head will be maintained below the groundwater table. What worries me is just the opposite. The tunnels and the cavern must be kept empty for most of the time. The groundwater table in the Niagara dolomite may be more than 200 ft above the tunnel and the cavern. The dolomite is leaky and cracked. How a potentially large infiltration of clean groundwater into the tunnel will be prevented is not discussed and it is not included in the EIS. This clean water inflow cannot be disposed of directly into the receiving waters since after the first use of the system it will be as polluted as the overflow with which clean water will be mixed.

In summary, for more than \$1.6 billion and many millions in consulting fees, the overall water quality benefits of the Master Program are somewhat dubious at best. During wet weather, significant improvements will be achieved in coliforms, somewhat marginal improvements will be noticed in BOD<sub>5</sub>, maybe cadmium and some other metals, no improvement in suspended solids and lead, and a significant increase of total oxygen demand and ammonia toxicity.

During dry weather flow the Master Plan can be detrimental to outer and inner harbors due to tripling ammonia loads with related toxicity increases and more than doubling oxygen demand on the receiving waters. In addition, the Plan calls for 500 acres of landfills. Where is the idea of "anti-degradation" that is so emphasized in the Clean Water Act? It is evident that the Master Plan is not only leaving the solution of the water quality problem to future generations, but is also making it more difficult.

In conclusion, I would like to comment on one more aspect of the planning process. In the last three years, we had many engineers - - mostly young and inexperienced - - working on the problems. We also have seen many out-of-town

consultants, including some on the top, come and go, spending a short time on the project and then leaving. They will not be paying for the Master Plan. With one or two peripheral exceptions, however, the local academic institutions were not involved. We have three excellent universities nearby and most of the staff graduated from them. Yet, with the exception of the Outer Harbor study very little professional input was sought from the universities. Some of the best specialists in the nation, and in the world, on waste treatment, mixing, treatment plants, water quality management, urban sewerage systems, landfills, limnology, etc. are right here in Milwaukee or Madison. There is a great deal of knowledge on the Milwaukee pollution problems and solutions gathered by our academic institutions. It is unfortunate that their professional input and expertise was not used, both in the Master Plan and in the EIS.

*V. Novotny*  
Vladimir Novotny  
Associate Professor of Environmental and  
Water Resources Engineering  
Marquette University

Comments Concerning the EIS Draft  
"Solids Management"

(Farm Community Perspective)

697 A review of the EIS Solids Management(draft) discloses the fact that the application of sewage sludge to agricultural lands is dedicated to toxic degradation of Wisconsin soils, devaluation of prime agricultural acreage, contamination of ground water, dairy herds and human food resources.

The indorsed alternative of the application of sewage sludge to agricultural land is promoted by the DNR and indorsed by the DNR on the basis of conjecture. The whole operation has been publicized as environmentally safe but this assurance is supported only with assumptions, presumptions and synthetic analysis.

The "Solids Management" merits scientific condemnation for a number of reasons, some of which are listed as follows:

- (698) 1. Critical factors cited in the Federal Criteria for the application of sewage sludge to agricultural land have been ignored.  
For example:  
- Agricultural lands contaminated with toxic cadmium sewage sludge must eventually be recorded in farm estate deeds. This land must also be considered as damaged and therefore devaluated.  
- Legal liability and compensation regarding law suits for the consequence of adverse environmental impacts related to the disposal of toxic industrial waste in sewage sludge.
- (699) 2. Farmers are patronized by the DNR Solids Management to accept sludge application to their lands, when the DNR, EPA and affiliated research will not accept responsibility for future adverse environmental impacts resulting from ~~the~~ toxic sludge.
- (700) 3. The "Cost Effectiveness" of the sludge application to agricultural lands fails to account for the monitoring expense related to approximately 64,000 acres of land.
- (701) 4. Common sense and scientific logic regarding soils chemistry could not support the present cation exchange capacity of soil for the sole purpose of saturating it with toxic cadmium. The detergents and plasticizers in sewage sludge are not even cited for potential soil degradation. The important impact of acid rain has been totally ignored regarding its many adverse soil changes.

- (697) 5. The ppm threshold for cadmium toxicity in a dairy cow is at present an unknown factor. Research concerning dairy herds, sewage sludge and cadmium toxicity is in progress at the U of W, Madison. At present there has been no completed research to confirm the safety of toxic sewage sludge to grazing and forage crop lands. In spite of this situation the EIS draft condones this operation.
- (702) 6. The largest canning company in the world, Del Monte, literally condemned the "Solids Management" application of toxic sewage sludge to agricultural land, when it refused to contract with sludge treated farms. The EIS draft failed to acknowledge this commendable criticism.
- (703) 7. The DNR has become apprehensive in regard to its past apathy concerning the generous cadmium soil contamination standards it has allowed on Wisconsin soils (in behalf of DNR interests). The EIS fails to cite the fact that recently the 2lb. per acre per yr. has been lowered to a 1/4 lb. for reasons of safety.
- (704) 8. The EIS fails to admit to the fact that the facilities, manpower, funds, policing and monitoring of the toxic sludge contaminated lands is literally at a non-existent status.
- (705) 9. It is completely irresponsible to deliberately contaminate agricultural land with toxic cadmium so that it is unfit for human food crops. The supposition that such contaminated land can be beneficially used for grazing and forage crops exceeds the tolerance limits of reason in the academic realm of agriculture science. The EIS draft appears to lack a "Down to Earth, Common Sense Approach" to the application of toxic sewage sludge to agricultural lands.
- (706) 10. The EIS draft fails to address itself to the fact that dumping industrial toxic waste into the sewer system is the principle problem concerning "Solids Management". It ignores the fact that the "DNR Industrial Policy Committee" magnifies this problem by extending industrial pollution deadlines.
- (707) 11. The EIS title "Solids Management" should be corrected to read "Toxic Industrial Waste Dispersion Management". The DNR Bulletin #88, "Guidelines for Sewage Sludge Application to Farm Land", confirms this fact.  
Signed: *[Signature]* Ecologist  
Listed in the American Med. of Sewage.  
Date: 18 Dec. '80

## METROPOLITAN MILWAUKEE ASSOCIATION OF COMMERCE

Environmental Impact Statement Hearing  
Milwaukee Water Pollution Abatement Program  
December 18, 1980

On behalf of the Metropolitan Milwaukee Association of Commerce, we want to offer some comments regarding the proposed Master Facilities Plan (MFP).

Our general, overall concern relates to the severe cost burden which will be placed on this community by the proposed plan. While we recognize that a significant investment will be required to rehabilitate and modernize our existing sewerage system, we believe the proposal goes well beyond what is reasonable and justifiable from a cost-benefit standpoint.

In spite of the projected massive expenditure of \$1.6 billion, water quality standards still will not be met and this community will be hard pressed to notice any significant improvement. And these figures are unrealistically low since they do not reflect heightened inflationary trends and escalating interest rates.

We do not believe the proposed plan is the most cost-effective approach, given the significant additional costs and ground water impacts that have not adequately been taken into consideration, which we will get into in a moment.

Given the limited time available at this hearing and the voluminous nature of the EIS documents, we would like to specifically zero in on the ground water implications of the plan and then supplement our remarks with a more detailed written report.

Our initial concerns centered on the possible negative impact which the deep tunnel construction might have on industrial deep wells in this area. Due to the very technical and specialized nature of this subject, and in order to get an objective evaluation of whether and to what extent our initial

- 2 -

concerns were justified, we hired a consultant to assist us.

As a result of that investigation, we find that not only were those initial concerns justified but that the problem was much broader in scope, likely to adversely affect both the quality and quantity of ground water throughout this community.

So now I'd like to turn it over to our consultant, Walter Satterthwaite, professional geologist and President of Walter B. Satterthwaite Associates to briefly present the findings of our investigation.

The Master Facilities Plan recommends more than 17 miles of in-line storage with 20 foot diameter tunnels situated in the Niagara dolomite and additional near surface storage. This is proposed as a part of a plan to reduce the problems of wet weather overflows that now result in contamination of surface waters.

The concept of the proposed plan which will store sewage and contaminated storm water within a potable water aquifer that presently supplies industry and public water cannot be documented by long term scientific record from which to assure feasibility. Also, the extent and magnitude of controls necessary to guarantee protection of present and future water availability and drinking water quality, have not been sufficiently investigated at the time of this hearing. An Environmental Impact assessment must necessarily evaluate effects of any proposed action on the total water resources and environment conditions in the region. Without stringent examination, the area's environmental quality could suffer as an unforeseen consequence during construction and/or over the long term future.

Our evaluation of ground water conditions has been directed toward investigation of potential changes in water availability or quality that would likely



occur from implementation of a subsurface storage facility. This investigation into ground water conditions includes evaluation of existing reports, well logs, water use and aquifer water levels. To further develop an accurate basis of preliminary assessment, interviews have been conducted with a major drilling firm, water users and consultants for Milwaukee Metropolitan Sewerage District. Early investigation has indicated there to be serious question as to whether ground water resource protection could be maintained upon implementation of a deep storage concept. To summarize the basis of our opinion:

In the Milwaukee area ground water for many of the wells is derived from the water table aquifer in the Niagara formation and from the sandstone sequence which was originally under substantial artesian pressure. Over the years as more and more wells were put in operation, aquifer pressure (head conditions) have decreased in the aquifers. Many of the high capacity wells collect water from both the Niagara and the sandstone aquifer.

682 In recent time, with the availability of low cost water from the municipal system in Milwaukee, a number of wells have become inactive. Also, many wells have been abandoned in the central areas of the city. Since many of these wells are not identified in drilling logs or records, their location or proper sealing or abandonment are uncertain.

The total number of wells in permitted use can be readily determined from available records so that an inventory of active wells and temporarily inactive wells can be completed. On the other hand,

definition of the number and location of improperly abandoned wells penetrating one or both of the aquifers throughout the city represents a nearly impossible task.

The Niagara dolomite formation is a major aquifer with reported yields ranging up to 1000 gpm which normally contributes approximately half of the total water for many high volume wells in the Milwaukee area. While water levels have decreased in both aquifers, regional withdrawals in the sandstone units have resulted in a greater reduction in water level in these units. This condition results in present day static water levels as much as 350 feet below land surface within the city. These formation water levels result in migration of water from the dolomite aquifer into the sandstone aquifer via abandoned wells and other wells when not in use. In the western suburbs and Waukesha County where this aquifer system is the primary water source, deep cones of pumping have become the dominant factor controlling ground water flow direction and gradient.

Ground water use and hydrogeologic conditions in this area have been evaluated in various reports, including "Ground Water Conditions in the Milwaukee/Waukesha Area - Wisconsin" which estimated area ground water use in 1949 as 19 mgd (million/gallons/day) from the sandstone and the dolomite aquifer. Ground water use at that time was slightly in excess of 38 mgd with withdrawal from each aquifer nearly balanced. While ground water withdrawal in the area now served by the Milwaukee (Lake Michigan) water supply has

not increased to the same extent as the inland area, a U. S. Geological Survey/Southeastern Wisconsin Regional Planning Commission report "Digital Computer Model of the Sandstone Aquifer in Southeastern Wisconsin" documents 32 mgd use in 1973 and projects 95 mgd withdrawal from the sandstone aquifer in the nine-county Wisconsin area by the year 2000. Since most major wells collect water from both aquifers, substantial increases in water withdrawal from the Niagara aquifer may also be expected. This condition will substantially reduce levels, thereby accelerating the rate of ground water movement in a westerly direction allowing greater migration from the Niagara aquifer and more rapid water movement in both aquifers toward the major pumping areas within and outside Milwaukee County.

While our evaluation of impacts resulting from the proposed plan of construction of in-line storage within the aquifer has not been finalized, the available data indicates there to be a number of primary impacts which can be grouped as immediate construction impacts, mid-term (post construction) and long term environmental impacts as indicated below.

(711) Immediate Impacts (Construction Period):

- The Niagara dolomite has considerable secondary permeability which will require variable but extensive dewatering to allow tunnel construction.
- Construction dewatering would result in a structurally controlled and irregularly shaped corridor area of reduced ground water

levels extending a considerable distance from the construction area.

- Wells within an approximate corridor area of up to several miles which pump from the Niagara aquifer may be expected to experience substantial reduction in capacity during construction.
- A significant number of high capacity wells utilizing both aquifers within the corridor will likely experience reduced level and capacity.
- Major industries in the corridor who now rely wholly or in part on ground water sources from both aquifers would experience lost well capacity and economic losses during construction unless alternate sources of water are provided.

Mid-term (post construction) impacts which could be anticipated based on available information and data are:

(712)

- Original ground water level and availability in the central corridor (affected area) will likely not be restored since a tunnel will function as a continual ground water drain.
- Ground water will continue to move from the Niagara aquifer to the sandstone aquifer via abandoned and inactive wells.
- As a result of increased withdrawal from both aquifers, water levels will be reduced, presenting a greater opportunity for waste water losses to enter the aquifers.

- Contaminants resulting from tunnel losses and construction spills would preferentially migrate to pumping wells in the local area and to the west where ground water is the sole source water supply.

Long term future impacts would be expected to be of greater severity due to a number of factors beyond the control of the MMSD and the agency as follows:

1. With ground water use in the sandstone aquifer estimated at 90 mgd by the year 2000 and corresponding increase in use of the Niagara aquifer, water levels will decrease in both aquifer units.
2. With such reduced water level, external conditions surrounding a tunnel would no longer create an inward pressure, but would be conducive to contaminated water loss from the tunnel.
- 713 2. As the tunnel ages, there will be increased opportunity for system leakage which in turn would enter the ground water aquifers.
- 714 4. Once contaminants enter the aquifer system, they would move at accelerated rates caused by steep gradients to existing permitted wells and public water supply wells located in Milwaukee County and Waukesha County where the largest ground water use occurs.

The current draft impact statement, which is the basis for this hearing, carefully examines surface water impacts and documents changes in flow, water quality, contaminant levels, future water quality and numerous secondary impacts.

However, unfortunately even primary impacts on the ground water resource system have not yet been evaluated. Such investigation must include inventory of existing wells, ground water use, water levels and future conditions for ground water resources in order to serve as a legitimate basis for selection of any preferential alternative. An assessment will necessarily have to include a detailed evaluation of construction, short-term, mid-term and long-term impacts as well as secondary impacts prior to any decision which would contemplate any storage or conveyance storage within the aquifer.

Our preliminary evaluation, which can only be briefly summarized herein, indicates a number of severe constraints that would be anticipated to result in substantial negative impacts if this alternative is implemented based on the proposed methods, criteria, and knowledge of the aquifer system.

At this time, sufficient data to quantify various potential impacts have not yet been developed by the consultants to the agencies which can serve as the basis for decision in this portion of the proposed alternative. The most important and far-reaching aspect of any aquifer storage decision must recognize that both aquifers serve as the primary source or indeed as the "sole source aquifers" in the area west of the Milwaukee area where surface water is not available. Therefore, stringent protection is necessary to guarantee preservation of water quality and availability for the long-term future.

STATEMENT OF HAROLD H. FUERNBERG AT MILWAUKEE  
AREA TECHNICAL COLLEGE ON DECEMBER 18, 1980,  
RELATIVE TO THE DRAFT ENVIRONMENTAL IMPACT  
STATEMENT RELATING TO THE MASTER FACILITIES  
PLAN OF THE MILWAUKEE METROPOLITAN SEWERAGE  
DISTRICT FOR THE LAKE MICHIGAN WATER POLLUTION  
ABATEMENT PROGRAM

Ladies and Gentlemen:

I am co-counsel for the plaintiffs in that legal action  
entitled City of Franklin, et al. vs. Metropolitan Sewerage Commission  
of the County of Milwaukee, et al., Case No. 531-895 in the Circuit  
Court of Milwaukee County, Wisconsin.

Before the adoption of the Master Facilities Plan of the  
Metropolitan Sewerage District of the County of Milwaukee for the  
Milwaukee Water Pollution Abatement Program, representatives of the  
15 municipalities and 6 taxpayers whom I represent objected to the  
adoption of the Master Facilities Plan on various grounds. One of the  
grounds was the fact that the Master Facilities Plan as adopted is  
environmentally unsafe in that the deep tunnels and in-line storage  
facilities proposed will pollute the wells within the District. Among  
the wells that will be polluted are municipally owned wells as well as the  
commercial wells identified in the report of Ralph Mileager. Before the  
adoption of the Master Facilities Plan by the Metropolitan Sewerage Commission  
of the County of Milwaukee and the Sewerage Commission of the City of Milwaukee,  
these environmental hazards were pointed out to the two commissions by Mr. John  
Drake and by Mr. Lawrence Michael at public hearings which were held by the  
two commissions. Furthermore, before the adoption of the Master Facilities

Plan, I renewed these objections in writing and filed them with the  
two commissions and with the Chicago office of the United States Environmental  
Protection Agency. I requested in writing that the Master Facilities  
Plan be amended to eliminate the environmental hazards identified by  
Mr. Drake and by Mr. Michael. However, neither commission saw fit to  
modify the Master Facilities Plan to eliminate the environmental hazards.  
Accordingly, the 15 municipalities and 6 taxpayers whom I represent commenced  
the legal action to which I referred in the Circuit Court of Milwaukee  
County to abate as a public nuisance the deep tunnels and in-line storage  
facilities. After the publication of the Ralph Mileager Report, I mailed  
a copy of that report to the Metropolitan Sewerage District and the two  
commissions and to the Chicago office of the United States Environmental  
Protection Agency. Upon the reading of the Draft Environmental Impact  
Statement prepared by the United States Environmental Protection Agency  
and Wisconsin Department of Natural Resources with the assistance of  
ESEI - Ecolsciences Environmental Group it appears that some recognition  
has been given to the dangers described by Mr. Drake, Mr. Michael, Mr. Mileager  
and the plaintiffs whom I represent in regard to the contamination of wells.  
Nevertheless, the present position of the staff and legal counsel of the  
Metropolitan Sewerage District still is that the deep tunnels and in-line  
storage facilities should remain an <sup>INTEGRAL</sup> intricate part of the Master Facilities  
Plan. Accordingly, I renew the objections which my clients have to the Master  
Facilities Plan as proposed and once again reiterate our demand that the  
environmental hazards inherent in the plan be eliminated and that the deep  
tunnels and in-line storage facilities as proposed be abandoned in favor of an

environmentally safe alternative plan and that no further funds be spent on the Master Facilities Plan as it now exists. I note that the Draft Environmental Impact Statement does not address itself to the problem of de-watering of the wells within the District. Nevertheless, I have been informed that the construction of the deep tunnels and in-line storage facilities will necessitate a very extensive de-watering program whereby the waters within the dolomite aquifer will be drained to such an extent that the wells of the District will be at least temporarily made inoperative. Considering the fact that approximately 40% of the drinking water used in the district is derived from wells, such a de-watering program is totally unacceptable. This type of problem was described by the Attorney General as a public nuisance subject to injunctive relief in the case of State ex rel. Lefollette vs. Michels Pipeline Construction, Inc., 63 Wis. 2d 278. Because of the de-watering program alone, the Master Facilities Plan as adopted should be abandoned.

We understand that the Draft Environmental Impact Statement will be considered by the Wisconsin Department of Natural Resources and by the United States Environmental Protection Agency and that thereafter hearings will be held on the final environmental impact statement. We also understand that questions posed at this time will be answered at the hearing to be held on the final environmental impact statement. Therefore, we request that answers be given on or before that time to the following questions:

1. De-watering of the Niagra formation could create a serious problem. What is the plan for de-watering, and what steps will be taken?

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2. While pumping a de-watering well 500 to 700 gallons per minute or more, do you have any projection what the drawdown might be at a well 1,000 feet away?
3. There are indications of water levels in some deep wells in the Milwaukee area that are below the projected level of tunneling. De-watering will lower these water levels deeper, and if there will be any contamination, pathogens will migrate through these wells. What steps will be taken to prevent this contamination?
4. The interview with Senator Percy of Illinois was broadcasted over Radio Station WGN on Tuesday, December 16, 1980, wherein he stated, "A moratorium should be placed on the Chicago tunneling project. The cost is now around 11 to 12 billion dollars and nobody knows for sure if it will work." What is your answer to that statement?
5. There is a city well pumping water from the Niagra dolomite at West Bend at 1,800 gallons per minute since 1932. Do you expect encountering such a well in the proposed route of the tunnel?
6. Faults and joints are common in the Niagra dolomite. Some people make reference to a fault extending southwest from the Milwaukee Harbor and throughout the Menomonee River Valley. Isn't it safe to say that sooner or later during construction, a fault line will be encountered? How will this be handled?

- (721) 7 A. Can a conduit or tunnel be water tight?
- (722) 8 2. Under what physical conditions can exfiltration occur?
- (723) 9 3. Will these conditions prevail in any portion of the proposed system and if so, to what extent? That is, what percentage of the system length could at times be subject to these conditions?
- 1724 10 A. Waste carrying conduits under gravity flow conditions are considered surcharged if the hydrolic grade line lies above the crown of the conduit. Under designed flows, what percentage of the system will be subject to this condition?
- (725) 11 5. Will exfiltration occur only during times of rainfall events, or will it occur in portions of the system under continuous use, that is, when the hydrolic grade line lies within the crown of the conveying structures?
- (726) 12 6. Will the ground water quality be impaired should exfiltration occur and will there be loss of use of the existing wells during construction, or restricted use for the present well water users as a result of quality changes?
- 727 13 A. Will the piezometric surface be lowered adjacent to any portion of the proposed system resulting in loss of use of wells or resulting in increased pumping heads and who will bear these costs?
- 728 14 A. Will the fissured nature of the Niagra formation increase the opportunity for contamination of the various aquifers, and what positive control measures can be taken to insure against degradation of ground water quality?

- (729) 15 A. What are the advantages of surface or near surface storage over cavern storage as it relates to the potential for the pollution of the ground water aquifer?
- (730) 16 16. How many cases and types of water borne diseases have occurred in the Metropolitan area over the last 20 years as a result of surface water quality?
- (731) 17 11. What is the profile of the proposed in-line storage alternative?

December 17, 1980

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Three years ago, due to family expansion, we decided to sell our home at 3821 5th Avenue, South Milwaukee, and soon found a home we liked. We bought it contingent to selling our home. At that time homes comparable to ours were selling in the low \$50's. Our real estate agent told us that though we could ask \$52,000 he would advise us to list at a lower price (solely because of our location). We put our home on the market for \$49,000. We had very few prospects, but did finally receive an offer to purchase from a couple whose attorney (after checking our area) advised them that because of Metro (at that time there was discussion of a composting site at the South Shore Plant) and what Metro might do in the future, they should not offer more than \$42,000. (\$10,000 below the average selling price of like homes in other areas of South Milwaukee). Since we had already placed our home on the market for \$3,000 less than comparable homes, we refused the offer. We lost the buyer, and, consequently, lost the home we wished to purchase.

In justice, I feel a thorough study on the marketability of homes in our area should be undertaken encompassing past, present and projected future selling prices and length of time needed to sell. In these inflationary times, homes in attractive areas are selling slowly. Our area, with the South Shore Plant as its unhealthily odorous neighbor, is already less than desirable. If Metro is allowed to expand here, we won't be able to give our homes away.

Mary M. Horwath  
Mary M. Horwath

James C. Horwath  
James C. Horwath  
3821 5th Avenue  
South Milwaukee 53172

December 18, 1980

RE: DRAFT ENVIRONMENTAL IMPACT STATEMENT

The primary responsibility of the Environmental Protection Agency is to protect the health and welfare of the people and to look at the environmental impact this might have.

The protection of the health and welfare of those people served by the Metropolitan Sewerage District has been thoroughly considered in the Draft Environmental Impact Statement. The expanded facilities planned by Metro will serve to protect the health and welfare of all people in the District through the year 2005. Sewage will be removed promptly from their homes and businesses and will be properly treated at adequate facilities.

But what has been planned to protect the health and welfare of those people who, because of residential location, suffer the environmental impacts from the South Shore Plant -- namely many residents of South Milwaukee? There are a limited number of references in the Statement to health and welfare problems caused by the operations of the South Shore Plant. The final Environmental Impact Statement must include answers to the following:

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1. Will a study be done to identify the gases emanating from the sewage treatment processes?
2. If harmful gases are identified, will a study be conducted to determine the effect of these gases on residents living in close proximity and will a plan be formulated to eliminate these gaseous emissions?
3. How will the processes which cause odors be contained or eliminated?
4. When will the odor-causing and bacteria producing sediment at the bottom of the two north lagoons be removed or covered?
5. When will the four open sludge lagoons be emptied?
6. Will the expansion into the lake bed remove recreational areas presently used for fishing, picnicing and swimming?
7. Will the expansion into the lake bed endanger the wild-life species presently common to the area such as sea gulls, raccoons, skunks, deer, cliff swallows and other birds?
8. Will an in-depth study be conducted to determine the extent of reduction of property values on homes in close proximity to the South Shore Plant?

The final Environmental Impact Statement must address all of the above issues in order to protect the health and welfare of all people affected by the Metropolitan Sewerage South Shore expansion.

Alderman Mary C. Nelson  
Alderman Mary C. Nelson  
City of South Milwaukee

MR. KARL G. ALFTER  
Rt. 1, W33775 Forest Ridge Dr.  
Delefield, Wisconsin 53018

December 15, 1980

Mr. Charles H. Sutfin  
Regional EPA Water Director  
230 So. Dearborn Street  
Chicago, Illinois 60604

Dear Mr. Sutfin:

On your published invitation in the MILWAUKEE JOURNAL on Dec. 14, 1980 for written comments relative to the environmental impact statement for the Milwaukee Metropolitan Sewerage District water pollution control projects, I am responding.

I am a member of the ACCESS Committee of the Milwaukee Metropolitan Sewerage District. In these meetings throughout the past year, I have made mention of the following concerns and I herewith share them with you at your invitation.

- (703) Treated sewerage sludge is being spread on agricultural lands by the Milwaukee District in southeastern Wisconsin. This is done under EPA and Wis. DNR standards presently extant. However, present day standards for heavy metals and living organisms in the sludge may well be made stricter in the future because of discovered hazard at that time. If this is the case, agricultural lands which have received this sludge application may well be considered poisoned in the future and their crops may well be unfit for animal or human consumption.
- 703 Further, the present regulations do not restrict the future use of the land. The present standards for agricultural application on a corn crop. Higher standards are presently in force for truck farming, and vegetable leaf crops because of the heavy metal plant uptake. The farmer can now subdivide and an unknowing home resident may have a table garden on this sludge treated land formerly done at corn agricultural levels. I feel that deed and zoning restrictions should apply to all lands treated at the presently high levels of sludge application for corn crops on agricultural land. These lands could change in regard to use and ownership, and need protection.
- 738 The Milwaukee District proposes agricultural storage sites and landfill sites for sludge in southeastern Wisconsin. In reference to these, I have concern for the water quality at these sites. Local run-off is to be contained at these sites, but improper design or damage to sealed bottoms could damage the natural aquifer resulting in nearby contaminated wells.
- 739 I live in the Delefield area, and have therefore had past knowledge of just such a situation at the nearby Sanitary Landfill. This landfill was built to Wis. DNR specification and now is contaminating the wells of homes built nearby.
- If an agricultural storage site or landfill is built near homes supplied with well water, these homeowners should be indemnified for possible water contamination or be provided with adequate safe water supply at Milwaukee District cost.

*Karl Alfter*





# MARQUETTE UNIVERSITY

1515 WEST WISCONSIN AVENUE / MILWAUKEE, WISCONSIN 53233 / 224 7030

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WATER DIVISION December 23, 1980

COLLEGE OF ENGINEERING  
DEPARTMENT OF CIVIL ENGINEERING

Mr. Gene Wojcik *GW*  
Chief, FIS Section  
Water Division  
U.S. Environmental Protection Agency  
Region V  
230 South Dearborn St.  
Chicago, IL 60604

RE: Environmental Impact Statement -  
Milwaukee Water Pollution Abatement  
Program

Dear Mr. Wojcik:

Pursuant to the National Environmental Policy Act and regulation, presented below are my comments on the Draft EIS for the Milwaukee Metropolitan Sewerage District's Water Pollution Abatement Program. My comments are based on the review of the Draft Executive Summary of the EIS, dated November, 1980, my general knowledge of the Milwaukee program as gleaned from reading various reports and articles through the years and from attending various conferences and hearings pertaining to the program, and from the general background acquired in my own professional activities in the environmental engineering area during the last 25 years, most of which being in the Milwaukee metropolitan area. Though there certainly will be many environmental benefits from the proposed program, I will only address in these comments key features of the program that in my view will have an overall significant adverse impact on our environment. These features can be summarized in three statements taken directly from the Draft Executive Summary, which follow:

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- (1) Page 1-6. "The MMSD recommends the Inline Storage Alternative."
- (2) Page 1-10. "Instead, landfilling of all solids was recommended. For the South Shore WWT, land application was recommended. Solids from the South Shore plant would be stored during the winter for land application over the growing season."
- (3) Page 1-19. "With proper construction and operating practices, the deep tunnel and storage facilities should not adversely affect the groundwater in the area."

Regarding the first point, the adverse environmental impact of deep cavern and tunnel storage of CSO stems mainly from the exceeding poor cost-benefit ratio resulting from the construction and operation of the proposed facilities. One of the basic principles of public health and public works ventures in past years has been to attempt to achieve the maximum benefit to the public for each dollar expended. It is based on the tenet that there are limited financial resources for most of society's undertakings, and if funds are not expended efficiently in one area of environmental improvement, it will result in the availability of fewer funds for another more critical area of environmental concern. It is my professional opinion that the purported environmental improvement to be achieved with the construction of the massive cavern and tunnels, is simply not worth the tremendous cost at this time, and that these funds could be used for much more effective environmental improvement. The loss in environmental improvement brought about by this inefficiency in the use of limited financial resources, will have an overall adverse impact on the environment.

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The proposed solids management program which is addressed in the second point, will also result in an overall adverse impact on the environment. The dependence on land disposal sites mainly outside the Milwaukee metropolitan

area, for the "dispersal" of sludges and other solids generated in wastewater treatment from a contributing population of around one million people, regardless if final disposal is accomplished by means of landfilling or application on agricultural lands, is a poor environmental approach to solids management. The principal reasons for this assessment are as follows:

- (1) Because of the large amount of solids generated, approval for disposal must be obtained continuously from numerous communities, governmental bodies and political entities to keep the system operating, which is a major point of vulnerability. The abrupt recinding of disposal permission by one or several of these bodies, can result in a crisis situation. Alternative measures hurriedly instituted under such stress conditions are often not in the best interest of the environment.
- (2) The dispersal of sludge solids on the land increases the probability of some of these materials being conveyed through erosion to nearby surface water bodies, some of which may be tributary to Lake Michigan.
- (3) The health impact of metals uptake into the food chain is still being investigated, and it would appear inadvisable to introduce this health risk, particularly with other solids management options available. Similarly, potential health problems as a result of viruses, bacteria and other pathogens, as well as synthetic organics, associated with municipal sludges and other residues, are also being investigated.
- (4) Disposal of large quantities of wastewater plant solids at landfill sites will intensify the leachate problem, and increase the quantity of many mobile constituents, resulting from the decomposition of these solids, reaching the groundwater table. The nitrate ion is an example of one such constituent.
- (5) With round trip haul distances often exceeding 50 miles, solids dispersal on the land will require a large resource commitment for transport of solids, particularly the use of gasoline or diesel fuel, and cause the related environmental stresses that originate from such an activity, as for example, exhaust emissions, dust, noise and spillage.

The best long range environmental approach for wastewater solids management in a large community like Milwaukee, in my opinion, is to reduce the weight and volume of the solids to the smallest possible levels within the district boundaries, and to rely on land outside the District boundaries to the minimal extent possible.

Because of the much smaller quantity of ash involved, the lands finally selected would be the best from the standpoint of erosion and leachate management. Also, this land would not be used for agricultural purposes, which excludes the risk associated with incorporating certain undesirable constituents into the food chain. Some form of incineration with suitable air pollution control devices, would not have as adverse an impact on the overall environment as the approach recommended. Sludge dewatering approaches, with chemical addition, are available to produce a cake which will require some auxiliary fuel for burning the solids. Energy balances can be made more attractive by the possible use of refuse derived fuel as the auxiliary fuel source.

The use of incineration will also eliminate the need for anaerobic digestion, particularly at the Jones Island plant. The return flows from anaerobic digesters and dewatering of digested sludges, contain high concentrations of ammonia, metals and other constituents, which ultimately will find their way to the plant effluent, and hence Lake Michigan.

The last adverse environmental impact considered in this statement has to do with the potential for groundwater pollution from the exfiltration of CSO and raw wastewater stored in the proposed deep tunnels and cavern. Presumably this matter was investigated extensively by geologists and hydrogeologists and it was concluded that this approach "should not adversely affect the groundwater in the area," (underlined emphasis is mine). This conclusion implies a risk that conditions could exist which may cause the contamination of the surrounding groundwater. I believe that the risk is a valid one. In my opinion this risk is simply not worth it. The benefits derived to the environment as a result of building these storage facilities, is not worth even a low probability risk that the groundwater below the most populous part of the state may become contaminated. The environmental trade-off is a very poor one. If it could be

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conclusively demonstrated that a significant number of people are presently suffering health or other ill effects as a result of CSO and wastewater discharges into surrounding surface waters, then this risk to the groundwater environment may be worth it. Until such evidence is made clear, it would be environmentally an unwise approach to "toy" with the quality of a locally critical fresh water resource, that up to now has been reasonably well preserved.

It is my opinion that exfiltration of tunnel and cavern contents is a reasonable possibility when considering the long range operation of the system. First of all the tunnels and cavern capacities were based on approximately 50 years of local climatological data. This is a relatively short time in a hydrological sense. A real possibility exists that future precipitation and land surface (runoff) conditions can occur, in which the storage capacity of the system is exceeded, and result in an unfavorable piezometric balance of the type demonstrated in the lower portion of Figure 1-4, in the Draft Executive summary.

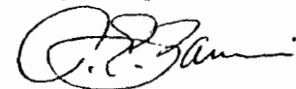
Also it cannot be assumed that the elevation of the groundwater table will remain static through the years. A combination of a sustained drought and extensive groundwater usage can lower the groundwater table appreciably, and increase the potential of exfiltration.

Finally, to assure that grouting and lining the tunnels and cavern will preclude any possibility of exfiltration is considering the situation only on a short term. From an environmental standpoint, it is also important to be concerned regarding the possible conditions of these man-made structures some 75 to 100 years hence.

In summary, it is my opinion that even a minor risk of groundwater contamination as a result of building these deep facilities, is not worth the purported benefits ascribed to the CSO abatement and peak flow attenuation

program, and for this reason, their construction will have an overall adverse impact on the environment.

Respectfully submitted,



A. E. Zanoni  
Professor of Civil Engineering



Franciscan  
Villa

Operated by Franciscan Sisters

Telephone: 764-4100

3601 South Chicago Avenue

South Milwaukee, WI 53172

P. O. Box 366

December 29, 1980

Mr. Charles Sutfin  
Director, Water Division  
US Environmental Protection Agency  
Region V  
230 South Dearborn Street  
Chicago, Illinois 60604

Dear Mr. Sutfin:

I am writing concerning the Milwaukee Water Pollution Abatement Program Environmental Impact Statement.

We at Franciscan Villa, a 150 bed skilled care Nursing Home have consistently gone on record indicating our concern with the environmental problems caused over the years by the South Shore Treatment Plant - specifically the odor problem.

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It is our position now that the Draft Environmental Impact Statement does not effectively deal with the odor problem at the South Shore Plant. We do support the findings of the South Shore Subcommittee Report - a copy of which is enclosed.

I will repeat again what we have indicated strongly before - the final recommendations at the South Shore Plant must be based on more than what is financially expedient. Human lives will be forever affected - for better or for worse - by what is finally decided. We feel strongly that the recommendations in the Draft Environmental Impact Statement will affect human lives for the worse, especially our 150 elderly residents.

Sincerely,

*Sister Mary Thomas Weyandt, O.S.F.*  
Sister Mary Thomas Weyandt, O.S.F.,  
Administrator

*Mr. Dan Langenwajter*  
Mr. Dan Langenwajter  
Assistant Administrator

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WATER DIVISION

December 29, 1980

DEC 31 AM 11 05

Gene Wojcik, Chief  
EIS Section, Water Division  
EPA - Region V  
230 South Dearborn Street  
Chicago IL 60604

WATER DIVISION

Re: Draft EIS on Milwaukee Metropolitan Sewerage District's  
Water Pollution Abatement Program

Dear Sir:

A review of the subject Draft EIS has generated the following comments to be included with the written statements being accepted by your agency until Friday, January 2, 1981:

1. The proposed deep tunnel plan is opposed for the following reasons:

- a. Public Health - The deep tunnel system is very risky as a result of undetermined fissures in the bedrock structure, which could pollute the aquifer serving the adjacent communities. Such testimony was provided during the public hearings held earlier on this subject by the Milwaukee Metropolitan Sewerage District. The real issue is adequate treatment of human waste products now combined with surface water runoff in certain areas of the City of Milwaukee and the Village of Shorewood. Complete sewer separation is the only solution, particularly in the downtown area of the City of Milwaukee where surface water runoff from approximately 1.5 square miles of streets, parking lots, and roofs are combined with domestic and commercial building sewage. Moreover, none of the urban development and renewal planning provides for the separation of sewers in the combined sewer area. The DEIS erroneously implies that deep tunnels will solve problems now caused by ground water infiltrating into sewers and building drains presently connected to the sanitary sewer. Combined sewage treatment involves the handling of tremendous wastewater flow that cannot effectively be given the preferred tertiary treatment, and consequently, an excessive dose of chlorine is required as compensation.
- b. Cost - Estimated \$1.6 billion project cost for the deep tunnel system is unrealistic in view of uncontrolled inflation and escalatory interest rates. For example, the Chicago area deep tunnel project started in 1972 has cost to date about \$1.5 billion for completion of 47 of the 131 miles of tunnels and reservoirs being planned. Completion costs are estimated at \$11 billion (see Attachments A and B). As stated on the third page of Attachment A, Chicago's deep tunnel was originally considered as a pilot for pollution control projects in other cities, but as projected costs of completion have risen, even the future of Chicago's tunnel has become doubtful. Operational costs to remove the accumulated sludge and pump the overflow sewage for

above-ground treatment are additional expenditures incurred by the deep tunnel system. It is much more cost effective to treat concentrated domestic sewage.

- c. Labor - Deep tunnel construction is capital-intensive, not labor-intensive. For example, one \$80 million contract to bore a half-mile stretch of tunnel in Chicago employed a \$6 million tunnel boring machine, but only 250 people to operate, maintain and administer it (Attachment A). Additional construction jobs would be generated by sewer separation and the construction of an equivalent subsurface transport system not requiring the use of sophisticated rock-boring equipment.
  - d. Time - The projected ten-year construction time frame for the deep tunnel system is unrealistic inasmuch as Chicago has only completed one-third of its project since 1972. The construction of subsurface storage and transport system for handling only sanitary wastewater, as an alternative, would involve the simultaneous effort of several local contractors who, in turn, would employ many unskilled laborers. Such an alternative would benefit the local economy immediately.
  - e. Community Power Structure - The deep tunneling project is a concept that has met overwhelming opposition at public hearings. Politically, it does not require owners of downtown property to pay for separating sewers in the 1.5 square mile business district of the City of Milwaukee, which are now a major contributor to the combined sewer overflow problem. These business persons want to spread the cost of the more expensive deep tunnel system to everyone owning property in the metropolitan area. Also, urban renewal projects in the combined sewer area continue to be promoted without any concern for sewer separation which should be part of the planning process. Consequently, the cost of constructing and operating this deep tunneling system will continue to burden residential property owners long after the developers and politicians who only have a temporary allegiance to the community are no longer involved or can be held accountable.
2. Existing sanitary sewers that have deteriorated need to be repaired, and illegal connections to sanitary sewers need to be corrected. Separation of the sewers, which includes the construction of large diameter subsurface sewers for handling wastewater, would provide a domestic sewage flow within the capacity of the Jones Island and South Shore treatment plants irrespective of wet weather flow.
  3. EPA rejection of the Draft EIS focusing on the deep tunneling system for handling combined sewage flow can best serve the public health of the entire Milwaukee metropolitan area and the long term ecology of Lake Michigan. Sewer separation and reconstruction of the deteriorated sanitary sewers should be the primary goal. Sewer separation is relatively easy to cost out and can be accomplished with less time and energy than attempting to construct deep tunnels which is a lot of folly.

Respectfully submitted,

Roger H. Hulbert

Roger H. Hulbert, MPH, RS

RHH:sko

Attachments

# Deep Tunnel: Safety in a Billion-Dollar Sewer

By Craig Fischer,  
Contributing Editor, NSNews

AT AN ESTIMATED projected cost of \$11 billion, it may be the single most expensive public works project ever undertaken, even bigger than the Alaskan oil pipeline. But because it's a municipal, not a national, project, and because it's being done underground, many people know nothing about it. It's the Chicago Tunnel and Reservoir Plan (TARP), better known as the "Deep Tunnel."

Essentially a large sewer, the Deep Tunnel, if completed, will consist of 131 miles of tunnels, 9 to 30 feet in diameter, 150 to 290 feet underground. Many hundreds of millions of cubic feet of solid limestone already are being drilled out by enormous boring machines.

The Deep Tunnel is designed to remove the burden that heavy or even moderate rainfall places on Chicago's antiquated, inadequate sewer system. Many times each year, rain overloads the sewer pipes, and the Metropolitan Sanitary District of Greater Chicago (MSD) is forced to allow a mix of sewage and storm water to pollute the city's rivers and canals. Perhaps once a year, sewage is pumped into Lake Michigan, the source of Chicagoans' drinking water. And during very heavy rainfall mucky water backs into the basements of many homes.

The Tunnel's promoters say it will conquer both problems of flooding and sewage pollution. The enormous task is being undertaken with the cooperation of the Metropolitan Sanitary District, the federal Environmental

Protection Agency, and more than a dozen heavy construction contractors, which separately and in joint ventures are working on separate segments of the 43 miles of tunnel currently contracted. The safety effort is handled in part by MSD, in part by its contractors.

"We have a long and specific list of safety requirements for the contractors," says Wes Scanlon, MSD director of safety and security. MSD requires that a safety engineer be on duty in each segment of the tunnel whenever workers are on the job, and Scanlon directs field safety inspectors who check on the contractors' safety directors. But final responsibility for safety rests with the contractors, as it is they who must comply with OSHA regulations, Scanlon points out.



This tunnel boring machine (seen from the rear) grips the walls of the tunnel, drills out two to six feet, and then pulls itself forward and grips the walls again. On a good day it may progress 150 feet. Muck is hauled back on conveyors, dumped into hoppers, and taken back to the drop shaft by train.

The safety job is made somewhat easier by the nature of the job. If it is true, as Scanlon and several contract safety directors claim, that relatively few people have been injured in the Deep Tunnel, it is partially because relatively few people are working on it. The Tunnel is capital-intensive, not labor-intensive. The drilling machines do most of the work. One \$80-million contract to bore a half-mile stretch of tunnel, for example, employs a \$6-million tunnel boring machine (TBM), but only 250 people to operate, maintain, and administer it.

The Metropolitan Sanitary District specified that contractors must use TBMs, not drill-and-blast methods, except for the drop shafts down to the tunnel. Blasting would disturb the homes, businesses, and people above, even the limited dynamiting in the drop shafts has cracked plaster, rattled windows, and annoyed people above. TBM boring is much faster than blasting, and it is more precise, so much less concrete is needed to line the tunnel.

And boring has safety advantages over blasting. Eliminating the need to use explosives is a safety advantage in itself. And rock falls are much less likely in a smooth-sided machine-bored tunnel than in a blasted tunnel. The dreaded cave-in is not possible in a tunnel that is drilled

out of solid rock.

But spalling, or flaking of stone off the crown of the tunnel, does occur, says Bob Harris, safety director of the Ogden-to-Addison phase being handled by Bordon H. Ball Construction and two other companies. Rock bolts, chain link mesh, and shotcrete on problem areas of the tunnel lessen the problem, and, of course, hard hats are a necessity. One of Harris's workers recently was injured by a piece of falling rock, his hard hat split in two, Harris says.

Ventilation is a constant concern underground, and the Deep

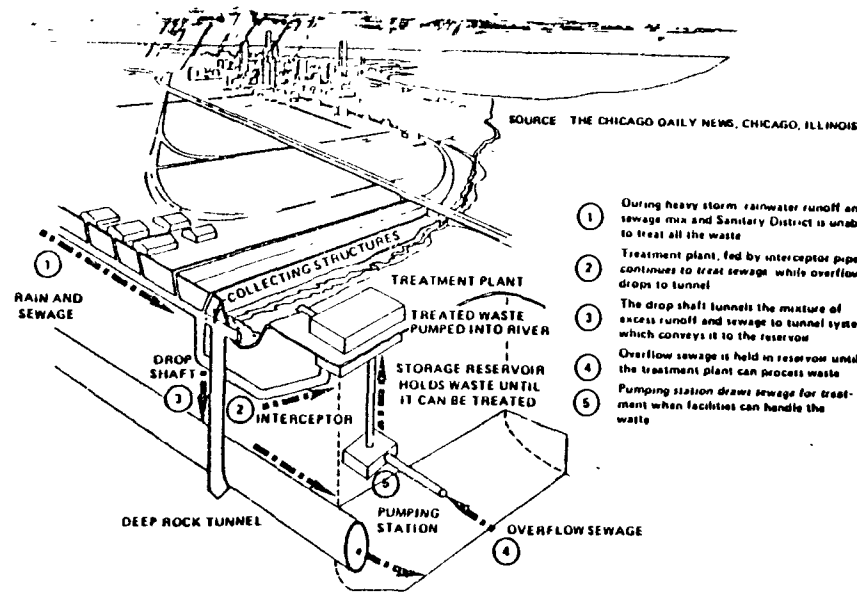
Tunnel is no exception. Workers extend large corrugated metal air ducts inside the tunnel as the TBM, or "mole," progresses, and the air in the tunnel feels drafty, not stagnant. But the possibility of boring into pockets of methane gas requires the use of gas detection and oxygen level instruments.

Maintaining safe air is especially difficult in the connecting shafts between Chicago's existing sewers and the Deep Tunnel, because the old sewers already are filled with sewage and other pollution. Al Glines, safety director of Granite Construction, says, "Chicago's world travelers bring back almost every disease known to man, and Chicago manufacturers damn near everything in the world, so chemicals and diseases in the sewers are something you have to be careful of. We monitor for poisonous and explosive gases continually, any time we break into the sewers. About twice a week we detect a gas and have to evacuate the area and aerate it. We use a lot of protective clothing, rubber gloves and raincoats, rubber boots."

There have been serious problems with ventilation. One worker was killed when he was lowered into a drop shaft full of carbon monoxide. The shaft, reportedly, had not been "blown out" with a fan-and-duct system following blasting. The worker, overcome by CO, fell off a plat-



A tunnel boring machine is shown boring out (breaking through from one segment of the Deep Tunnel to another). The tunnel boring machine, which weighs as much as 900 metric tons, has bits that rotate four to 12 revolutions per minute.



Schematic shows how the completed tunnel and reservoir system would work.

form and drowned. In another incident three workers re-entered a blasted area before the air was cleared, were overcome, and had to be rescued by coworkers.

"The one substantial violation that I still find throughout this project is inadequate ventilation," says OSHA Compliance Officer Phil Collern. "All in all there have not been as many citations as we might have expected, but ventilation seems to be a big problem."

There have been no disastrous fires or explosions, points out S. A. Healy Safety Director Ed Marszalek. All the hydraulic and lubricating machine oils used are nonflammable, he says.

Maintaining communication in the Tunnel is a must, says Bob Harris. At his site there's a phone in each drop shaft, at the top of the shaft, and at the controls of the crane that lowers workers into the shaft, and work stops immediately if the system fails. The phones are connected to the main office. And no one ever goes into a drop shaft alone, Harris adds.

The most common injuries in the Deep Tunnel are those that might occur on any construction site, report the safety directors: slips, trips, and falls, back injuries caused by improper lifting techniques, foreign bodies in eyes, nail punctures, finger jams. "We've had a lot of sprained ankles," reports one safety director. "In the Tunnel you're walking on uneven surfaces, sometimes through water where you can't see the ground level."

"We have to continually emphasize safety around cranes," says Granite's Al Glines. On another site a worker was killed as he walked under a muck bucket after signaling the crane operator to lift and dump it. The heavily loaded boom reportedly dropped a few inches, just enough to hit the victim on the head and rupture blood vessels in his neck.

### No More Deep Tunnels?

Chicago's Deep Tunnel originally was considered a pilot for similar flood- and pollution-control projects in Boston, Cleveland,



Shown is a view from the "working chamber" near the main drop shaft.

and other cities. But as projected costs of completion have risen, even the future of Chicago's Tunnel has become doubtful.

The Tunnel was conceived in 1965, but it wasn't until amendments to the Clean Water Act of 1972 promised 75 per cent federal funding of pollution control projects that the Metropolitan Sanitary District proposed and began planning the current TARP. The MSD praises TARP as "a spectacular moneysaver" that's "undervalued by any dollars-and-cents price tag," but a General Accounting Office study ordered by Sen. Charles Percy (R. IL) recommended that the EPA halt funding until it could reassess much less costly alternatives to the Tunnel.

Critics of the project charge that

- The Clean Water Act's original goal of "fishable and swimmable" waterways will not be met by the Tunnel project. In fact, state and federal officials can't even agree on whether the Tunnel will achieve the less stringent goal of waterways useful for recreational boating. In any case, the Tunnel does nothing about industrial chemical pollution of the rivers.

- As for flood control: Phase I of the project (the Tunnel itself, currently under construction) would have little impact on flooding, according to the GAO. Substantial flood control would be achieved only by Phase II—connection of the Tunnel to three surface reservoirs, including a huge abandoned rock quarry. But the EPA cannot fund Phase II because the agency's purpose is pollution control, not flood

control. The MSD is hoping that the Army Corps of Engineers could fund Phase II, but it remains to be seen whether the corps can pay for urban flood projects. In the past it has built only rural projects.

- Even if the tunnel, the reservoirs, and associated suburban sewer and treatment plant improvements are completed and they achieve their goals, it will be at a cost the country cannot afford. The MSD erred in looking for a single project that would eliminate both river pollution and basement flooding problems, according to the GAO. Only a grandiose plan like Deep Tunnel could accomplish both.

Left unconsidered were dozens of small-scale, labor-intensive measures, including, better sewer maintenance, disconnection of home downspouts from sewers, use of standpipes, overhead sewers, and other flood-control devices in the home, "ponding" in unused parking lots and on rooftops, construction of retention basins, and use of "porous pavement" to slow the flow of water into sewers during rainstorms.

MSD officials acknowledge that such measures can alleviate the flooding to some extent, but they argue that even in combination they would not provide the flood control that the Deep Tunnel will. The GAO counters that it has "serious doubts" about whether TARP will ever create any flood control benefits, given the questionable funding of Phase II.

The MSD reports that the EPA recently decided that Phase I of Deep Tunnel should be completed and authorized \$585 million to accomplish that. □

Dave Burkart  
5421 So. 43rd Street  
Greenfield, WI 53220

Dec. 30, 1980

*EW*

EIS Section Chief  
Water Division  
U.S. EPA  
Region V  
230 S. Dearborn St.  
Chicago, IL 60604  
Attn: SWEE

RECEIVED  
DEC 31 AM 11.05  
WATER DIVISION

Dear Director:

I would like to point out some shortcomings of the Executive Summary of the DEIS for the Milwaukee Water Pollution Abatement Program. I have not read the complete DEIS, and all references and quotes in the following discussion refer to the Executive Summary.

The plan fails to describe exactly how improvement in treatment plants, interceptors and separation of storm water will result in

MWPAP DEIS

Page 2

(748) better quality water in Lake Michigan and other receiving waters. There should be a clear assessment of impacts pertaining to the plan's results in upgrading water quality. For (359) example, on page 1-13 is the statement "urban runoff which contains organic pollutants and heavy metals would still be discharged... and in-stream water quality standards might not be achieved." Apparently, not all environmental impacts have been (749) thoroughly studied, for note the word "reduce," rather than "eliminate" in this passage on page 1-23: "All farmers interested in receiving the solids from the South Shore WWTP would have to be informed of the potential hazards of its use. This precaution and the adherence to DNR and EPA regulations would reduce the potential for soil and groundwater contamination."



(750) The plan seems to have a bias toward large, centralized and therefore expensive systems. If small, local systems were implemented by local governments, then local decisions on urbanization and development might take ~~the~~ into account the economic and environmental costs of sewage resulting from such growth, which would result in more realistic appraisals of the carrying capacities of the areas subject to such growth.

(751) The "loss of income to the local economy" resulting from "reliance on firms outside the area" referred to on page 1-15 might be avoided by alternative practices like better septic systems, composting toilets and spray irrigation. On page 1-21 it is admitted that "some or all of the local WWTPs" will be abandoned which will "change the character of some streams from

permanent to intermittent. As a result, the biological communities present in the affected rivers could change." This alone should be sufficient motivation for further study of the advantages of localized over centralized treatment.

The summary fails to adequately discuss the "proper construction and operating practices" (page 1-19) which will avoid adverse effects on groundwater.

(753) There should be extensive implementation of fail-safe procedures and back-up facilities which will, hopefully, work better than those at a nuclear power plant called Three Mile Island. The DEIS contains a natural bias towards water quality, which results in ignoring other factors of environmental impact, such as

- Energy (how will the water be pumped out of the deep tunnels,

what will that cost, and from where will the electrical power for it come?)

(754)

- Land Use (Table 1.2, page 1-9 calls for filling in 39.5 acres of Lake Michigan)

(750)

- Urban Planning (see earlier comments on local versus regional system).

It is unfortunate that I did not have a chance to review the entire DEIS in time to submit these comments by the deadline, but I trust that my ideas will prove of value to you and other agencies involved in developing the FEIS as we all work together to solve a complex and demanding problem.

Yours truly,

David Bennett

QUOTATION NO. 6258

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Date JANUARY 8th PM 2:31

TO UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION # @ 230 SOUTH DEARBORN STREET CHICAGO ILLINOIS 60604  
ATTENTION MR. GENE WOJCIK  
CHIEF ENGINEER E.I.S.

Job SEWAGE TREATMENT FOR  
THE CITY OF MILWAUKEE

QUANTITY	DESCRIPTION	PRICE
755	<p>I am a resident of BAY VIEW ( Division of Milwaukee ) and very concerned about the sewage treatment process under consideration .</p> <p>I attended an ENGINEERS MEETING last month ---- The subject being .. ( AERATION OF SEWAGE AND FLOOD WATER FOR THE CITY OF MILWAUKEE ) ( see at tached ) ( ABATEMENT TUNNEL PLAN FOR MILWAUKEE )</p> <p>We should use tthis plan and carryy the effluent to the HONG AIR FORCE BASE .</p> <p>This AERATION PLAN IS FURTHER explaineed on the write up from WISCONSIN PLUMBING &amp; HEATING SUPPLY CO We have 5 instalations operating operating over a period of 15 years. All of which are succesful and operating today.</p> <p>I am a graduate Engineer from The University of Wisconsin at Madison . I have been a sales engineer withn CUTLER HAMMER for 40 years calling on Power Companies covering Hydraulic Control by The Dean Valve Control system. This system controls the flood gates to the turbines and the tainter gates</p> <p>My interest in this subject is to reduce or control the 300% increase in taxes on water use in Milwaukee and provide a workable and continued plan for people outside the CITY OF MILWAUKEE and yet extend cast iron sewage collection and ttreatment when warranted .</p> <p>Yours truly <i>Deaumont A Steel</i></p>	

Noties above are in accordance with the specifications, but we do subject to acceptance within 15 days and is not Guaranteed thereafter.

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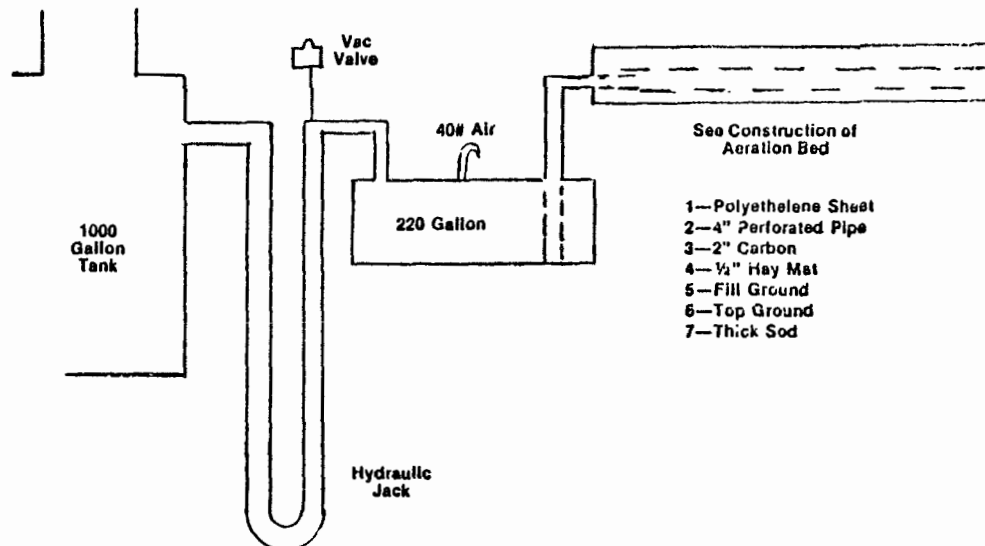
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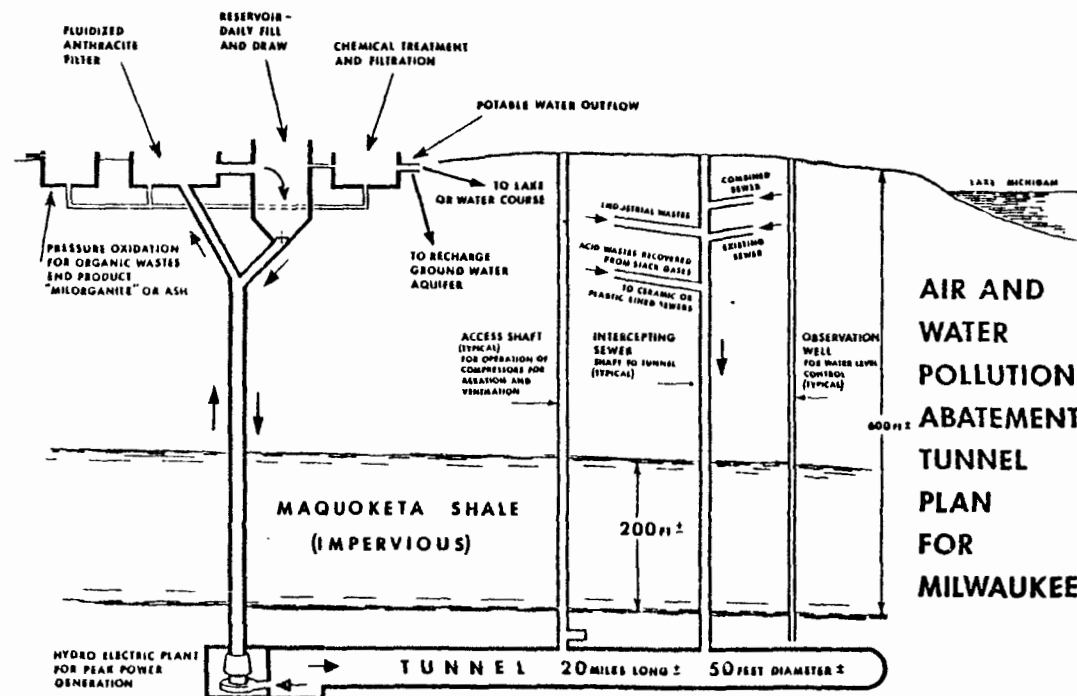
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*William F. Becker*

3474 North Downer Avenue  
Milwaukee, Wisconsin 53211  
January 8, 1981

Dear Mr. Wojcik:

I understand your office is receiving statements from interested parties through January 12, 1981 as regards the arcane Milwaukee Water Pollution Abatement Program malaise and the Draft of the Environmental Impact Statement. Initially, I am no neophyte to the Milwaukee sewerage problem as I served on the Milwaukee Metropolitan Sewerage Commission (MMS) Base Committee (a citizens' advisory committee charged with providing community input to MMS's decision making process.)

663

Secondly, I am appalled that the Impact Statement in no way addresses the handling of solids and I am stunned that we must wait until 1982 or 1983 for such. It may interest you to know that the engineers responsible for developing this 3 million dollar report who were questioned about this omission by Village of Brown Deer attorney, Harold M. Fuhrman, at a December MMS hearing stated solids were to be left out of the study at the direction of officials of the State of Wisconsin Department of Natural Resources (DNR!) To the showers! Somewhere in the grand design of the engineers' approach, as well as that of the DNR, the rubric of systems analysis was "left by the roadside." Namely, you have no system without an endpoint--here, solids treatment/handling. In doing this study a tone has been created and that's all. This Procrustean bed, of a sort, does nothing to help Milwaukee's problems. Hundreds of thousands of taxpayers' hardearned money will be gobbled up by retrofitting the Jones Island and South Shore sewerage treatment plants. This is retrograde thinking when better ideas are called for and available. Now the MMS, by its recent admission, believes it will be necessary to spend well in the neighborhood of two billion dollars on a proposed treatment system.

Thirdly, I am aware of a plan which could cost effectively deal with Milwaukee's sewerage problems. This plan, which I outline herein, has, indeed, been presented to the MMS. Alas, there has been not so much as a mite's worth of commentary regarding it from any quarter of the Commission or its august, well-ensconced and, I might add, extremely well paid engineering staff.

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Page Two: Letter to Mr. Eugene Wojcik of January 8, 1981

568

Here is a plan worthy of a dignified study:

1. Construct a tunnel at a depth of 600 feet;
2. Treat sewerage in this tunnel by means of oxygenation;
3. Construct a pumped storage reservoir and a hydroelectric power generating facility along with it; and
4. Construct infiltration galleries to return water to the aquifer.

The results of implementing the above would be the following:

- a. Dollars now destined to be frittered away on the Jones Island and South Shore facilities could be spent on effectively treating sewerage while in the tunnel;
- b. Exfiltration from a deep tunnel would simply not exist as such a deep tunnel, lying in the Dolomite, would be covered by Maquoketa shale which is impervious to water. Take the dollars now destined to be spent on cement lining a relatively shallow tunnel under Milwaukee County Stadium and spend them elsewhere or, better yet, save them;
- c. Peak power generation would be enjoyed by the environs of Milwaukee and, in a macro-sense, all of Southeastern Wisconsin. You may be interested to know that Wisconsin Electric Power has a generator site in the Milwaukee suburb of Germantown which utilizes diesel fuel exclusively. Such a site could be eliminated and the much heard of electric demand forecasted for the 80s, 90s and beyond could be easily met;
- d. There would be absolutely no discharge to Lake Michigan or any other water courses. I believe Chicago's new system, when on line, will spew about 4 ppm BOD into water courses. Milwaukee's proposed system would be far in excess of that I am told by reliable sources;
- e. The large volume of water in the tunnel would dilute industrial wastes. The advantages of this are obvious;
- f. The high jinks and high cost of sewer separation

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*William F. Becker*

3474 North Downer Avenue  
Milwaukee, Wisconsin 53211  
January 15, 1981

Dear Mr. Wojcik:

I wish to correct one statement made in my letter to you dated January 8, 1981 wherein I stated Village of Brown Deer Attorney Harold H. Fuhrman questioned the engineers responsible for the preparation of the Environmental Impact Statement at the December, 1980 hearing of the Milwaukee Metropolitan Sewerage Commission. This statement is inaccurate. In point of fact what Attorney Fuhrman did was to present seventeen questions to be answered by Ecosciences, U. S. Environmental Protection Agency and the Wisconsin Department of Natural Resources.

Again, thank for your ear.

Yours truly,

*William F. Becker*  
William F. Becker

Mr. Eugene Wojcik, Chief, EIS  
U. S. ENVIRONMENTAL PROTECTION AGENCY-REGION V  
230 South Dearborn Street  
Chicago, Illinois 60604

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Page Three: Letter to Mr. Eugene Wojcik of January 8, 1981

- f. (continued) could be abandoned as the flow of combined sewers would be accepted by a deep tunnel;
- g. Ground water resources would be protected by a deep tunnel. Infiltration would cease to be a problem;
- h. Land disposal for effluents would add nutrients to the soil for potential crop growth and silviculture. Note: Wastewater management studies by the U. S. Army Corps of Engineers in 1973 state that wastewater disposal for a city the size of Chicago (for example) with a projected 1990 population of 9 million would require a land mass of 590 miles<sup>2</sup> (1,529 kilometers<sup>2</sup>;) and
- i. Increase the aesthetics of Milwaukee's lake shore. The Jones Island plant is especially opprobrious in location, appearance and function. Loss of this plant would be no loss to be sure.

I assure you I have simplified in the foregoing. And, yes, I have been acerbic. The plan I put forth here is no will-o'-the-wisp. What I contend is backed by experts (geologists, engineers and the like.) Are you interested in what I have said here? Does this plan stand a chance of a fair hearing? If so, you can be shown more details by someone eminently more qualified. I can put you in touch with the gentleman who is the capable author of "my" idea.

I will be most interested in your reply. If you care to phone my numbers are as follows:

- (414) 962-3247 -- Home; and
- (414) 963-6737 -- University of Wisconsin, Office.

Thanking you in advance for your ear, I am,

Yours cordially,

*William F. Becker*  
William F. Becker

Mr. Eugene Wojcik, Chief, EIS  
U. S. ENVIRONMENTAL PROTECTION AGENCY-REGION V  
230 South Dearborn Street  
Chicago, Illinois 60604

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THE UNIVERSITY OF WISCONSIN-MILWAUKEE/P.O. Box 413, Milwaukee, Wisconsin 53201

COLLEGE OF LETTERS AND SCIENCE  
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January 9, 1981

WATER DIVISION

U. S. Environmental Protection Agency  
Attn: Mr. Gene Wojcik, Chief, EIS  
Region V  
230 South Dearborn Street  
Chicago, Illinois 60604

Dear Sir:

568;

As a geologist I have been interested for a long time in various proposals for deep tunnels under Milwaukee. Now that the Milwaukee Water Pollution Abatement Program is giving serious consideration to the drilling of tunnels for disposal and/or storage of its sewage, with billions of dollars at stake, it is extremely important to consider some of the bedrock geology. Throughout most of the Milwaukee area, except for a small patch in the northeastern part of the County where there are Devonian rocks, the Silurian (Niagaran) dolomite lies immediately below the glacial drift. It ranges from highly porous reef-rock to dense, well-bedded inter-reef strata. The contact between these Paleozoic rocks and the glacial drift is highly irregular because of millions of years of exposure of the rocks to erosion by streams, groundwater, and wind before the advance of the glacier strewn variable quantities of boulders, gravel sand and clay indiscriminately over the hills and valleys. There is no guarantee against seepage in or out of the Silurian dolomites, because of the unpredictability of the distribution of buried dense rocks and porous reefs, and also of the glacial materials. Where clay overlies a reef, there is a seal, but it is not continuous, and it may be either extensive or limited. Dense layers of dolomite are also relatively impermeable, and are more continuous than the glacial deposits, but they, too, are interrupted in places by rising through them of the porous, permeable reefs.

Below the Silurian rocks, the Ordovician strata are topped by the Maquoketa Shale, which is impervious and would make an efficient seal against leakage in either direction. The shale, of course, should not be used as the roof of a deep tunnel, because it is a comparatively weak rock, but if the deep tunnels were made in the underlying Galena Dolomite, the conditions needed should be attainable.

Therefore, I hope you will give serious consideration to building a treatment tunnel at a depth of 600 feet (or deeper if necessary) to take advantage of the natural conditions.

Sincerely yours,

*Katherine G. Nelson*

Katherine G. Nelson  
Professor

KGN/ndr

John Bennett, Franklin, WI

424 As Manager of the Franklin Water Utility, Mr. Bennett voiced his concerns about aquifer pollution from deep tunnels. He expressed his understanding that by constructing its tunnel system, Chicago has contaminated the local groundwater to such an extent that it cannot be used for industrial process waste treatment. Since Franklin residents rely on groundwater for drinking, they are especially concerned about potential groundwater contamination.

757 In addition, Mr. Bennett commented that the City of Franklin is the only community in Milwaukee County that allows its agricultural land to be used for the disposal of sewage sludge. He said the Common Council is reviewing their policy of accepting sewage sludge. Mr. Bennett noted that if Franklin decided not to accept sewage sludge, it could greatly affect MMSD's plans for solids disposal.

James T. Klein, Vice President, Froedtert Malt Corporation, West Milwaukee, Wisconsin

758 Mr. Klein voiced his concern that groundwater use at Froedtert Malt Corporation could be affected by construction of deep tunnels. Froedtert Malt is located within a mile of the deep tunnel site. The corporation now uses 400 million gallons of well water each year, and no alternative water sources are available.

Patrick Doyle, Milwaukee, Wisconsin

759 Mr. Doyle objected to the high cost of the Master Facilities Plan. He suggested that the EIS is too liberal in its assumption that the project will be 36% Federally funded, and that with the incoming Reagan administration, Milwaukee may receive far less Federal aid. Mr. Doyle particularly objected to the deep tunnel project, referring to an earlier statement that the costs to date for Chicago's project have risen to more than 11 billion dollars, although 6 billion dollars was the estimated project cost. Mr. Doyle noted that if Milwaukee uses too much money to implement the Master Facilities Plan, other needed municipal projects will suffer.

Ralph Becker, City Engineer and Manager of the Water Utility, City of New Berlin

760 Mr. Becker recommended that the present water pollution abatement program be abandoned. It is Mr. Becker's opinion that the current program is neither environmentally sound nor cost-effective and that the financing of the project is totally irresponsible.

Sylvia Leiner

761 Ms. Leiner expressed her concern about the economic impact of the Milwaukee Water Pollution Abatement Program on the poor or near-poor of Milwaukee.



Jeanette Bell, League of Women Voters

- (761) Mrs. Bell outlined the League of Women Voters' position on water resources which includes increased citizen participation in policy decisions affecting water resources. Mrs. Bell expressed the concern of the League of Women Voters over the introduction of poisons and toxic substances into the sewer system. She feels that all the impacts of these toxic substances through the sewage treatment process into bodies of water, application to agricultural land or landfill should be identified.

Ron Schlueter, Alderman, Second District, South Milwaukee

- (399) Mr. Schlueter reported that most of the complaints he receives are concerned with the odors from the South Shore treatment plant. He feels that the issue of odors at South Shore has not been addressed adequately in the EIS.

Henry Bohmann

- (424) Mr. Bohman quoted from an article in the December 17, 1980 edition of the Milwaukee Journal concerning Senator Charles Percy's call for a moratorium on the construction of a deep tunnel project in Chicago.

Robert Litzau

- (763) Mr. Litzau noted that chlorine can combine with methanes to

form a cancer-causing substance. Also, Mr. Litzau remarked that chlorine often oxidizes plutonium, making it more easily absorbed by humans.

- (764) He questioned whether the EIS addressed long-term health problems and asked why more information about industrial pre-treatment wasn't included.

- (765) Mr. Litzau asserted his opinion that decomposing toilets should be required in Milwaukee and the sewer system decentralized. Also, he suggested that industry should be required to treat their wastewater to drinking water standards, and that stricter control should be placed on municipal spending.

David Popalisky

- (767) Mr. Popalisky requested clarification about how much fish from Lake Michigan can be safely consumed. Mr. Popalisky understands that 5 pounds per week of fish is safe, but Chapter IV of the EIS states that PCB levels in Lake Michigan fish exceed the safe limit for human consumption.

Annie Salmona

- (412) Ms. Salmona criticized the EIS process and what she feels is a lack of concern for public comment. Ms. Salmona also objected to the approach (that she feels both the EIS and the Facilities Plan take) which assumes that Milwaukee should pollute to the maximum extent allowable by law.

(763)

She emphasized the danger of chlorine in our water because it forms trihalomethanes and can cause cancer. Also, chlorine can oxidate plutonium, making it more easily absorbed by human tissues.

(768)

In closing, Ms. Salmona encouraged the EPA and DNR to consider alternate methods for disinfecting sewage effluent, ozone, typical algae and muriatic acids, for instance.

SECTION 3  
RESPONSES TO PUBLIC COMMENTS

1. Conclusions on all elements of the Master Facilities Plan have been presented in the Final EIS in the form of EPA's Recommended Plan. The Recommended Plan and justification for its selection is located in Chapter 3 of the Final EIS. The detailed environmental impact analysis of the Recommended Plan is presented in Chapter 5 of the Final EIS.

The Draft EIS is an informational document to be used by the public, environmental groups, and Federal, State and local agencies.

2. Federal and State laws and regulations require the EPA and DNR to evaluate feasible alternatives to the proposed action. The EIS and the Master Facilities Plan did not evaluate the same set of alternatives in all cases.

Various alternatives analyzed in the Facilities Plan (the Northridge and Mitchell Field South Interceptors, for example) were not analyzed in the EIS because they were determined by EPA not to represent potentially significant environmental impacts. Accordingly, these proposed actions received Negative Declarations in the Notices of Intent to Prepare an EIS. Other alternatives such as new lakefill configurations at South Shore and modified combined sewer overflow abatement programs were developed in the EIS as a means of investigating possible mitigating measures to some Facilities Plan alternatives.

As part of the independent analysis undertaken in the EIS, the approaches taken in evaluating the impacts of various Facilities Plan elements may differ from those used in the Facilities Plan. However, the EIS has striven to present all of the assumptions and methodologies of its analyses in a clear manner so that the EIS reader can easily compare the environmental impacts identified in both the Facilities Plan and EIS documents.

3. The population forecasts generated by SEWRPC were used for planning purposes in the EIS (e.g., capacity of treatment plants and interceptor need and sizing). The EIS developed alternative population projections based upon extrapolation of current trends to the year 1990, for some interceptor service areas, for the secondary growth analyses. The reader is referred to Appendix IX, Secondary Growth, for a more detailed discussion of EIS projections.
4. The low flow analyses presented in the revised Appendix

VII, Water Quality, are based on measured upstream water quality conditions, existing measured WWTP effluent quality, and proposed future effluent limitations. The low flow analyses were conducted for seven day, 10-year low flow values; the lowest flows at which DNR and 208 recommended water quality standards are applicable. The analyses accounted for conservative substances and substances, such as ammonia and dissolved oxygen, which undergo transformation or degradation within a stream. While the EIS approach for the low flow analysis may involve the use of more basic analytical techniques than were used in the Facilities Plan, the EIS approach is not more subjective than the analysis presented in the Facilities Plan. Numerous subjective judgments were made in the development, calibration, and use of the model utilized in the Facilities Plan. In addition, the EIS approach is consistent with the areawide Water Quality Management Plan which recommends that a low flow analysis be used to determine the impacts of wastewater treatment plants.

One reason that negative water quality impacts are estimated to result from some WWTP recommendations is that the existing effluent concentrations are compared to future maximum permitted levels.

The maximum permitted effluent levels were used for future conditions because they represent the worst case situation for water quality. In addition, it is estimated that loads from some WWTPs would increase in the future due to increased flows to the plants. The EIS clearly indicates that several of the plan alternatives, such as the elimination of bypasses and combined sewer overflow abatement, would provide substantial improvements in water quality.

5. It has never been the function of this EIS to critique the Master Facilities Plan (MFP). The EIS was prepared to provide an independent review of the actions proposed by the MMSD in its Master Facilities Plan. The Draft EIS was received by the public, and public comment has been used during preparation of the Final EIS.

The Final EIS does contain, in accordance with the provisions of the National Environmental Policy Act (NEPA), an EPA Recommended Plan. This plan represents EPA's independent determination of the most environmentally sound and cost-effective way to meet the goals of the Clean Water Act. The DNR does not make a recommendation in the Final EIS. The Final EIS is used by the DNR as

an environmental review document during the Department's facility planning review process.

The EPA and the DNR believe that the reasons for additional alternative development and analysis are clearly presented in the EIS.

6. The statement regarding hypochlorite disinfection is made on page IV-77 of Appendix II, Jones Island of the 1980 Draft EIS: "Hypochlorite could be studied further in AFP or in design (Step II of the Construction Grants Program)." The sentence is not intended as a formal recommendation to study hypochlorite further, e.g. in Advanced Facility Planning (AFP). Rather it was included to point out that hypochlorite may have some advantages over chlorine gas, and it may be desirable to study this possibility in further detail. The EIS was prepared utilizing available data, but the document notes where additional data are needed.
7. The Department of Natural Resources (DNR) has pointed out publicly, and in its correspondence with the MMSD, that it may be necessary for the MMSD to secure lakebed grants from the Wisconsin Legislature, if the proposed lakefills at the Jones Island and South Shore WWTPs are approved. The DNR has also pointed out that compelling reasons must be demonstrated before it would consider approving the proposed 9.5 acre lakefill for Jones Island and 30 acre lakefill at South Shore. The DNR will make no final decision regarding these lakefills until the EIS process is completed.

In its review of the District proposals to create lakefills adjacent to both the Jones Island and South Shore WWTPs, the DNR has considered the impact analyses set forth in both the EIS and the Facility Plan. DNR protects the lakebed and other water rights and fully scrutinizes all projects before granting Department approval. The DNR must consider the public need for the lakefills and alternatives available for facility expansion. Lakefill impacts on navigation, wave action, burden upon adjacent properties, loss of aquatic habitat, and precedent for lakebed expansion need to be addressed. The loss of aquatic habitat is one of the DNR's primary concerns; the uniqueness of the potential habitat should be discussed in terms of similar habitat, not in terms of the total habitat of Lake Michigan. In making the final decision concerning DNR approval of the lakefill proposals, the Department of Natural Resources will consider these environmental impacts, along with the demonstrated need for the lakefills.

8. The EPA and DNR recognize that the large main tunnels beneath the Menomonee and Milwaukee Rivers, which along with other smaller components which comprise the Inline System, serve the dual function of eliminating bypassing from the separated system and correcting CSO. However, the EPA and DNR do not believe that a system should be classified strictly on its original development concept, but instead must be evaluated based on how the total system is expected to operate. In the case of the large diameter tunnels, this operation includes storage and conveyance of CSO as well as peak flows from the separated sewer system. Accordingly, for the purposes of this EIS, all impacts of the tunnels (including cost, construction disruption, groundwater impacts, and energy and resource use) have been allocated to CSO abatement and peak flow control based on that portion of the total tunnel and accompanying cavern storage system required to control these wastewater volumes and eliminate the discharge of untreated sewage to area surface waters.
9. We know of no examples in the EIS of alternatives being mistakenly attributed to the MMSD.
10. The EIS uses the same data base as the MFP. However, the EIS developed supplementary data when necessary.
11. The alternatives and findings of the MFP are clarified in Chapter 3 of the Final EIS (FEIS).
12. The text has been changed.
13. The statement has been modified.
14. The paragraph discusses public concern not EIS conclusion.
15. The planning period is 1985-2005. Therefore, the equalized average annual tax rate for the MFP was calculated in the EIS for this 20 year planning period.
16. Paragraph deleted in Final EIS.
17. The northern subregional is included in Table 3.1 of the Final EIS.
18. The note is clarified in the Final EIS.
19. Table 3.4 (Table 3.6 in the Final EIS) has been modified to note that the Franklin 1 Plant Alternative would discharge to the Wind Lake Drainage Canal.

20. The discussion of existing conditions at the Muskego Northeast WWTP has been changed to show the average flow as 0.39 MGD.
21. Phosphorus removal is noted in the third paragraph.
22. The text has been corrected.
23. The text has been corrected.
24. The text has been corrected.
25. The text has been corrected.
26. The text has been expanded to include a description of treatment processes.
27. The text has been corrected.
28. The text has been corrected.
29. The reference has been deleted.
30. The "upgrading and expansion" alternative has been added to the Final EIS.
31. The locations of the Jones Island and South Shore WWTPs have been added to the map.
32. Figure 3.10 illustrates those portions of the interceptor service areas that are considered in the EIS. The title of the Figure has been clarified.
33. The revision has been made.
34. This issue has been noted in the text.
35. The reference upon which this comment is based is unclear.
36. The eighth bullet has been altered to read, "Failing septic systems in New Berlin and Muskego..."
37. The alternative designated in Table 3.13 as "preferred" for the Subregional Alternative is the least costly, most environmentally sound alternative. The footnote refers to the fact that the final subregional alternative was eliminated from further consideration because it would be far more costly than the final Regional and Local Alternatives and it would have negative impacts on water quality.



38. The footnote to Table 3.14 (Table 3.13 in the Final EIS) explains that the present worth figure includes costs for CSO abatement, Jones Island and South Shore rehabilitation and expansion, and peak flow attenuation.
39. Figures 3.18 and 3.19 which follow page 3-90 and Figure 3.13 which follows page 3-82 have been modified in the Final EIS. Specifically, the following changes have been made in response to your comments:
- a. Possible deep tunnel interceptor corridors and cavern storage locations not have been shown. Proposed locations of these facilities can be seen in Figures 3-11 and 3-14 through 3-17.
  - b. The Franklin-Muskego Interceptor has been identified on each figure.
  - c. These interceptors were not evaluated in the EIS.
  - d. The Caddy Vista and South Milwaukee connections have been redrawn.
  - e. The Muskego Rendering WWTP is not shown because it would serve only as a pretreatment facility and would discharge to the City of Muskego sanitary sewer system.
40. Page 3-73 of the Draft EIS is part of Table 3.13. The subject of this comment is unclear.
41. The subject of this comment is unclear.
42. The text says, "The Local Alternative for each WWTP that was identified . . . as being the most environmentally sound and least costly . . ." The sentence is comparing local alternatives only, not local and regional alternatives.
43. These interceptors received "Findings of No Significant Impact" (FONSI) and they are not a part of the EIS. See section 3.7 of the Final EIS.
44. The section has been expanded to include a sentence stating that if any malfunctioning septic tanks are abandoned due to interceptor construction, loadings to Oak Creek of fecal coliforms, nutrients, and organic matter would be reduced.
45. Title of the Figure has been changed to "Major Lakes and Streams in the Planning Area."

46. Since the WWTP discharges at the confluence of Pigeon Creek and the Milwaukee River, our analysis has assumed that the effluent is discharged to the Milwaukee River.
47. Chapter 4 discusses the existing environment, and therefore the current DNR water quality standards are described. In the evaluation of future WWTP configurations and CSO abatement alternatives, presented in Chapter 5 of the EIS, in Appendix V, Combined Sewer Overflow and Appendix VII, Water Quality, both the DNR standards and 208 recommended standards are used to interpret water quality impacts.
48. The sentence is revised to read, "Wastewater could contain a number of other toxic substances . . ."
49. Fecal coliforms are considered the primary indicators of fecal contamination and are some of the most frequently applied indicators of water quality. Both the existing DNR and 208 recommended water quality standards to support recreational use include limits for fecal coliforms. The presence of fecal coliforms indicates the presence of bacterial, viral, protozoan, and possibly fungal species with the potential to infect humans and other organisms. Section 4.1.1.3.2 states that fecal coliforms exist in human and animal wastes.
50. Section 4.1.1.4.1 states that the Milwaukee River upstream of the estuary is low in suspended solids and high in dissolved oxygen. A comparison of upstream and downstream fecal coliforms and biochemical oxygen demand values is also presented.
51. Suspended solids concentrations of 5-40 milligrams per liter are relatively low. For example, suspended solids concentrations measured in the Menomonee River (Menomonee River Pilot Watershed Study, International Joint Commission, 1977) averaged more than 200 milligrams per liter at several sampling stations. The average concentration of 17 mg/l in Deer Creek is slightly more than one-half of the typical concentration in WWTP effluent that receives secondary treatment. The average suspended solids concentration measured has been added to the paragraph.
52. The following sentence has been added to the paragraph:

"Some pollutants undergo degradation in the Outer Harbor and most particulate pollutants are deposited into the bottom sediments."

53. No studies have quantified the deposition of organic matter which occurs near the outfall. The first sentence has been revised as follows:
- "If deposition of organic sediment near the outfall occurred, it could result in increased densities of detritus feeders, which in turn may result in increased densities of fish that feed on detritus feeders."
54. The supporting data for the PCB statements are set forth in the referenced sources (Veith and Lee, 1971; EPA, 1976).
55. The paragraph has been revised as follows:
- "A benthic survey at the Oak Creek Power Plant site, located a few miles south of the South Shore WWTP outfall, indicated the presence of amphipods, isopods, oligochaetes, chironomid midge larvae, snails, and mayfly nymphs (WEPCO, 1974). These organisms are commonly found along much of the shore of Lake Michigan."
56. The statement about dissolved oxygen depletion in Lake Michigan has been deleted.
57. The statement that eutrophication may have eliminated the long jaw Cisco from Lake Michigan has been deleted.
58. The source is now indicated.
59. Racine County is now included in the list.
60. The section is deleted in the Final EIS.
61. The section has been rewritten.
62. Chromium concentrations were not reported in Table 5.1 of the Draft EIS. The Combined Sewer Service Area (CSSA) and flow assumptions used in the EIS analysis are presented in section 5.1.2 of Appendix V, Combined Sewer Overflow. The basis for the concentrations of pollutants in combined sewer overflows and in storm runoff are set forth in the response 630.
63. Table 5.2 has been revised. The concentrations used in the Final EIS are for untreated sewage, as reported in Table 5.1 of Appendix V, Combined Sewer Overflow. Bypass flows were estimated by relating rainfall data to measured bypass flows and extrapolating to the entire planning area using historical precipitation records.

64. This figure has been deleted from the Final EIS.
65. The Jones Island WWTP effluent contributions to the Outer Harbor are based on data set forth in Table 23 of Appendix VII, Water Quality. The data are also presented in Chapter 5 of the Final EIS.
66. This discussion has been revised for the Final EIS. The revised analysis indicates that total direct phosphorus loads to Lake Michigan from the Outer Harbor and from direct WWTP discharges are about 1,750 pounds per day. This total phosphorus load represents 4.5% of the existing phosphorus load to Lake Michigan. If current discharge levels are maintained through the planning period and the wastewater volumes tributary to the South Shore WWTP increase as predicted, the proportions of the total phosphorus load to Lake Michigan contributed from the Milwaukee area is expected to decrease from 4.5% to 4.0%. If during the planning period current phosphorus discharge levels increase to the maximum level currently permitted, and if the wastewater volumes tributary to the South Shore WWTP increase as predicted, the proportion of the total phosphorus load to Lake Michigan contributed from the Milwaukee area would increase from 4.5% to 5.8%.
- It is acknowledged that the target phosphorus load for Lake Michigan was established to prevent further degradation of the Lake and to protect nearshore areas. The EIS does not imply that the operation of the Jones Island and South Shore WWTPs would preclude attainment of the total lake target load.
67. The values in the draft EIS were from the draft Appendix VII, Water Quality. Appendix VII has been revised, and the water quality discussion in Chapter 5 of the EIS has been changed. The values referenced in the revised Chapter 5 of the Final EIS are from the revised Appendix VII.
68. The sentence has been deleted from the Final EIS. At this time, relatively little is known about the mixing zone from the South Shore WWTP. A summary of the MMSD analysis of effluent dilution presented in the Wastewater System Plan is set forth in section 4.2 of Appendix VII, Water Quality.
69. The values in Table 5-4 are from the analyses presented in Appendix V, Combined Sewer Overflow. No alternative for one-half year level-of-protection was evaluated in Table 5-4 of the Draft EIS.

70. A complete discussion of the pollutant concentrations, flows, and loads from combined sewer overflows is presented in Appendix V. Table 5-1 of Appendix V sets forth the pollutant concentrations used in the analysis. Again, a half-year level of protection alternative was not included in Table 5-4.
71. The values shown in Table 5.5 do not include a 25% reduction in storm runoff loads. The methodology for this analysis is set forth in Appendix V, Combined Sewer Overflow. The impact of various levels of nonpoint source pollution control under all CSO abatement alternatives is presented in section 5.1.8 of Appendix V.
72. In the Final EIS, this table has been deleted and replaced with a separate table for each WWTP. The source of the tables is Appendix VII, Water Quality. The methodology for the analysis is presented in section 3.1.1 of Appendix VII.
73. This section has been revised in the Final EIS. With the Final Local Alternative for the Germantown WWTP, which includes land application of the WWTP effluent, all 208 recommended standards would be met. The discussion in the Draft EIS does not state that a reduced flow would have an adverse impact on the Menomonee River.
74. This section has been revised in the Final EIS. With the Final Local Alternative for the Muskego WWTPs, which includes land application of WWTP effluent, all 208 recommended standards would be met. The discussion in the Draft EIS did not state that a reduced flow would have an adverse impact on either Tess Corners Creek or Deer Creek. Continued WWTP discharge to Tess Corners Creek, as discussed in Appendix VII, Water Quality, would result in the violation of the 208 recommended phosphorus and chlorine standards.
75. This table has been deleted in the Final EIS and replaced with a separate table for each WWTP. The values in the Final EIS are based on the analyses set forth in Appendix VII, Water Quality.
76. The use of effluent limits would not define the pollutant loadings under current conditions as accurately as available data. When conducting the water quality analyses set forth in revised Appendix VII, the best available data or best estimates were used, regardless of whether they were lower than, equal to, or higher than effluent limits. It was assumed that future

pollutant concentrations in the effluent would be at the maximum levels permitted by the DNR. A No Action Alternative is evaluated in revised Appendix VII for all WWTPs. For discussion of phosphorus at South Shore WWTP, see response 66.

77. The Final EIS does not identify changes in low flows as either a beneficial or adverse impact on streams.
78. The potential exists for the occasional occurrence of the longear sunfish in the Milwaukee River in the planning area.
79. The sentence has been added to p. 5-27.
80. The potential sources of groundwater pollution have been added in the Final EIS.
81. The sentence has been revised to reflect your comment.
82. The Regal Manors treatment plant is located within the 100-year recurrence interval floodplain as reported by SEWRPC.
83. The sentence has been revised to reflect your comment.
84. Section 5.1.8.1 has been revised as follows:

"With the No Action Alternative, adverse effects on wildlife habitat would be limited to disruption of habitat areas caused by the construction of residences. New residential construction could occur only in those areas with soils suitable for on-site sewage disposal systems. These areas may include glacial features, woodlots, and other potential wildlife habitats."
85. The text has been corrected.
86. Comment noted.
87. The EIS does not include the Northeast Side Relief System in the No Action Alternative, because as stated in the Notices of Intent dated 10/21/77, the system was analyzed for secondary growth impacts to the interceptor tributary area outside Milwaukee County.
88. The survey referred to is the DNR complaint records cited by the MMSD.
89. As the text notes, the possible sources of pathogens would include runoff and animal wastes. With the

abatement of CSO and bypasses, there should be no human sewage in the waterways. However, the pathogens that would remain would still present some small risk of causing disease.

90. The text now includes a reference to section 3.11.2, Local Alternatives, which lists the interceptors.
91. The source has been noted on Table 5.63.
92. Table 8-1 of the Jones Island Planning Report shows that Alternative 2 combined with J12/J16 has a present worth of \$434.6 million, while Alternative 2 (the Recommended Plan) combined with J30/J31 has a present worth of \$460.3 million. Therefore the Recommended Plan is 6% higher.
93. This information was taken from Technical Memorandum 2/1-10 entitled "Energy Impact and Resource Recovery Analysis," Table 5-2. The data provided in Table III-10 in Appendix II were developed for purchased fuel oil, natural gas, and electricity. This information was taken from Table 5-2 of Tech. Memo 2/1-10 prepared by the MMSD. The MMSD did not provide data (listed in the second column) in their June 1980 Facilities Plan.
94. Data supplied by the MMSD listed the average usage of ferric chloride to be 983,640 pounds per day. However, units should have been pounds per month, and the 32,000 lbs/day figure should be used for the table.
95. In Physiochemical Process for Water Quality Control, W.J. Weber (citing Holluta 1964) states "the immediate bactericidal properties of ozone are superior to those of chlorine . . ." Ingols and Felter (1987) found that the destruction of E.coli cells with ozone was more rapid than chlorine once the initial demand had been satisfied. The statement was meant to be of a general nature.
96. The EIS does not attempt to attach any "significance" to impacts.
97. If reduction of risk to public health becomes an important criterion, hypochlorite disinfection could become a viable alternative to disinfection with chlorine.
98. Table 7-2 of the Jones Island EA shows the following for the MMSD Recommended Plan:

JI effluent as % of Total Load

<u>Parameter</u>	<u>Current Situation</u> <sup>1</sup>	<u>MMSD Recommended Plan</u> <sup>2</sup>
BOD	45%	58%
TSS	13%	12%
Total P	28%	32%
NH <sub>4</sub> -N	84%	97%

<sup>1</sup>Table 4-9 represents the current situation.

<sup>2</sup>Table 7-2 represents the impacts of the MMSD's Recommended Plan.

The Jones Island effluent represents greater than 50% of the BOD and NH<sub>4</sub>-N discharges.

99. Total load includes Jones Island WWTP, river loads, and combined sewer overflows. This table shows that the Jones Island effluent will continue to provide inputs to the Outer Harbor with the Recommended Plan. Construction of an outfall would eliminate 97% of the total load of ammonia-nitrogen, 58% of the BOD, 32% of the total phosphorus, and 12% of the total suspended solids, to the Outer Harbor.

(1) An outfall that would discharge directly to Lake Michigan would remove the input of the following to the Outer Harbor.

<u>Parameter</u>	<u>Load</u>	<u>% of Load</u>
BOD <sub>5</sub>	6,360,000 lb/yr	58%
Total Suspended Solids	7,700,000 lb/yr	12%
Total Phosphorus	131,000 lb/yr	32%
Ammonia-Nitrogen	7,367,000 lb/yr	97%

(2) The environmental consequences of the outfall relocation are addressed in the revised Water Quality Appendix, Section 4.1.1. This section discusses water quality conditions in the Outer Harbor and in Lake Michigan, pollutant loadings, sediment loadings, and sediment quality conditions. The impacts of increased ammonia and phosphorus loads to Lake Michigan and the public health risks posed by relocation of the outfall are also discussed. The analysis of ammonia considers acute toxicity levels and established water quality standards for fish and aquatic life. The section acknowledges that the Outer Harbor now acts as a settling basin of pollutants discharged from the WWTP. Your concerns regarding the exposure of intolerant aquatic



life to metals and toxic substances have been added to Appendix VII. It was not the intent of the Draft Environmental Impact Statement to make a recommendation as to whether or not the Jones Island outfall should be relocated, and therefore the secondary impacts of constructing an outfall are not discussed.

100. The sampling was noted on Page IV-84.
101. The data used in the Draft EIS were those contained in the June, 1980, Facilities Plan (Table 9-4 of the Jones Island Planning Report). The new cost data were developed after the publication of the Facilities Plan and are included in the Addendum to Appendix II, Jones Island.
102. The residence time of soluble pollutants in the Outer Harbor is addressed in Appendix VII, Water Quality, Section 4. The soluble pollutant residence time is equal to the hydraulic residence time which was found to average 1.5 to 2.0 days. The Outer Harbor is a very complex system and can retain water for much longer time periods, however 1.5 days to 2.0 days is a conservatively low estimate.
- The retention of pollutants in the Outer Harbor sediments is related to the pollutants' biodegradability. A detailed discussion of the Outer Harbor sediments is given in Section 5.1 of the CSO Appendix.
103. Comment noted; parameter should read "Total Ammonia-Nitrogen, (mg/l) 5.2". At an average discharge pH of 7.1 and temperature of 20°C, the un-ionized ammonia-nitrogen concentration would be 0.026 mg/l. This would meet DNR "end-of-pipe" un-ionized ammonia concentration permit levels.
104. Comment noted.
105. These studies were designed to evaluate the incidence of disease among people living near a WWTP. The answer to the second question is "no". The incidence of disease from raw or poorly-treated sewage is well known and the main reason for treating wastewater.
106. The results of archaeological studies performed at Jones Island in the summer of 1980 are discussed in the Final EIS Addendum to Appendix IV, Solids Management. This information was not included in the June, 1980, Facilities Plan which was part of the data base for the Draft EIS.

107. It is our understanding that the fine screens blind (clog) at flows in excess of 140 MGD, causing in-plant bypasses. This was used to calculate bypass loads.
108. The text (pp. V-107 and VI-110) states that the Jones Island WWTP disinfects with free chlorine. Also, the EIS readily acknowledges that this chlorine will react with various chemicals in the WWTP effluent. Jones Island does not use combined chlorine (such as chloramine) as a disinfectant. The chlorine may or may not be combined at the discharge point in the Outer Harbor.
109. A detailed discussion of the relationship between distance from the Jones Island outfall and dilution of sewage effluent is included in Appendix II, Jones Island, Section 4.1. Toxicity was determined by the concentration of un-ionized ammonia-nitrogen.
110. This section of the Appendix has been revised. See the Final EIS Addendum to Appendix II, Section 9.0.
111. The text states the "Outer Harbor would become more similar to nearshore Lake Michigan water," but this is not the key to evaluating the effectiveness of an outfall. The key is whether or not the WWTP effluent adversely impacts the Outer Harbor water quality and whether or not the effluent meets State and Federal permit requirements.
112. These locations are noted in the MMSD Support Data File, Volume 2, 1980, Section, "Documentation of the Preliminary Analysis of the Jones Island Outfall Relocation." The reference is found in Section 4.1.1, of the Water Quality Appendix.
113. The Outer Harbor acts as a settling basin to capture those settleable solids not removed in the Inner Harbor. Please refer to the CSO Appendix, Section 5.1.
114. Disposal sites are reliable, not infallible, retention structures. In the rewritten discussion, Section 9.0, of the Addendum to the Jones Island Appendix, the sentence has been deleted.
115. Nutrients, especially  $PO_4-P$ , can be made soluble through biological activity and leached out of dredge spoil disposal areas, particularly if these disposal areas are near the receiving water.
116. The effects of chlorination and dechlorination are discussed in Section 3.2 of the Addendum to Appendix II,

Jones Island.

117. The toxic concentration of un-ionized ammonia-nitrogen, its dilution, and Outer Harbor mixing effects are discussed in detail in Section 4.1.2 of the revised Water Quality Appendix.
118. No Action for the Jones Island WWTP would involve no capital improvements at the WWTP, but would entail implementation of all other aspects of the MFP. This alternative would include reliance on the current operation and maintenance practices. Wastewater flows to Jones Island are decreasing and peak flows would be attenuated in the future. Therefore, bypasses would be expected to decrease, provided the current treatment capacity of Jones Island is maintained. The EIS does not say that decreased bypasses at Jones Island would also reduce a public health hazard. However, under a No Action Alternative, the frequency and quantity of bypasses should be no greater than they are now.
119. Stumm (1958) found that disinfection with ozone has the advantage of being effective against some chlorine resistant viruses. However, two major reasons exist for not selecting ozone disinfection: cost (capital and O&M) and unreliability (it provides no residual protection against re-contamination). Although ozone may have superior water quality benefits, since it does not produce toxic chlorine derivatives, it is less stable, and therefore, could not be considered to be more cost-effective or environmentally sound than chlorine.
120. This statement is true, and it makes dual-use less attractive. However, the terminal is now used to store road salt and it is in a state of disrepair. Therefore, the location is not currently being put to its optimal use.
121. The EIS has not attempted to attach significance to impacts. The data are not available to compare short-term impacts to the long-term effects of effluent discharge. The EPA conclusions, discussed in Chapter 3 of the Final EIS, reflect their determination of the significance of this impact.
122. The EIS does not attempt to attach significance to impacts. The comment represents MMSD opinion. The EPA conclusions, discussed in Chapter 3 of the EIS, reflect their determination of the significance of this impact.

123. The results of archaeological studies performed at Jones Island WWTP during the summer of 1980 are discussed in the Addendum to Appendix II, Jones Island, Section 2.0.
124. Corrections have been made in the Addendum to Appendix III, South Shore.
125. This was a typographical error. It is corrected in the Errata Section of the Addendum to the South Shore Appendix.
126. The paragraph has been revised in the Errata Section of the Addendum to the South Shore Appendix.
127. The correction has been made in the Errata Section of the Addendum to the South Shore Appendix. Figure III-1 of the Appendix shows the actual piping arrangement.
128. This addition has been made in the Errata Section of the Addendum to the South Shore Appendix.
129. This information has been added in the Errata Section of the Addendum to the South Shore Appendix.
130. More detailed drawings (prepared by the MMSD) are included in the Addendum to Appendix II, Jones Island.
131. The discussion on pages IV-59 through IV-60 has been rewritten in the Errata Section of the Addendum to the South Shore Appendix.
132. A cadmium concentration of 0.0002 mg/l is recommended in the International Joint Commission's Water Quality Agreement of 1978 for the protection of Lake Michigan. The 5.0 mg/l for dissolved oxygen is incorrect. It has been corrected to read 6.0 mg/l in the Errata Section of the Addendum to Appendix II, Jones Island.
133. The correction to the title to Table V-2 is noted in the Errata Section of the Addendum to the South Shore Appendix.
134. The typographical error is corrected in the Errata Section of the Addendum to the South Shore Appendix.
135. The paragraph has been revised in accordance with the comment. See the Addendum to the South Shore Appendix.
- al36. While the reaction rates for chloramine formation

are generally faster than those for chlorohydrocarbon formation, there is evidence of the latter being formed in wastewater treatment plant effluents. Gaffney (JWPCF March 1977) reported a 4.5-fold increase in the dichlorobiphenyl concentration of a Georgia WWTP due to tertiary chlorination. Snider and Alley (Environmental Science and Technology, Oct. 1979) determined that the rate of formation of chlorobiphenyls was quite slow under conditions present in a WWTP effluent. However, caution should be exercised when using higher chlorine concentrations such as for ammonia removal (break point chlorination) in digester supernatants. Studies relating haloform formation in drinking water (Symons et al. JAWWA, 1975) and in river water (Peters et al., Environmental Science and Technology, Nov. 1980) both indicate the formation of chlorinated hydrocarbons is well within the realm of possibility in a WWTP effluent.

137. This statement is not made on page VI-92 in paragraph 3.
138. This sentence is deleted. See the Errata Section of the Addendum to the South Shore Appendix.
139. A statement about the safety of ozone disinfection has been added to the Errata Section of the Addendum to the South Shore Appendix.
140. Approximately 5.2 million BTU per year.
141. These facts are pointed out in the Addendum to the South Shore Appendix.
142. Future truck traffic would be 45 trucks/day (Monday through Friday) with the implementation of the MMSD Recommended Plan.
143. Comment noted.
144. We are unaware of these comments.
145. The February, 1980, Draft Solids Management Report (received by ESEI on April 2, 1980) was used for the Draft EIS. The June, 1980, SMR (received by ESEI on August 20, 1980) was not used for the Draft EIS. The Final EIS has been revised as appropriate.
146. This section is modified in the Addendum to Appendix IV, Solids Management.
147. These alternatives were eliminated in Phase I

(incineration and pyrolysis) and Phase II (cocombustion), of the analyses contained in the SMR. Appendix IV of the EIS only addressed the environmental impacts of the MMSD recommended solids management plan. Reasons for elimination are discussed in Chapter IV of Appendix IV, Solids Management.

148. The MMSD already has nearly 70,000 acres approved for agricultural application by the DNR. This exceeds the land requirements listed in the SMR.
149. Comment noted. However, the Site Specific Analysis (SSA) will identify specific landfill and sludge storage sites.
150. The intent of the EIS analysis is to compare the costs, long-term flexibility, and environmental impacts of a total land application program to the alternative using both landfill and land application. The landfill site could be located, purchased and designed during the planning period. The construction of the site would then take less than 5 years. The MMSD is considering short-term flexibility. The SMR identified land application as the least expensive alternative for each individual plant, therefore the EIS also evaluated a total land application system. The EIS does not attempt to evaluate the degree of flexibility between a landfill/land application system or a total land application system; however the EIS finds that sufficient flexibility can exist for either system.
151. A dual-disposal method (e.g. landfill and land application of sludge) would allow day to day flexibility for the disposal of sludge. Short-term flexibility may not be necessary since adequate excess capacity would be designed into the disposal facilities. A dual-disposal method does have disadvantages, e.g.:
  - If a landfill failed, sludge storage might become a long-term problem, or sludge application rates might have to be adjusted.
  - The MMSD might have to purchase additional equipment for land application, if a landfill failed.
  - The MMSD might not have enough land available for long-term sludge application, if a landfill fails.

The purpose of the EIS analysis for flexibility was to determine if a less costly methods of sludge disposal

with adequate provision for back up was available.

- 152. Comment noted.
- 153. The typographical error has been corrected in the Errata Section of the Addendum to the Solids Management Appendix.
- 154. Noted in the Errata Section of the Addendum to the Solids Management Appendix.
- 155. In 1979, the MMSD land-applied sludge from April to December; a total of 225 days. Therefore, the 90-day period of application is a very conservative number.
- 156. The correction has been made in the Addendum to Appendix IV.
- 157. These figures are taken from the SMR.
- 158. The figures and wording are taken directly from the SMR.
- 159. The correction is noted in the Errata Section of the Addendum to Appendix IV.
- 160. The correction is noted in the Errata Section of the Addendum to Appendix IV.
- 161. The correction is noted in the Errata Section of the Addendum to Appendix IV.
- 162. The issue of flexibility is discussed in the Addendum to Appendix IV.
- 163. Page IV-23 includes a description of how the final alternatives were chosen. For clarification, add the alternative numbers to the appropriate paragraphs on p. IV-23.

First Paragraph - J11, J12, J19, J20, J30,  
J32, J50, J52

Fourth Paragraph - J51, J64

Long-term and short-term problems are addressed in the discussion of flexibility, Section 6.0, of the Addendum to Appendix IV.

- 164. The end use of a landfill site is not certain. In addition, the use of the land is committed to sludge burial during its operating life. Agricultural land used for sludge application may not be suitable for growing crops used



for human consumption. This is the only restriction that may be placed on such land. Land use changes can occur more quickly and with less impact when land is used for sludge application than for a sludge landfill.

165. The EPA's and DNR's use of a 75% land availability figure (as opposed to the 50% figure used in the SMR) accounts for the differences in acreage. This issue is discussed in detail in the section on Land Requirements in the Addendum to Appendix IV.
166. It is true that annual cadmium loading rates decrease from 2.0 kg/ha/yr at present to 1.25 kg/ha/yr in 1984, and further to 0.5 kg/ha/yr in 1987. However, 0.5 kg/ha/yr was used in the EIS as a conservative number for the land application analysis, thus maximizing acreage requirements. Initially, it would seem to be advantageous to locate sufficient land areas for application at the 0.5 kg/ha/yr level, allowing application on any particular site for 10 years. Using the currently higher permissible cadmium loading rates as the basis for calculating land requirements minimizes initial acreage required but reduces site life since total cadmium application is limited to 5 kg/ha. Consequently, MMSD would have to switch to new application sites earlier in the program.
167. The correction is noted in the Addendum to Appendix IV.
168. The MMSD's Industrial Waste Pretreatment Program was not included in the EIS analysis. Therefore, a worst case situation was analyzed in the EIS. It would be speculative to project the effects of a pretreatment program. The assumption of gaining an additional year of site life was not used in the EIS.
169. The EPA and DNR originally determined that a 75% land availability factor would be used in the Draft EIS. However, both the 50% and 75% land availability factors are discussed in the Land Requirements section of the Addendum to Appendix IV, Solids Management.
170. The statement represents the DNR's opinion. The history of landfill operation in Wisconsin has been one with many landfills having either a poor design and/or poor operation. The word "may" is the key to the sentence. If the landfill is well designed and well operated, these restrictions may not exist.
171. The land areas referred to on page V-11 are not total on-site requirements as presented on Table V-1. Rather,

they are additional area requirements for new facilities which do not include the existing South Shore digesters.

172. This issue is discussed in detail in the Land Requirements section of the Addendum to Appendix IV.
173. Emissions tabulated in the Jones Island Facilities Plan Element (MMSD, 1980) show that total emission (tons/year) from combustion at Jones Island will be greater than the present emissions due to the increased solids loading using sludge and refuse-derived fuel.

The incinerator emissions loadings estimates, with the exception of particulates, were based on sewage sludge incineration emissions factors presented in Compilation of Air Pollutant Emission Factors (USEPA, 1977). This is the standard reference for emission factor data. The emission factors used to obtain the loadings in Table V-6 were for a sewage sludge incinerator operating with a wet scrubber type air pollution control device. The data presented in Table V-6 show that sulfur dioxide, nitrogen oxides and hydrocarbon emissions will increase and particulate emissions will decrease as compared to the present emissions shown in Table IV-2 in the JIFPE.

Factors to be considered when comparing the existing emissions to the estimated future emissions include:

- Incineration is a combustion process whereas sludge drying is not. Combustion related pollutants such as sulfur dioxide and nitrogen oxides will be produced in much greater amounts by incineration.
- Sludge loadings or input loadings under the co-combustion alternatives are much greater than existing conditions. Existing emissions result from a dry sludge input of 150 tons/day. Future emissions are based on a 417 to 1545 dry tons/day input.
- It is possible that the future emissions as presented in Table V-6 could be reduced by employing other types of air pollution control devices or additional air pollution control devices.
- The alternatives proposed involve co-combustion of sludge with refuse derived fuel (RDF) and grit and screenings. Emission factors based on such co-combustion are not available. As such, emission

factors based on sewage sludge incineration were employed in this analysis.

174. Comment noted. This information is included in Table V-6, footnote 2.
175. Comment noted.
176. Comment noted. The costs published in the EIS are based on the best available data at publication time.
177. See responses 150 and 151.
178. Table V-2: This Table has been modified using EIS data in the Land Requirements section of the Addendum to Appendix IV, Solids Management.
- Table V-3: This Table is not from the November, 1980 Draft EIS.
- Table V-5: This is Table V-4 (modified) of the Draft EIS which is deleted in the Addendum to Appendix IV.
- Table V-6: This is Table V-5 of the Draft EIS which is modified in the Errata Section in the Addendum to Appendix IV.
- Table V-8: This is Table V-7 of the Draft EIS which is modified in the Errata Section in the Addendum to Appendix IV.
- Table V-9: This is Table V-8 of the Draft EIS, which is modified in the Errata Section in the Addendum to Appendix IV.
- Table V-10: This is Table V-9 of the Draft EIS. Electricity values should be deleted. Fertilizer values were used for nitrogen, phosphorus and potassium. Steam production values are included in off-site resource production (Table V-10 of the Draft EIS).
- Table V-11: This is Table V-10 of the Draft EIS. The EIS used 4.9 miles per gallon to calculate requirements while the MMSD used a gallon per hour conversion factor. The table is correct as is.

Table V-12: This is Table V-11 of the Draft EIS. The modifications made by the MMSD are not significant.

Table VI-1: There is no Chapter 6 in the November, 1980 Draft EIS. This is Table V-12, which is modified in the Errata Section of the Addendum to Appendix IV.

179. Correction noted in Addendum to Appendix V.
180. Correction noted in Addendum to Appendix V.
181. Chapter 1 is a summary. The problems and alternatives are discussed later in the text.
182. The correction is noted in the Errata Section of the Addendum to Appendix V.
183. The text has been modified. See the Errata Section of the Addendum to Appendix V.
184. See the Errata Section of the Addendum to Appendix V note for page 1-6, Section 1.2.1.
185. The text is modified in the Errata Section of the Addendum to Appendix V.
186. The correction is made in the Errata Section of the Addendum to Appendix V.
187. Mr. Duane Schuettpelz of the DNR, in a letter of July 3, 1980 to Dale Leucht of EPA, stated that the intent of the current "open waters" Lake Michigan water quality criteria was to exclude both the Inner and Outer Harbors from having to meet trout water criteria. This memo is on file at ESEI and available for review. The DNR and EPA concur that the Outer Harbor is designated as a warmwater fishery by Wisconsin water quality standards.
188. The rivers were discussed together because the Inner Harbor was treated as a common unit in Chapter 5. It is recognized that combining these rivers into one analysis does not allow the differences between the rivers to be distinguished. That is why the sensitivity analysis was performed in Section 5.1.6.3 of the Appendix.
189. The intent of the statement is to relate the effects of a lake seiche on the Inner and Outer Harbor. A seiche is a fluctuation of the surface elevation of a lake,

which occurs on an irregular frequency, due to a number of factors such as wind velocity and localized differentials in atmospheric pressure.

190. This fact is noted in the Errata Section of the Addendum to Appendix V.
191. Correction noted in the Errata Section in the Addendum to Appendix V.
192. "Piezometric surface" defines the pressure head of water in a confined (artesian) aquifer. The term aquifer is defined as "a geologic formation which contains water..." (Linsley; Kohler, Paulhus, Hydrology for Engineers). The use of peizometric surface in the EIS is correct for confined aquifers as applied.
193. In this context, the amount of recharge should be qualified as being small. There is, however, adequate evidence that movement through the Maquoketa shale does occur. SEWRPC Technical Report No. 16 estimates the hydraulic conductivity at  $0.0005 \text{ (gal/d)/ft}^2$  for the shale.
194. The text states that the longjaw cisco may have been killed by eutrophication effects. The reference does not appear in the Final EIS.
195. Comment noted.
196. Correction noted in Errata Section of Addendum to Appendix V.
197. The text is modified in the Errata Section of the Addendum to Appendix V.
198. The correction is noted in the Errata Section of the Addendum to Appendix V.
199. The development of the Wastewater System Plan is discussed in Chapters 1 through 5 of the EIS. This Appendix discusses only the CSO program. It is assumed that the reader has read the main text.

200. The correction is noted in the Errata Section of the Addendum to Appendix V.
201. O&M costs were prorated in the same manner as capital costs in the Draft EIS.
202. It is recognized that the Inline System is a flexible alternative for eliminating bypassing from the separated sewer system, regardless of the requirements needed to correct the CSO problem. The discussion to which this comment is directed stems from the statement (p. 4-51 paragraph 1) that "Storage systems designed for clearwater flows from the separated area were evaluated to determine the feasibility of expanding the available volumes to fulfill storage requirements for CSO abatement." CSO abatement under the MMSD's Recommended Plan can also be provided by the Inline system through the use of the Inline tunnels to convey CSO to storage and treatment.
203. Change noted in Errata Section of the Addendum to Appendix V.
204. It is assumed that this comment refers to the statement "Exact shaft sizes and types have not been determined for each location.". Nowhere does the Draft EIS state or imply that only one dropshaft had been used for estimating. Prior to publication of the Draft EIS, the precise structural dimensions and physical configuration of each dropshaft were not available.
205. Sixteen pump stations are noted in Chapter 6 of the CSO volume of the MFP and Appendix 6-D (Figure 6-23 and Table 6-15). Chapter 3 of the CSO section of the MFP indicates that the number was decreased to fifteen, but gives no indication as to why the station was no longer needed for basin 188. Hence, the 16th pump station was not removed from the EIS text.
206. Correction noted in the Errata Section of the Addendum to Appendix V.
207. By each number cited in Section 5.1.2, there is a reference source. If there is a specific number which is being called into question, worksheets used in calculating these numbers as well as the references are available to the public.
208. Comment noted. See response 207.

209. Particulate matter (suspended solids) loads are quantified in Tables 5-2, 5-3, 5-8, and 5-9.
210. The 630 mg/l value is for BOD-ultimate (see Table 5-1). The corresponding BOD<sub>5</sub> value is 420 mg/l. The value is somewhat higher than the mean Jones Island influent concentration because it includes a higher percentage of industrial discharges which tend to have higher BOD loads. This is discussed in the text on page 5-7.
211. Phosphorus concentrations in street runoff are strongly dependent upon the surrounding land use. A reasonable total phosphorus concentration from the IJC Menomonee River Study (Konrad J.G. et al., Menomonee River Pilot Watershed Study-Summary Report, IJC, May 4, 1978) would be 0.5 mg/l. However, the study included a wide spectrum of urban and rural land uses. Generally, higher industrial/commercial land use resulted in higher total phosphorus concentrations. The reported range of total phosphorus concentrations from this study was 0.09 mg/l to 1.52 mg/l. Kluesener and Lee report urban runoff total phosphorus concentrations in Madison, Wisconsin between 1 mg/l and 2 mg/l (Kluesener, J.W. and Lee, G.F., "Nutrient Loadings from a Separate Storm Sewer in Madison Wisconsin", JWPCF, Volume 46, No. 5, May 1974.). Based upon these data, the value of 1.6 mg/l total phosphorus may be considered high (i.e., worst case) but is within the range of reported urban street runoff concentrations.
212. The commentor is confusing the 11% complete separation area with the 11% increase in flow from the CSSA under complete sewer separation system. The increase in flow is distributed over the entire CSSA area and does not originate entirely within the 11% complete separation area.
213. The EIS study team agrees with this comment, and nothing on page 5-13, paragraph 3 contradicts the statement. Section 5.1.5.2.2 addresses scouring of bottom sediments and discusses the limited area directly affected by discharges under the Modified CST/Inline Storage Alternative.
214. The values presented in Table 5-3 did take into account the reduction in the water load to the Jones Island WWTP due to the elimination of storm water runoff entering the WWTP. All of the storm water runoff water load and associated pollutant loadings were assumed to be diverted to the rivers (Inner Harbor). The Inner Harbor water and pollutant loadings would therefore

increase. The Outer Harbor water loads and pollutant loadings are the sum of the Inner Harbor, two combined sewer overflow outfalls, Lake Michigan inflow, and the Jones Island WWTP. Thus, if water loads are reduced to the Jones Island WWTP, but those loads are instead discharged to the Inner Harbor (as was assumed), then the total water load to the Outer Harbor remains constant. Pollutant loadings would vary, however, because different volumes of water would be subjected to the treatment efficiencies of the Jones Island WWTP and the settling rates of the Inner Harbor.

215. These concentrations and loads are given in the Water Quality Appendix VII, Chapter 4.
216. The EPA and DNR considered including a sample data sheet in Chapter 5. However, it was concluded that the presentation distracted from the discussion and would be confusing to most readers. These data sheets are on file at ESEI's office and are available for public review.
217. This issue is addressed in Section 5.1.8, Nonpoint Source Pollution Abatement of this Chapter. Basically, the argument presented is that the nonpoint source control measures recommended under the 208 Plan would result in a 25% decrease of metals and suspended solids.
218. An in-depth discussion of food chain pathways was not considered germane to the presentation. The commentor is referred to the work of Nathams et al., on the uptake of DDT by Capitella, Tubifex, and Nephtys from sediments (Nathams et al., "Availability of Sediment-Absorbed Selected Pesticides to Benthos with Particular Emphasis on Deposit-Feeding Infauna," DMRP Technical Report D-77-34, November 1977) and the efforts of Neff et al., on the uptake of sediment-absorbed metals by Rangia Cuneata, Palaemonetes kadiakensis, Neanthes arenaceodentata, and Tubifex (Neal et al., "Availability of Sediment-Absorbed Metals to Benthos with Particular Emphasis on Deposit-Feeding Infauna," DMRP Technical Report D-78-42, August 1978). The studies of Jensen et al., and Magnuson et al., also document the conversion of sediment-absorbed mercury into the more toxic and bio-available methyl-mercury (Jensen, S. and Jernelov, A. "Biological Methylation of Mercury in Aquatic Organisms", Nature 223, August 16, 1966 and Magnuson, J.J. et al., "Final Report - An Assessment of the Environmental Effects of Dredged Material Disposal in Lake Superior - Volume 3: Biological Studies," Marine Studies Center, University



of Wisconsin - Madison, March 1976).

219. The previously cited memo of Mr. Duane Schuettpel to Ms. Dottie Harrell, DNR File Reference 3200, August 27, 1980 is the basis of the 0.04 mg/l un-ionized ammonia-nitrogen concentration.
220. Comment noted.
221. The agencies agree that not all CSO events cause sediment scour and stated in the text, "the measured frequency of discharge would not necessarily result in increased DO violation...". The primary point of this discussion was that alternatives which continue to allow discharges to the rivers are less attractive than alternatives which eliminate discharges.
222. The text has been modified in the Addendum to Appendix V.
223. The Verification Study (Meinholz et al., 1979) determined that 30-47% of the sediment carbonaceous BOD loadings could be attributed to in situ algae productivity. These data were developed from the work of Bothwell ("Studies on the Distribution of Phytoplankton Pigments and Nutrients in the Milwaukee Harbor Area and Factors Controlling Assimilation Numbers," Ph.D. Thesis, University of Wisconsin-Madison, December 1975). The basic assumption in the Verification Report estimates was that algal productivity (gross production not corrected for algal respiration) eventually contributed to the sediments through 100% sinking loss. However, the EIS consultant applied the same basic data to the free water method of Odum, which provides simultaneous estimates of gross primary production and total community respiration (corrected for diffusion), (Odum, "Primary Production in Flowing Waters" Limnol. Oceanogr., 1956). This approach recognizes that the bulk of algal primary production is respired by algae, leaving very little production available for growth. Applying this approach to the Milwaukee River, it was determined that only about 5% of the sediment BOD load arose from in situ productivity. Bothwell determined that algal production in the rivers was greater than the Outer Harbor. It was therefore concluded that algal BOD loads to the Outer Harbor sediment would be relatively minor.
224. These pollutant loads are given in Table 5-18.

225. Some inter-mixing within the Inner Harbor between different rivers may occur. There are also few data available on the Kinnickinnic River sediments. While the analysis presented in Section 5.1.6.3 of Appendix V may somewhat overestimate the difference in sediment quality between the Kinnickinnic River and the rest of the Inner Harbor, it is an appropriate "worst case" analysis. It is not possible to quantify the effect of increased unleaded gasoline usage on storm water lead concentrations.
226. Acutely toxic levels of pollutants result in severe biological harm or death. However, lower concentrations could be harmful to biota and affect reproduction, feeding, and behavior. In addition, rapid increases in the concentrations of pollutants may be harmful, even if acutely toxic levels are not exceeded.
227. The nonpoint source loading estimates set forth in SEWRPC Technical Report No. 21, Sources of Water Pollution in Southeastern Wisconsin: 1975 indicate that high density residential, commercial, and industrial land uses generate higher pollutant loadings than lower density urban land uses. For example, commercial and industrial land uses generate from 0.70 to 0.75 pounds per acre per year of total phosphorus (SEWRPC Technical Report No. 21, Table 364, p. 546). However, residential land uses generate a total phosphorus load of only 0.32 pounds per acre per year. The Residential Land Use section in Technical Report No. 21 (page 308) notes that pollutant loadings from residential land uses are a function of the population density; higher density residential areas tend to have higher pollutant loadings. In SEWRPC Planning Report No. 30 A Regional Water Quality Management Plan for Southeastern Wisconsin: 2000, Volume 3, Recommended Plan, Table 66, page 201, a general urban nonpoint source control cost of \$8 per acre per year is presented. However, a minimum level of nonpoint source control in industrial areas could cost \$52 per acre per year. Since the CSSA contains a larger portion of high density residential land use, commercial use, and industrial use than other urban land in the SEWRPC planning area, it is reasonable to assume that the cost of controlling nonpoint source pollution in the CSSA may be higher than for other urban areas.
228. A change is noted in the Errata Section of the Addendum to Appendix V.

229. A change is noted in the Errata Section of the Addendum to Appendix V.
230. A change is noted in the Errata Section of the Addendum to Appendix V.
231. The comment is too vague for response.
232. The EIS allocated the costs of the various components of the four system level alternatives in the fashion deemed equitable by EPA and DNR. This method was used because the tunnels and storage caverns of three of these alternatives are necessary for both correcting the CSO problem and for eliminating bypassing from the separated sewer system. The costs were divided on the basis of the proportional volume each program would require of the storage facilities.

The methodology used in the Draft EIS is a simplification of the method for allocating costs for multiple use facilities which is outlined in the EPA Seminar Publication "Benefit Analysis for Combined Sewer Overflow Control". The following formula is presented in this publication:

$$AC_i = SC_i + JC \left( \frac{RC_i}{RC_1 + RC_2} \right)$$

Where       $AC_i$  = the allotted costs for purpose i  
               $SC_i$  = the separate costs for purpose i  
               $JC$  = the joint costs  
               $RC_i$  = the remaining costs for purpose i

Separate costs are costs for those items used solely for one purpose such as dropshafts in the CSSA. Joint costs are costs of all components used by both programs, and is equal to the sum of all remaining costs.

The factor  $(RC_i / (RC_1 + RC_2))$  is assumed proportional to the storage volume required for each purpose in order to simplify the calculations. It is correct that other methods for allocating costs for abating problems of the separated and combined systems (may be appropriate. The cost allocations in the EIS are for informational) purposes only. Under Wisconsin Statutes, the MMSD is responsible for determining the method to use for allocating system costs.

233. The severity of disruption is dependant upon the

viewpoint of the observer. Dropshaft construction is expected to take approximately 1 year. During this period traffic will increase (especially trucks) due to hauling of materials, equipment and spoil to or from the actual site. Parking in the areas around the site will be limited due to the increased demand for spaces imposed by the construction workers. If these problems do not directly impair access to a business, their presence could decrease business by making the area less pleasant to travel in or through. The possible decreased levels of business represent a real impact of unpredictable severity.

- 234. Table 5-35 has been corrected. See the Errata Section of the Addendum to Appendix V.
- 235. The EIS has not attempted to assign significance to impacts.
- 236. The paragraph has been revised. See Addendum to Appendix V.
- 237. Table 5-36 has been modified. See Addendum to Appendix V.
- 238. Comments in this table are classified in two separate categories. Comments following "Site:" refer to conditions in the immediate vicinity of the proposed construction site. Comments following "Access Situation:" refer to traffic conditions along major streets in the area near the construction. "Access situation:" comments are directed at a much broader area than "Site" comments.
- 239. The title "Annual Operation and Maintenance Requirements" should be footnoted by footnote 1. These values refer to energy required for pumping and operation of screening structures including hauling screenings. The footnote is modified in the Addendum to Appendix V to state "nor does it reflect the energy requirements for treatment of captured flows at the WWTP."
- 240. These changes are noted in the Errata Section of the Addendum to Appendix V.
- 241. These figures are rough estimates and they were included for informational purposes only.
- 242. When the Draft EIS was prepared, data were not available

to determine the flow split to the Jones Island and South Shore WWTPs. Therefore, the analysis assumes the maximum flow to Jones Island.

243. Energy use is compared to total local supplies in Chapter 4 of the main text of the EIS. Table 5.42 (page 5-147) has been corrected in the Addendum to Appendix V.
244. It is correct that the Hales Corners WWTP, which is operated by the MMSD, will be abandoned soon. This point has been clarified in the Errata Section of the Local Alternatives Appendix Addendum (see Volume 3).
245. The correction has been noted in the Errata Section of the Local Alternatives Appendix Addendum.
246. There is no evidence that connection of the Caddy Vista system to a local Oak Creek sewer would limit sanitary sewer service in the Caddy Vista subdivision during the planning period to a rate less than that forecast in the SEWRPC Year 2000 Land Use Plan, or Year 2000 Regional Water Quality Management (208) Plan. However, additional sewer service may be required in the entire southern Milwaukee County-northern Racine County area as population and land use patterns change beyond the 20-year planning period.
247. Clarification has been made in the Errata Section of the Local Alternatives Appendix Addendum.
248. The text has been modified to clarify this point. See the Errata Section of the Local Alternatives Appendix Addendum.
249. The column heading has been modified to: "Treatment and Conveyance Capital Cost". The irrigation cost has been corrected. See the Errata Section of the Local Alternatives Appendix Addendum.
250. This issue is discussed elsewhere in the Appendix.
251. Clarification has been made in the Errata Section of the Local Alternatives Appendix Addendum.
252. The missing line has been noted in the Errata Section of the Local Alternatives Appendix Addendum.
253. As cited in NR 210.10, a pH limit of 6.0 to 9.0

is required for all publicly owned treatment works unless inorganic chemicals are not added to the treatment process and industrial sources do not cause the pH of the effluent to be less than 6.0 or greater than 9.0. This limit may be set at more stringent levels where necessary to meet the water quality standards of the receiving stream. These limits are given in NR 104.02. Limits, even more stringent than those cited in NR 210.10 and NR 104.02, may be established by the Wisconsin Department of Natural Resources in special situations in order to ensure that the water quality standards of a receiving stream are met.

The pH limits cited on page 5-4 are based on the requirements of NR 210.10.

- 254. The correction has been noted in the Errata Section of the Local Alternatives Appendix Addendum.
- 255. The correction has been noted.
- 256. Interbasin transfer of water was not considered a legal issue for this alternative because the source of water for the Northeast service area is groundwater. Groundwater sources are not categorized by the same watershed boundaries as surface waters and are not subject to the same watershed rules. Accordingly, the ultimate disposal method of small quantities of wastewater originally withdrawn from groundwater sources in Muskego as well as New Berlin were not evaluated as potentially illegal interbasin water transfers in this EIS.
- 257. The pH limits cited on page 5-13 are based on the requirements of NR 210.10. See reply to comment 259 for additional clarification.
- 258. The correction has been noted in the Errata Section of the Local Alternatives Appendix Addendum.
- 259. The pH limits cited on page 5-22 are based on the requirements of NR 104.02. See response 253.
- 260. The statement in the EIS was intended to compare the relative impacts of locating or not locating a WWTP south of McShane Road. Both EPA and DNR consider the operation of a WWTP south of McShane Road with a continuous effluent discharge to Tess Corners Creek to be potentially detrimental to the development of housing north of the road.

261. Clarification has been made in the Errata Section of the Local Alternatives Appendix Addendum.
262. The purpose of the discussion in the Local Alternatives Appendix was to compare the impacts of the alternatives that connect the local communities to the MMSD with the impacts of the alternatives that continue local wastewater treatment in these communities. In order to connect the City of Muskego sewer system to the MMSD system, it would be necessary to construct an interceptor from the Northwest WWTP to the Northeast WWTP and finally to an 84-inch MIS in College Avenue near Highway 100. This particular conveyance system would serve Muskego only. A separate pump station and 16-inch force main would provide sewage conveyance for Franklin. Thus, the Franklin-Muskego Interceptor includes two completely separate conveyance systems within Milwaukee County. In order to determine the total impact of connecting Muskego to the MMSD, it is necessary to address the impacts of the Muskego portion of the Franklin-Muskego Interceptor as well as the impacts of the connector Interceptor in Muskego.

263. The cost presented in the EIS were developed as outlined below:

Local sewer rehabilitation	\$0.29 million	(WSP Chapter 8, Table 8A-10, sheet 3 of 3)
Muskego Connection	\$3.59 million	(WSP Chapter 12, Table 12-6-1, sheet 3 of 5)
Franklin portion of-Franklin-Muskego Interceptor	-\$1.08 million	(FMIFPE Cost-Effectiveness Worksheet Forms 1-5, Alternative 12)

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Net Present Worth      \$5.48 million

The value of \$5.65 million in Chapter 5 should be changed to \$5.48 million.

264. The correction has been noted in the Errata Section of the Addendum to Appendix VI.
265. The EIS costs include the initial capital cost of the Regal Manors connection which are not included in the MMSD costs.
266. The correction has been noted in the Errata Section

of Addendum to Appendix VI.

- 267. The EIS costs include the initial capital cost of the Regal Manors connection which are not included in the MMSD costs.
- 268. Comment noted.
- 269. The EIS costs include the initial capital costs of the Regal Manors connection which are not included in the MMSD costs.
- 270. The correction has been noted in the Errata Section of Addendum to Appendix VI.
- 271. Comment noted.
- 272. The correction has been noted in the Errata Section for Appendix VI.
- 273. The correction has been noted in the Errata Section for Appendix VI.
- 274. The correction has been noted in the Errata Section for Appendix VI.
- 275. The correction has been noted in the Errata Section for Appendix VI.
- 276. The correction has been noted in the Errata Section for Appendix VI.
- 277. The correction has been noted in the Errata Section for Appendix VI.
- 278. The text has been modified. See Errata Section of the Addendum to Appendix VI.
- 279. The costs presented on page 8-6 of the Draft Local Alternatives Appendix assumed that the Mequon-Thiensville connector would start at the Thiensville WWTP. The draft Appendix has been corrected to note that the connector would actually start at an existing pump station on Cedarburg Road. Based on this correction, the capital and O&M costs of the Thiensville portion of that connector have been revised to \$1.61 million and \$0.001 million, respectively. These revisions have been noted in the Errata Section of the Local Alternatives Appendix Addendum.
- 280. Clarification has been made in the Errata Section



of the Addendum to Appendix VI.

- 281. Comment noted.
- 282. The correction has been noted in the Errata Section of the Addendum to Appendix VI.
- 283. Comment noted.
- 284. Table 11-1 is updated in the Local Alternatives Appendix Addendum.
- 285. See Local Alternatives Appendix Addendum for clarification of this figure. The figure is also presented in Chapter 3 of the Final EIS (Volume 1).
- 286. See Local Alternatives Appendix Addendum for clarification of this figure. The figure is also presented in Chapter 3 of the Final EIS (Volume 1).
- 287. Both existing DNR (NR 102-104) and 208 recommended water use objectives and supporting water quality standards were evaluated in the revised Appendix VII, Water Quality. A percent of time compliance level approach was not used in the EIS. Although the 208 plan utilized a compliance level approach for water quality standards application, the 208 plan also recommended that point source pollution abatement measures continue to be designed to meet standards during Q<sub>7,10</sub> flow conditions.
- 288. In the revised Appendix VII, Water Quality, mass loading calculations under low flow conditions were conducted for conservative substances only. Analyses for non-conservative substances, such as ammonia-nitrogen and dissolved oxygen took into account instream processes such as reaeration, nitrification, and sediment oxygen demand.

The mass loading calculations utilize simplifying assumptions concerning the loading, transport, and mixing of pollutants with receiving waters in order to provide reliable predictions of water quality conditions. The loading calculations are appropriate for assessing the impacts of wastewater treatment plant discharges immediately downstream of the mixing zone. The calculations are also useful in evaluating compliance with existing DNR and 208 recommended water quality standards under alternative conditions.

289. Existing water quality was described using data reported by SEWRPC, which were collected during relatively low-flow conditions, generally in August. It was assumed that the water quality occurring during these low-flow conditions would be characteristic of the  $Q_{7,10}$  water quality conditions. The methodology used in the low-flow water quality analysis is described in Section 3.1.1 of the revised Appendix VII, Water Quality.
290. Table 1 and its associated text are deleted in the revised Appendix VII. The reference to 169 pollutants is also deleted.
291. The deposition of metals in the Inner and Outer Harbors is discussed in Chapter 5 of Appendix V, Combined Sewer Overflow.
292. The revised Water Quality Appendix replaces the original discussion of fecal coliforms with a discussion of the origin of fecal coliforms and their usefulness as indicators of pathogens in water.
293. The discussion of ammonia-nitrogen in the revised Appendix VII has been modified to eliminate any implication that most of the ammonia in sewage effluent is in the un-ionized form. However, as pH rises, the percent of un-ionized ammonia-nitrogen rises quickly. At a temperature of 20°C, the percentage changes from 28% at a pH of 9.0 to 56% at a pH of 9.5 to 80% at a pH of 10.0.
294. The revised Appendix VII analyzes the decomposition of organic-nitrogen to ammonia-nitrogen and the nitrification of ammonia-nitrogen to nitrite-and nitrate-nitrogen.
295. Yes.
296. The EPA and DNR acknowledge the usefulness of models, including Streeter-Phelps, in evaluating WWTP loads to receiving streams. However, the application of any model without calibration using instream data or sensitivity analyses is inappropriate. Under low flow ( $Q_{7,10}$ ) conditions, reaeration rates and sediment oxygen demands can play a significant role in a stream's oxygen budget. Under these conditions simplifying assumptions (i.e., excluding in-stream reaeration rates and SODs) are, in fact, not reasonable. Reaeration rates alone can vary orders of magnitude depending upon a stream's depth, wetted cross sectional

area, flow, velocity and temperature (Zision et al., EPA 600/3-78-105, December, 1978). Factoring in nitrogenous oxygen demand would require knowledge of the sum of organic plus ammonia-nitrogen oxygen demand. Reported  $k_n$  (nitrification rate) values range from 0.032 to 2.5 (Zision et al., ibid.). Recent studies of Finstein and Storm (JWPCF, p.2055, August, 1978) and Curtis et al., (Water Res. 9 pp.255-268, 1975) have indicated the dominant role of fixed or sediment nitrifiers upon a stream's ability to nitrify ammonia. Curtis cited 80% of the nitrification activity as occurring in the sediments.

While each of these variables may be defined and verified against the actual stream conditions, model application would require an extensive study program. Given the choice between model oversimplification or a qualitative analysis of oxygen demands, the EPA and DNR selected a qualitative approach, which is presented in the revised Appendix VII, Water Quality.

297. The WWTP mixing zone pH is of primary importance because it affects the concentration of un-ionized ammonia-nitrogen. The revised Appendix VII, Water Quality notes that small pH changes in highly buffered systems may occur. However, it was not possible to quantify the increase in algae levels expected downstream of WWTPs nor the effect that increased algae levels would have on pH.
298. Temperature was not analyzed in the revised Appendix VII, except in Sections 3.2 and 4.1.2 in conjunction with discussion of un-ionized ammonia. In these sections, the temperature was determined by using either the MMSD Purification/ Analytical Data or the MFP Summary Support Data File, Environmental Assessment, Volume 2.
299. The accumulation and impact of pollutants entering a lake aquatic system are addressed in the revised Appendix VII, Water Quality. Metals may be insolubilized as carbonates or sulfides, ionically bound through organic-clay absorption, or mechanically trapped in pore water or within a hydrated floc. The revised Appendix evaluates lake conditions under WWTP alternatives.

300. It is agreed that some water quality effects due to nonpoint pollution sources may occur during low flow conditions. However, these effects may be relatively small compared to the nonpoint source impacts which occur during storm events. With the exception of Deer Creek, which has rich organic bottom sediments, there is little indication that substantial pollutants have been deposited in the bottom sediments and are causing water quality problems for the WWTP effluent-receiving streams. In the revised Appendix VII, Water Quality, it was assumed that streams would meet the recommended 208 water quality standards if not affected by WWTP discharges. Specifically, reductions in fecal coliform and phosphorus levels were assumed to occur under low flow conditions for some streams. The EPA and DNR did not believe that there was sufficient basis to reduce concentrations of other parameters under future conditions.
301. In the revised Appendix VII, Water Quality, the future upstream water quality was assumed, if not affected by upstream WWTP discharges, to meet the recommended 208 standards of 0.1 mg/l phosphorus and 200 MFFCC/100 ml fecal coliform. Other parameters were assumed to be equal to existing values as determined from data reported in SEWRPC Technical Report No. 17, Water Quality of Lakes and Streams in Southeastern Wisconsin: 1964-1975.
302. See response number 307.
303. The water quality analyses presented in the Final EIS appendices are more refined and include a wider scope of subjects than the analyses presented in the draft Water Quality Appendix. Fecal coliform is discussed in Appendix V and in revised Appendix VII, Water Quality.
304. See Table 23 of the revised Appendix VII and Chapter 5 of the Final EIS.
305. Sections 3.1.1 and 3.1.2 of the revised Appendix VII, Water Quality, describe the methodology used to analyze existing and future water quality of the Thiensville WWTP.
306. The statement was that the DNR water quality standard would "likely" be met. A similar conclusion was reached in the revised Appendix VII, Water Quality, Sections 3.1 and 3.2. However, it was found that chlorine and phosphorus would exceed the 208 recommended water quality standards downstream of the WWTP.

307. Flow augmentation downstream of the WWTPs is considered neither a beneficial impact nor an adverse impact. The New Berlin WWTP effluent would have higher concentrations of phosphorus, ammonia, and chlorine than the stream. The revised Appendix VII, Water Quality presents a more detailed analysis of water quality impacts downstream of the WWTP.
308. The DNR standard for un-ionized ammonia-nitrogen for recreational use and warmwater fish and aquatic life is documented in a memorandum from Duane Schuettepelz to Dorothy Harrel, DNR, dated August 27, 1980.
309. Discussions of water use objectives and water quality standards are given in Chapter 2 of the revised Appendix VII, Water Quality. The issue of the Streeter-Phelps model is discussed in response 296. The percent of compliance approach was not utilized in the revised Appendix VII for the low flow analysis.
310. Section 3.1.1 and 3.2.2 of the revised Appendix VII describes the methodologies used to evaluate the impacts of WWTP discharges on water quality.
311. Impacts on the Oakwood Reservoir are addressed in Section 3.3.2 of the revised Appendix VII. Existing DNR standards and 208 recommendations are addressed in the revised Appendix VII.
312. The DNR standard for un-ionized ammonia-nitrogen for recreational use and warmwater fish and aquatic life is documented in a memorandum from Duane Schuettepelz to Dorothy Harrel, DNR, dated August 27, 1980. DNR water quality standards applicable to intermediate and marginal stream uses are set forth in Chapter 2 of the revised Appendix VII, Water Quality. An ammonia-nitrogen analysis for the proposed New Berlin Southeast WWTP is presented in Section 3.2.3.4 of the revised Appendix VII.
313. The revised Appendix VII, Water Quality, does not estimate the change in the rate of marsh development. A detailed discussion of Big Muskego Lake is included in the revised Appendix.
314. The City of Muskego and the Wisconsin DNR are currently conducting a diagnostic-feasibility study on Big Muskego Lake. The study will evaluate the need for, and feasibility of, rehabilitation measures for the lake. A detailed analysis of the impacts of WWTP discharges to Big Muskego Lake is set forth in Section 3.3.1 of revised Appendix VII.

315. The EIS consultant assumed that the phosphorus concentration in the South Shore WWTP could increase from its existing concentration of 0.6 mg/l to the maximum level permitted by the DNR of 1.0 mg/l. There is no assurance that future operations will result in concentrations which are lower than the maximum level permitted.
316. A complete analysis of the impacts of the CSO abatement alternatives is set forth in Appendix V, Combined Sewer Overflow. Sediment resuspension and sediment/water interactions are discussed in Section 5.1.5.2.2 of this Appendix.
317. Complete documentation of all loads from the CSSA and from upstream sources and their fate is given in Chapter 5 of the CSO Appendix.
318. The study conducted by Lee, et al., (1980) further evaluated mixing in the Outer Harbor. The Lee study was incorporated into revised Appendix VII, Water Quality.
319. These issues are addressed in Section 4.1 of the revised Appendix VII, Water Quality. Results of a recent Outer Harbor study by Lee, et al., (1980) are incorporated into the revised Appendix VII.
320. Water use objectives and water quality standards are discussed in Chapter 2 of the revised Appendix VII, Water Quality.
321. These are recognized as key factors and they are incorporated into the revised Appendix VII, Water Quality, and in Appendix V, Combined Sewer Overflow.
322. The discussion of Outer Harbor water quality with respect to all CSO alternatives is presented in detail in Chapter 5 of Appendix V, Combined Sewer Overflow. The revised Appendix VII, Water Quality, summarizes the impacts of the Jones Island WWTP on the Outer Harbor and includes an analysis of the effects of relocating the Jones Island WWTP discharge.
323. The impacts of relocation of the Jones Island WWTP outfall are set forth in Section 4.1.1 of the revised Appendix VII, Water Quality. The length of a possible relocated outfall pipe has not been determined for the water quality analysis. The analysis assumed that the relocated outfall would be sited so that effluent would not be transported back into the Outer Harbor.

324. Section 4.2 of the revised Appendix VII, Water Quality, includes a discussion of the mixing of the South Shore WWTP effluent with Lake Michigan.
325. Comment noted.
326. The University of Wisconsin at Milwaukee study (Lee et al., 1980) was incorporated into revised Appendix VII, Water Quality.
327. Minimal loss of ammonia to the atmosphere was assumed for the ammonia analysis in Section 4.1.2 of revised Appendix VII, Water Quality.
328. The text has been modified in the Errata Section of the Addendum to the Interceptor Alignment Appendix.
329. Comment noted.
330. This floodplain is designated by SEWRPC.
331. The EIS found the levels of energy consumption unacceptable.
- The typo has been corrected in the Errata Section.
- Comment noted.
332. The Addendum to Appendix VIII reflects this new information.
333. This has been corrected in the Addendum to Appendix VIII.
334. With the alignment changes to the interceptor, the EIS now agrees with the MMSD.
335. Comment noted.
336. Comment noted.
337. Comment noted.
338. Comment noted.
339. Comment noted.
340. Comment noted.
341. The statement should not be taken as advocating any financing option.
342. Comment noted.

343. The EIS estimated the average household charge in contract communities by dividing the average year residential capital charge by the EIS-estimated average year number of households. This household average is defined and explained in the text.

EIS data on sewerer households vary slightly from MMSD data because the data came from community officials, and there could be as much as one year's difference in these figures. However, just as the comment states, the numbers are close.

Assuming the comment refers to contract communities, the following table presents a comparison of 1980-1990 capital charges and 1991-2001 charges for contract communities. The data are taken directly from the MMSD financial model output FM60A (the MMSD Recommended Plan). The average annual charge for each period is given in parentheses next to the total charge for the period. As the table indicates, all current contract communities' charges are heaviest in the later years of 1991-2001. In fact, on the average, the charges are 60% higher in the later, 10-year period. Therefore, according to the MMSD data, not only is there no logical problem but, more fundamentally, the analysis is very logical. The lightest charges occur in the period 1980-1990 when, as the comment states, there is the fewest number of households.

<u>Community</u>	1980-1990		1991-2001	
	CAPITAL CHARGE (x1000)		CAPITAL CHARGE (x1000)	
	<u>Total</u>	<u>(Average)</u>	<u>Total</u>	<u>(Average)</u>
Brookfield	\$ 6,161	\$ ( 560)	\$ 8,549	\$ ( 777)
Butler	1,566	( 142)	2,038	( 185)
Elm Grove	3,086	( 280)	3,833	( 348)
Menomonee Falls	10,679	( 970)	18,558	(1,687)
Mequon	7,856	( 714)	13,041	(1,185)
New Berlin	11,568	(1052)	19,212	(1,746)

Source: FM60A, MWPAP

The communities of Caddy Vista, Germantown, Muskego, and Thiensville would not connect to the MMSD under the MMSD Recommended Plan until 1985. Consequently, MMSD computer output showing contract charges to these communities begins in 1985. A comparison of the charges for the periods 1985-1994 and 1995-2004 is presented in the following table.



<u>Community</u>	1985-1994		1995-2004	
	<u>CAPITAL CHARGE (x1000)</u>	<u>(Average)</u>	<u>CAPITAL CHARGE (x1000)</u>	<u>(Average)</u>
	<u>Total</u>		<u>Total</u>	
Caddy Vista	\$ 394	\$ ( 39)	\$ 335	\$ ( 34)
Germantown	6,794	(679)	6,975	(698)
Muskego	5,950	(595)	5,807	(581)
Thiensville	2,202	(220)	1,707	(170)

Source: FM60A, MWPAP

As depicted in the table, the first ten-year costs would be slightly higher for Caddy Vista, Muskego, and Thiensville. Germantown's charges, like all the contract communities discussed earlier, would be higher in the later 10-year period.

In summary, seven of the ten contract communities would experience the heaviest charges after 1990, not before as stated in the MMSD comment. The three contract communities that would have heavier charges in the first 10-year period average only 15% higher than the second 10-year period.

344. Comment noted.

345. The complexity of the EIS fiscal analysis is determined by EPA and DNR, who are responsible under the National and Wisconsin Environmental Policy Acts for presenting the impacts of alternatives to proposed actions. The agencies recognize that the MMSD communities are responsible for determining the terms of the service contracts.

346. The methodology cannot be "subject to the same fallacy as the household cost analysis" because it has been demonstrated that, according to MMSD data, contract charges are not heaviest between 1980 and 1990.

Although the peak MMSD debt service would occur in 1990, it is extremely misleading to not place the peak in perspective. The table below, showing the MMSD (financial model output) debt service by year, reveals some important characteristics of this debt service schedule.

DEBT SERVICE CHARACTERISTICS - RESPONSE 346

<u>YEAR</u>	COUNTY'S ANNUAL DEBT SERVICE <u>FOR MMSD (x1000)</u>	<u>PERCENT VARIANCE FROM MEAN</u>	<u>PERCENT VARIANCE FROM PEAK</u>
1985	\$56,572	-36	-42
1986	71,235	-19	-27
1987	83,421	-05	-15
1988	93,751	+06	-04
1989	97,476	+11	0
1990	97,917	+11	0
1991	97,664	+11	0
1992	95,330	+08	-03
1993	95,185	+08	-03
1994	95,021	+08	-03
1995	94,855	+08	-03
1996	94,703	+08	-03
1997	93,651	+06	-04
1998	93,535	+06	-04
1999	91,419	+04	-07
2000	91,419	+04	-07
2001	90,267	+03	-08
2002	87,719	0	-10
2003	78,771	-10	-19
2004	63,630	-24	-35

MEAN = \$88,177

PEAK = \$97,917

Source: MMSD FINANCIAL MODEL FM60A

- 1) Between 1988 and 2001 (14 years) the annual debt service never varies more than 8% from the peak in 1990. The average variance during the 14-year period is only 3.5%.
- 2) Furthermore, between the years 1987 and 2003 (17 years), the annual debt service never varies more than 11% from the mean. The average variance during the 17-year period is only 77%.

As this table depicts, the year in which the annual debt service peaks, relative to other years, has little impact on the fiscal analysis.

Although some flows from potential contract communities, as a percent of the total system flow, do reach their peak between 1990 and 2005, detailed information is provided here to show the peak relative to the other years. The table below reveals the percentage of system flow by community for five representative years during the planning period. The last column lists the percentage increase from the 1995 percentage (used as the average for Table 61 in the Fiscal Appendix) to the peak percentage in 2005. The deviation between the average percentage in 1995 and the peak percentage in 2005 varies by community from 0 to 37%.

In summary, the average community charges estimated for a flow-based system (in Table 61 of the Fiscal Appendix) should not be measurably affected by the fact that the MMSD debt service peak does not correspond to the contract communities' peak percent of the total system flow because:

- 1) The annual MMSD debt service does not vary from the peak by more than 8% during a 14-year period from 1988 to 2001.
- 2) The annual MMSD debt service does not vary from the mean by more than 11% during a 17-year period from 1987 to 2003.
- 3) The greatest variation between the 1995 percentage of total flow and the 2005 peak percentage of total flow for all would-be contract communities is only 37%.

As the table indicates, for six contract communities the percentages of the total flow increased after 1995. In order to determine if the numbers in Table 61 of the Fiscal Appendix are subject to a

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PERCENT OF TOTAL MMSD SYSTEM ANNUAL FLOW BY COMMUNITY

	<u>1985</u>	<u>1990</u>	<u>1995</u>	<u>2000</u>	<u>2005</u>	<u>Percent Increase From 1995 to 2005</u>
Brookfield	.9%	.9%	.9%	.9%	.9%	0
Butler	.2	.2	.2	.2	.2	0
Caddy Vista	.04	.04	.04	.05	.05	25
Elm Grove	.4	.4	.4	.4	.4	0
Germantown	.6	.7	.8	1.0	1.1	37
Menomonee Falls	1.5	1.7	1.9	2.2	2.4	26
Mequon	1.1	1.2	1.4	1.5	1.6	14
Muskego	.5	.6	.7	.8	.9	29
New Berlin	1.6	1.8	2.0	2.2	2.4	20
Thiensville	.2	.2	.2	.2	.2	0

Source: MMSD MODEL FMFL 1

"fallacy", a very detailed analysis has been conducted. The annual percent of the total flow for each community has been multiplied by the MMSD debt service for the same year. This procedure was carried out for all 21 years between 1985 and 2005. The 21-year average for each community is compared to the 21-year average originally calculated in Table 61 of the Fiscal Appendix. As shown in the table below, there is a difference of 3% between the Table 61 average charges and the charges resulting from the detailed analysis conducted to respond to this MMSD comment.

	<u>Detailed Analysis</u>	<u>Fiscal Appendix</u>	<u>Percent Difference</u>
Caddy Vista	\$ 38	\$ 43	13 %
Germantown	717	741	3
Menomonee Falls	1,666	1,714	3
Mequon	1,165	1,206	3
Muskego	608	629	3
New Berlin	<u>1,729</u>	<u>1,783</u>	<u>3</u>
Total	\$5,923	\$ 6,116	3 %

All costs in Thousands.

347. The comment period was extended two weeks beyond the minimum period designated by the EPA and DNR regulations to take into account the complexity of the document.
348. Appendix VII, Water Quality, has been revised to include additional water quality analyses. The water quality discussions in Chapters 3 and 5 of the main body of the EIS have also been revised to include cross-referencing to Appendix VII and to Appendix V, Combined Sewer Overflow.
349. In the Final EIS, cross-referencing has been extensively used, and the readability of the document has been improved. EPA's regulations for the preparation of an EIS require that the Table of Contents follow the Executive Summary.
350. Comment noted. Duplication has been reduced in the Final EIS. CEQ regulations require a summary of environmental impacts in Chapter III: Alternatives.
351. The purpose of the EIS is to examine the environmental consequences of the Master Facilities Plan and alternatives to the plan. While several sections of the EIS contain general discussions of the policies of some guiding legislation, such as the Clean Water Act

(Chapters 2 and 4) and the policies of local communities as they relate to development (Secondary Growth Appendix), the EIS must focus upon the proposal at hand. Discussing broader policy issues is outside the scope of the EIS.

352. Flexibility, as defined on page IV-85 of Appendix II Jones Island and IV-58 of Appendix III South Shore, does not preclude innovative or alternative technologies. The land application of sludge is an alternative technology to landfilling, for example. Innovative and alternative (I/A) technology is not automatically ruled out as "infeasible". Many I/A systems would be familiar to engineers, designers, contractors or plant operators. Also, feasibility is only one of many criteria used to evaluate the technical merits of an alternative.

Numerous advanced wastewater treatment processes do exist. However, they can be very expensive, difficult to operate, unreliable, or may not consistently meet effluent discharge limits. If an alternative is not feasible (i.e., is impossible or impractical, and does not have a proven history), then the expenditure of money to plan, design and construct such a facility would not be funded by the EPA and DNR.

Typically, the most successful WWTPs operate using the well-proven and well-tested activated sludge process (using air or High Purity Oxygen, HPO) to achieve secondary treatment limits.

353. This EIS represents an independent evaluation of the environmental impacts of the Master Facilities Plan. Except for the evaluation of interceptor extensions, the planning that was undertaken in the MFP was limited to a 20-year period (1985-2005) by EPA Construction Grants Program regulations (40 CFR 30). For this reason the EIS has limited its analysis to this 20-year period.
354. The MMSD's Industrial Waste Pretreatment Program is discussed in Appendix II, Jones Island, Appendix III, South Shore, Appendix IV, Solids Management and the Addendum to the Solids Management Appendix. It would be highly speculative to predict the results of the MMSD's Industrial Waste Pretreatment Program without the benefit of EPA's categorical standards. The MMSD will not make any projections for this same reason. The analysis of Water Quality Impacts and Solids Management Alternatives is based on a "worst case"

analysis, i.e., no industrial pretreatment, therefore, actual impacts could be less with the implementation of the MMSD's Industrial Waste Treatment Program.

Section 4.3, Priority Pollutants, of the revised Appendix VII, Water Quality discusses some of the water quality impacts of metals and toxic substances. All available MMSD data for priority pollutants were incorporated into the EIS.

355. It was not the intent or the responsibility of the EIS to discuss water use in the planning area. In Chapter 6 of the MMSD-MFP, water use and water conservation measures are discussed. Water use accounts for only the base flow to the MMSD WWTPs. Under peak wet weather conditions, up to 900 MGD can flow through the MMSD system, while the base flow is only 18% (166 MGD) of this total flow. Seventy-two percent of the peak flow is caused by inflow and infiltration (I/I) or stormwater and is not related to water use by commercial, industrial or residential consumers.
356. The MMSD's Infiltration and Inflow (I/I) Report was prepared separately from the Master Facilities Plan and was approved by EPA and DNR. This report, not the EIS, determined the cost-effective level of I/I removal.

The MMSD is currently in the process of adopting a plan for repairing and rehabilitating separated sewers and interceptor sewers in its service area. This plan will be based upon the results contained in the Sewer System Evaluation Survey (SSES) Report which is also being finalized by MMSD at this time. The adoption of a rehabilitation plan and SSES Report by MMSD at some future date may require an ammendment to the adopted plan and may also require further environmental review by EPA and DNR.

357. On May 19, 1980, the EPA promulgated its regulations on Hazardous Waste Management Systems in the Federal Register (45 FR 33063-33588). These regulations addressed several areas:

- 40 CFR 260: General
- 40 CFR 261: Identification and Listing of Hazardous Waste
- 40 CFR 262: Standards Applicable to Generators of Hazardous Waste

- 40 CFR 263: Standards for Transporters of Hazardous Waste
- 40 CFR 264, Standards Applicable to Owners and  
265: Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities
  - Financial Requirements
  - Underground Injection
- 40 CFR 122, Consolidated Permit Regulations  
123,  
124,  
125:

Both the DNR and the EPA recognize that improper handling and disposal of toxic and hazardous materials are serious problems. Both agencies have adopted regulations to correct these problems. The Hazardous Waste regulations will minimize adverse environmental impacts by these materials. The MMSD and Milwaukee industries are required to meet the provisions set forth in these regulations, all the other EPA regulations listed in Title 40 of the Code of Federal Regulations and all the DNR regulations listed in the Natural Resources Chapters of the Wisconsin Administrative Code.

Although metals can be toxic to plants or animals, some are also essential trace elements which provide beneficial results. For example, small amounts of zinc, nickel and copper are required by man. This point is discussed further in the Addendum to Appendix IV, Solids Management in the section on Public Health.

The MFP and the alternatives which are evaluated in the EIS do not allow these pollutants to pass through treatment facilities untreated. In fact, some industrial discharges to the sewer system have been decreasing (this is shown in the Addendum to Appendix IV, Solids Management). The MMSD intends to eliminate the discharge of toxic and hazardous materials to its sewers.

Both agencies have regulations for landfilling solid waste (including sludge), and the EPA has published numerous reports on landfills. Research on land-filling and leachate control as well as land spreading of sludge will continue. The MMSD's Industrial Waste Pretreatment Program will regulate what industries can discharge to the sewer system. All discharges, including toxic and hazardous substances (e.g., PCBs and radioactive wastes) are monitored. PCBs and radioactive



wastes are not allowed in the MMSD sewer system. The Nuclear Regulatory Commission is also responsible for radioactive wastes and has strict regulations for their disposal. An extensive study for all 129 pollutants on the EPA's priority pollutant list was done for MMSD WWTPs' influent, sludge, and for several local water treatment plants' (WTP) intake and treatment levels. A discussion of this MMSD study is presented in Appendix VII, Water Quality, Section 4.3.

Your five points are well taken. The alternatives presented in the MFP and EIS were developed to achieve the results set forth in your comment.

358. The Draft EIS addressed sediment pollutant management in Appendix V, Combined Sewer Overflow, Section 5.1. The statement in the Appendix is meant to be interpreted in light of historical loadings to the Inner and Outer Harbors' sediments. Local water quality management agencies were designated in the Areawide Water Quality Management (208) Plan prepared by SEWRPC. For more than one year, the DNR and MMSD have been negotiating their respective responsibilities for correcting the problems associated with heavily-polluted sediments in the lower reaches of the three rivers.
359. The revised Water Quality Appendix (VII) and the Combined Sewer Overflow Appendix (IV) each present detailed analyses which discuss the quantity of pollutants being added to the receiving waters, the resultant water quality, and the degree to which instream water quality standards will be met.

Within the combined sewer service area, the combined sewer overflow abatement alternatives offer a wide range of levels of urban storm water treatment. The Complete Sewer Separation Alternative includes no treatment of storm runoff by the WWTPs. Under the Inline Storage and Modified CST/Inline Storage Alternatives, an intermediate level of stormwater capture and treatment would be provided. Under the Modified Total Storage Alternative, all storm water would be captured and treated at the Jones Island and South Shore WWTPs. Appendix V, Combined Sewer Overflow, discusses the water quality impacts of each alternative. The analyses indicate that the treatment of storm water runoff results in substantial water quality benefits.

360. Comment noted. For more discussion about the fiscal impacts of the program, please see the Fiscal/Economic Impacts Appendix and its Addendum.

361. Proper maintenance of sewers by local municipalities should minimize infiltration and inflow (I/I) to the sewer system. Under the MMSD's Recommended Plan, a portion of the I/I would be eliminated. The projected I/I rates are used for planning purposes and could be revised as new data become available. Proper maintenance by repair and rehabilitation is not a permanent solution to the I/I problem. Enforcement of municipal ordinances which prohibit I/I discharges to the sewer system are also important factors in attempting to reduce I/I.
362. The effects of Jones Island effluent ammonia-nitrogen concentration on the Outer Harbor are addressed in the revised Appendix VII, Water Quality, Section 4.1.2. The results of this new analysis are also incorporated into Chapter 5 of the main text of the Final EIS.
363. The water quality discussion in Chapter 5 has been revised to incorporate the results of the new Appendix VII, Water Quality. The phosphorus load to the Outer Harbor is expected to decrease by about 20% under future conditions. There will be increased flows from the South Shore WWTP under future alternatives, and the phosphorus load from that WWTP may more than double. Only the Jones Island WWTP discharges its' effluent to the Outer Harbor.
364. Under the current U.S. District Court Order, the CSO abatement alternatives are sized for the largest storm on record. If this storm was exceeded, the storage facilities could become filled to capacity, and excess flow from the combined sewers would be discharged to the rivers.
365. Comment noted.
366. Comment noted. Other industries discharging metals and toxic wastes could also face expensive pretreatment programs.
367. An Industrial Waste Pretreatment Program is part of the MMSD Recommended Plan. Portions of the program are already being developed. Industries will be required to pretreat (at their own cost) their discharges to the MMSD's sewer system and remove any toxic, hazardous, or radioactive wastes. Since this program is not fully developed and implemented, an in-depth evaluation of its impacts on water quality and sludge disposal can not be presented in the EIS. The EIS provides a worst-case situation, i.e., no industrial

pretreatment. Industry is one of the major dischargers of metals to the MMSD sewer system as shown below. Residential, domestic, background, and unknown sources account for the remainder.

<u>Metal</u>	<u>Industrial Contribution to MMSD WWTPs</u>
Cadmium	45-70%
Chromium	85-90%
Copper	50-65%
Nickel	65-80%
Lead	70-75%
Zinc	55-85%

Presently, the MMSD distributes its \$30 million annual treatment cost to the system's users by way of an EPA approved user charge system which, by definition, does not subsidize the industries. Of the MMSD's 29.6 million 1980 operation and maintenance budget, 9.2 million, or 31%, was paid by the industrial class.

Current state law requires that MMSD construction costs be financed by the Milwaukee County property tax. For a discussion of the industrial capacity share of improvements, see reply 501 of the CAC comments.

368. The MMSD Recommended Plan for the South Shore WWTP involves a complete landscaping of MMSD property. This is discussed in Section 11.0: Recreational-Dual Use in the Addendum to Appendix III, South Shore. The MMSD's landscaping plan involves extensive planting of trees and plants.
369. Agreed. Public works contractors would have to be aware of local public nuisance ordinances and minimize noise associated with construction near residential areas.

The trucking of sludge from the South Shore WWTP would be reduced by up to 50%. Most other transportation operations would not change. Since the trucking of sludge from the South Shore plant has the highest daily frequency, this reduction causes a significant beneficial impact. Therefore,

the noise, dust and exhaust could be cut in half by the MMSD Recommended Plan for the South shore WWTP. This is discussed in Section 12.0: Transportation and Access in the Addendum to Appendix III, South Shore.

370. The reference of this comment is unclear.
371. The water quality discussion in Chapter 3 has been revised in the Final EIS. Bypasses do degrade water quality conditions and annual loadings from the bypasses can be found in Chapter 3.
372. The low flow water quality analysis for most pollutants is conducted at the WWTP discharge point because that is where the greatest impacts will occur. For non-conservative pollutants such as ammonia and biochemical oxygen demand, the analysis also considers downstream reaches. In addition, the discussion of combined sewer overflows includes impacts on all CSO-affected reaches, the Inner Harbor, and the Outer Harbor.
373. An expanded discussion of Lake Michigan's water quality and future impacts on the Lake are presented in Chapter 4 of the revised Appendix VII, Water Quality. The discussion indicates that, although Lake Michigan has very good water quality overall, there are indications of deterioration, and localized problems do exist.
374. Figure 4.2 of the Draft EIS excluded streams affected by combined sewer overflows. Those stream reaches have been added to the figure in the Final EIS. All CSO affected streams violate the fecal coliform and dissolved oxygen standards.
375. The following table shows the existing proportion of the total watershed loads contributed by point and nonpoint pollution sources:

		Percent of Total Load		
		Milwaukee River	Menomonee River	Kinnickinnic River
Sediment	Point	0	1	10
	Nonpoint	100	99	90
Nitrogen	Point	10	18	35
	Nonpoint	90	82	65
Phosphorus	Point	14	32	62
	Nonpoint	86	68	38
Biochemical	Point	10	24	67
Oxygen Demand	Nonpoint	90	76	33
Fecal Coliform	Point	60	87	98
	Nonpoint	40	13	2

Source: SEWRPC Technical Report No. 21, Sources of Water Pollution in Southeastern Wisconsin: 1975.

376. Given that the geographic location of households influences the total allocation of public services (i.e., budgets, personnel), the primary determinant of the magnitude of each public service needed is the number of households.
377. Tourism, conventions and sporting events do bring external income into the area. To a small extent, increased activity in these sectors would help offset the impact of the costs of the MFP.
378. The MMSD User Charge Program charges for flow, BOD, and suspended solids. Toxics are not allowed in the sewer system based on EPA's categorical standards. MMSD's future user charge program could charge for toxics.
379. Agreed. Comment noted.
380. This has been revised in the Final EIS.
381. The supplemental EIS on the MMSD's Site Specific Analysis addresses the specific impacts of the proposed ultimate disposal facilities. Environmental impacts that are of a general nature are discussed in Appendix IV, Solids Management and its Addendum.
382. The "affected" environment at the MMSD WWTPs are discussed in Appendix II, Jones Island, and Appendix III, South Shore (and their associated Addenda). The future EIS supplement on MMSD's Site Specific Analysis will discuss the "affected" environment surrounding specific disposal facilities.
383. The MMSD intends to utilize this incinerator during the planning period. Otherwise, screenings, grit, and scum would have to be taken to a landfill.
384. See response to 370. The discharge of toxic substances to the MMSD sewer system will be regulated by the EPA's categorical standards for 21 types of industry. Discharges of toxic substances will not be allowed during the planning period. The Addendum to Appendix IV, Solids Management addresses industrial wastes, priority pollutants including heavy metals, toxic and hazardous substances, public health and water quality. These sections contain a more thorough discussion of toxic substances.
385. This is MMSD's conclusion restated.
386. Discing of farmland is a normal agricultural practice.

Grasslands are not used for agriculture and would therefore not be disced.

387. Agreed. However the point being made is that the impacts are related to the quantity of land disturbed, if the land is of equal quality.
388. Metals are readily bound by soil. Leachate may eventually reach surface or groundwater if not collected. However, before the design of a landfill is approved, an adequate leachate collection and treatment system must be developed.
389. (a) The MMSD determined that a three-day storage capacity would be sufficient for the on-site storage of sludge at the Jones Island WWTP. The EPA and DNR feel that this would be sufficient on-site capacity due to land constraints at Jones Island. Although transportation of sludge from the WWTP could be delayed due to a strike or inclement weather, the EPA, DNR and MMSD believe that this problem could be mitigated within three days. When MMSD operators went on strike in November, 1979, MMSD technical and managerial personnel immediately took over operation of MMSD facilities. Snowstorms have, at the most, inhibited movement of Milwaukee traffic for one or two days. Also, if rail transportation is used, no delay due to weather should occur. If, for some reason, the MMSD's sludge landfill is inoperative, and other municipal landfills in the region refuse to accept MMSD sludge, the sludge from the Jones Island WWTP could be applied to agricultural land or stored in the MMSD's proposed sludge storage facility.
- (b) Ammonia impacts to the Inner Harbor are discussed in the revised Water Quality (Section 4.1) and CSO Appendices (Sections 5.1.4.3 and 5.1.5.1) and their associated Addenda. The discussion of Water Quality in the Jones Island Appendix II only summarizes the results contained in these appendices. The Water Quality Appendix is referenced in Appendix II. Air quality problems due to increased ammonia discharged into the Outer Harbor would be insignificant. It is doubtful that odor threshold levels would be exceeded due to increased discharges of ammonia.
390. Cost and energy consumption (which is included in the O&M cost) are the only significant quantitative differences in alternatives. All the systems were

designed to give the same level of environmental protection. This is a fundamental principle for cost-effective analysis. Each alternative would deliver a given level of protection and the system with the lowest cost is the most effective at meeting that level of protection; i.e., a "best-buy". The six systems for wastewater treatment are different in layout and/or processes used. This is described in the alternatives Chapter (IV) of the Appendix. Other alternatives addressed disinfection and location of the expanded facilities. The alternatives considered in the EIS are not, "six versions of the same system".

391. The table on page III-26 presents a 12-month average of effluent flows and concentrations, along with monthly characteristics. This is a common method of presenting results. Removal efficiencies are also given so the reader may understand at what level of efficiency the plant is operating. For a given parameter (e.g., BOD<sub>5</sub>) the average discharge is 19 mg/l (the standard is 30 mg/l on a monthly basis), and the discharge ranges from a low of 8 to a high of 25 mg/l. The effluent limit for BOD<sub>5</sub> at the Jones Island WWTP was never exceeded, and the WWTP removed 94% of all BOD<sub>5</sub> entering the plant.

These data represent existing conditions at the plant which is the intention of Chapter III: Existing Conditions. Chapter V: Affected Environment compares the effluent with Outer Harbor water quality which would be "affected". Chapter IV discusses the environmental consequences during the planning period of the projected effluent discharge to the Outer Harbor.

Presentation of the data in their form is standard for any EIS and follows scientific format. The tables summarize portions of data from the years 1975 to 1979.

392. A cost-benefit analysis for ozone versus chlorine disinfection has been done. Please consult sections starting on pages IV-75, V-95, V-99, VI-107, VI-113, VI-116, VI-117 and VI-118 in Appendix II, Jones Island.

Chlorine has a well-proven history as a disinfectant while ozone disinfection is not as reliable. The Table following presents a summary comparison of ozone versus chlorine disinfection.

SUMMARY COMPARISON OF OZONE AND  
CHLORINE DISINFECTION

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CHARACTERISTICS OF A GOOD DISINFECTANT	CHLORINE (Cl <sub>2</sub> )	OZONE (O <sub>3</sub> )
Non toxic to aquatic life	-	+
Does not form hazardous side products	-	+
Side products formed are hazardous to human health	-	+
Has a residual disinfecting effect	+	-
Has a method to measure residual	+	+
Disinfectant is available	+	+
Is toxic to microorganisms	+	+
Controls odors and taste	+	+
Does not impart odors or taste	-	+
Non corrosive	-	-
Toxic to microorganisms at ambient temperature	+	+
(+) has that characteristic		
(-) does not have that characteristic		

When the MMSD considered the six alternatives for Jones Island, chlorine was included as the disinfection alternative since it was determined more cost-effective than ozone. If ozone was used to disinfect the effluent, then the total costs could be determined by subtracting the cost for chlorine and inserting the cost for ozone. Disinfection is part of the total system for wastewater treatment.

393. Industrial pretreatment is discussed on page IV-46 in Appendix II, Jones Island, Appendix III, South Shore, Appendix IV, Solids Management and in the Addendum to the Solids Management Appendix. The EIS has taken a



worst case situation. The MMSD's Industrial Waste Pretreatment Program Report (October 1980) makes no projections based on pretreatment. Therefore, developing a "best-case" situation would be highly speculative.

394. Ammonia, which has a characteristically sharp and pungent odor, can be recognized at a concentration of 46.8 ppm in the atmosphere. The un-ionized form of ammonia is toxic to fish and can contribute to the depletion of dissolved oxygen in the Outer Harbor, but since it is dissolved in the wastewater, it should not present any significant odor problems. Due to the toxicity of ammonia to fish and other aquatic life, the EPA and DNR are considering requiring some level of ammonia removal for the Jones Island WWTP. Methane will not cause problems because it is odorless.
395. The MMSD's reasons for choosing landfill are discussed in their Facility Plan (Solids Management Facility Plan Element). Codisposal and incineration are not cost-effective and increase air pollutant emissions. Land application is the MMSD's recommended plan for the South Shore WWTP. the MMSD's Total Solids Management Plan for landfill and land application of sludge allows for flexibility in case one system is inoperative for environmental, technical or legal reasons. These alternatives for sludge disposal are discussed in Appendix IV, Solids Management.
396. The effects of relocating the Jones Island WWTP outfall on the Outer Harbor water and sediment quality are discussed in detail in Section 5.1.6.1 of the Combined Sewer Overflow Abatement Appendix. The relocation analysis was performed as a sensitivity analysis for the assumptions used to evaluate CSO loadings. A second review of the impact of the Jones Island outfall on the Outer Harbor and nearshore Lake Michigan water quality is given in Section 4.1.1 of the Water Quality Appendix. The results from these evaluations will be incorporated into the EIS's main text.
397. The EPA and DNR have raised this question with the MMSD. As a result, the MMSD has provided more information about possible methods for the proposed ammonia discharge levels. The Final EIS addressed ammonia removal in the Addendum to the Jones Island Appendix. The following table summarizes available methods for ammonia control.
398. The alternatives evaluated in the MFP and EIS provide for substantial reductions in the discharge of untreated

or inadequately treated wastewater to Milwaukee's rivers and Lake Michigan. SEWRPC's areawide water quality management plan sets forth recommendations to improve inland water quality throughout the entire southeast Wisconsin region. The discharging of pollutants which cause harm to the environment will be reduced in the future. Also, the EPA and DNR are required by law to impose effluent limits to maintain desired water quality standards.

399. There has been considerable public concern expressed about odors occurring in the populated vicinity of the South Shore WWTP. The EPA and DNR are aware of this serious odor problem which has existed since the South Shore WWTP was expanded in 1974 to achieve secondary treatment of wastewater. The two north sludge lagoons, the sources of a number of complaints, were constructed in 1973. It has been suggested that detailed odor and air quality studies be performed at the WWTP to determine the causes and magnitude of the problem in addition to the odors' effects on public health and property values. Such studies could not be completed in time to incorporate them into the EIS. Furthermore, the EPA and DNR do not intend to conduct a site specific study on odors at South Shore since this would only determine the extent of previous problems and would have no value in assessing impacts of future alternatives under consideration for the South Shore WWTP. As there are no baseline data recording the odor/air situation at South Shore before the WWTP was constructed, any studies now would not validly demonstrate the differences between the situation before construction and the present situation. Without the benefits of a site specific study on the public health of nearby residents, it is not possible to verify that the South Shore WWTP is the source of these problems. Recent EPA studies done elsewhere conclude that residing near a WWTP does not present significant health problems. This information is discussed in the Addendum to Appendix III, South Shore.

A study on property values near the South Shore WWTP was conducted by the South Milwaukee Tax Assessor in 1978. The results of this study are presented in the South Shore Appendix.

Further information regarding the sources of odors in a wastewater treatment system, the substances that produce odors and gases, and methods for mitigating odor problems can be found in the Addendum to Appendix IV, Solids Management.

The north sludge lagoons were emptied by the MMSD in 1979 as a result of many complaints from nearby residents. The MMSD intends in the near future to remove these two lagoons and landscape the area adjoining South Milwaukee. This intention is documented in the August 15, 1980 letter from the MMSD to State Representative Chester Gerlach. With the implementation of the MMSD Recommended Plan, which includes enclosed process buildings, odors caused by the South Shore WWTP should be mitigated. The EPA and DNR feel that any adverse impacts to nearby residents should be kept at a minimum and will consider this situation when making their decisions on the South Shore WWTP.

One comment alleged that the South Shore WWTP has been and is in violation of the Oak Creek zoning code. The specific ordinance is zoning code 17.38 (8) (C), and reads as follows:

"(8) PERFORMANCE STANDARDS, NOXIOUS AND ODOROUS MATTER, M1, M2 and M3 DISTRICTS.

(C) M3 District"\*

"No activity or operation shall cause, at any time, the discharge of matter across lot lines in such concentrations as to be noxious. The emission of odorous matter in such quantities as to be readily detectable without the use of instruments at any point along lot lines, when diluted in the ratio of one volume of odorous air to 20 volumes of clean air, is prohibited."

\*M3 is a Heavy Manufacturing District which is the zoning designation of South Shore WWTP.

The Oak Creek City Planner was contacted in an attempt to determine if any violations were being committed by the South Shore WWTP. That discussion gave no indication that the treatment plant was in violation of Oak Creek zoning ordinances, and there was no indication that any action was pending on this matter. He stated that all complaints of this type (odors) are forwarded to the DNR. Public Health complaints should be directed to the State Department of Health and Social Services.

400. The South Shore WWTP has disinfected wastewater effluent with chlorine for a number of years and, to date, has not experienced spills that would threaten the health and safety of citizens living or working near the WWTP. The WWTP is equipped with facilities and trained personnel that minimize the dangers associated with handling chlorine gas. Section 3.0 of the Addendum to Appendix II, Jones Island discusses chlorine disinfection as well as other disinfection methods. This section also includes a discussion on safety and proper handling in addition to the environmental affects of chlorine gas as a disinfectant.
401. Comment noted. Spurs are inspected before use and receive necessary maintenance to allow safe use.
402. Comment noted. MMSD safety procedures mitigate this occurrence.
403. Comment noted. This recommendation, along with the others (401, 402), is appreciated and should be incorporated into the MMSD's Operation and Maintenance (O&M) plans for the South Shore WWTP.
404. The expansion alternatives for the South Shore WWTP are discussed in Appendix III, South Shore of the EIS. The alternatives discussed in Appendix III would be the same for any local, subregional or regional system-wide plan.
405. The June 3, 1980, "Citizens Report on the Milwaukee Water Pollution Abatement Program" articulates citizen concerns about the Master Facilities Plan, not the EIS. These concerns affected the Draft EIS, but it is the responsibility of the MMSD to respond to those comments.
406. A detailed discussion of alternatives to the plan recommended in the Draft EIS is included in the appendices to the Draft EIS. The ACCESS Committee was organized by the MMSD for input to the MFP. Any questions about the ACCESS Committee should be directed to the MMSD. We are unaware of any studies performed by citizens groups on codisposal, "self-energizing furnaces", compost, etc.
407. The EIS consultant cannot supply information on MMSD reports. In addition, it is unclear what report you refer to.
408. The Draft EIS contains no conclusions. The methodologies and assumptions used for the EIS analyses are identified throughout the document.

409. In its analysis of the land application of sludge, the EIS used the information set forth in EPA and DNR regulations. It is not the purpose of the EIS to determine the validity of those regulations.
410. Currently, the MMSD service area sewer system is overloaded by excessive infiltration and inflow (I/I). By 2005 it is expected that this I/I would result in peak daily flows in the system of 900 MGD. This flow would far exceed the capacity of the existing Metropolitan Interceptor Sewer (MIS) system and the Jones Island and South Shore WWTPs. The MMSD has undertaken two studies in order to determine the most cost-effective means of reducing this I/I versus increasing the conveyance and treatment capacity of the sewer system. The first study, the I/I Study, concluded that it would be cost-effective to remove 48% of the I/I. After removal of the excessive I/I, the peak daily flow in the system would be reduced to 705 MGD. The second study, a Sewer System Evaluation Survey (SSES), was undertaken in order to gather more detailed information on the sources of I/I and to then re-evaluate the cost-effectiveness of removing the I/I. A draft report on this study has concluded that only a 13% removal in I/I is actually cost-effective. Accordingly, the expected peak daily flow has been tentatively revised to 820 MGD. The final SSES report is expected in April of 1981.

Based on present information, the EPA and DNR believe that deep tunnels can be designed and operated to protect groundwater. For further detailed discussion on the possible impacts and mitigating measures as well as a discussion of further information needed before a final decision is made, please see the CSO Appendix Addendum.

The Master Facilities Plan evaluated several alternatives based on an estimated 705 MGD peak daily flow. Systems which could treat this flow without storage were evaluated but found undesirable because of limited space at existing treatment plants, the large capital cost to expand plant capacities, and the inherent problems with operating an activated sludge treatment system at widely fluctuating flow rates. A system of near surface storage facilities throughout the MIS system at critical points was also evaluated. This system was less desirable because large tracts of land would be required throughout the city to build such facilities and the unit cost per volume of storage was significantly higher for these small localized facilities compared to a deep tunnel and cavern storage system.

Furthermore, these localized facilities did not offer any possibility for integration with CSO abatement systems. Preliminary analysis has shown that the deep tunnel and cavern storage system is even more cost-effective at the higher flow rate of 820 MGD estimated in the draft SSES report.

- 411. High quality fresh water is extremely important to the planning area. The impacts of groundwater and surface water quality are discussed in the EIS; the Water Quality and CSO Appendices in particular. Water use is discussed in Chapter 6 of the MMSD Wastewater System Plan.
- 412. An extensive review of existing water quality conditions was presented in Chapter 3 of Appendix V. To provide a basis for relating future water quality conditions to a known situation, predicted water quality conditions under CSO abatement alternatives were compared to these existing conditions. A comparison to water quality standards was used as an additional method of assessing the water quality impacts of CSO abatement alternatives, since these standards are related to specific water uses.
- 413. Comment noted. An index is included in the Final EIS.
- 414. The older sections of the Milwaukee Metropolitan Sewerage District contain sewers which were built to convey both human sanitary wastes and storm water. Under mild to moderate storm conditions most of the sewage and storm water is conveyed to Jones Island WWTP for treatment. However, large or intense storms cause an overflow of wastewater into local rivers. This was an acceptable practice at the time the sewers were built and was considered a better approach to sewage treatment than forcing the storm water to back up into homes or overloading the WWTP. Any sewer which conveys both storm water and sanitary wastewater is a combined sewer. Any hydraulic event which causes a combined sewer to discharge to a natural water body, such as the Milwaukee River, without treatment is a combined sewer overflow (CSO).

Many of the pollutants found in sanitary sewage are found in combined sewer overflows, but they are in lower concentrations because they have been diluted with relatively "clean" storm water. These pollutants can cause a deterioration in the receiving stream water quality because they overload the stream's natural ability to assimilate pollutants. The nutrients,

such as phosphorus and nitrogen, encourage algae growth. The organic material decays causing oxygen depletion and odor problems. Various metals enter the stream which may be toxic to aquatic life. Solids from the combined sewer overflow may be aesthetically unappealing and contribute to the sediment load. Pathogens common to sewage make the water unhealthy for human use.

Each of the combined sewer overflow abatement plans evaluated in the CSO Appendix treat the storm water in a different manner. Because of these differences, each alternative would have a different impact on water quality. For this reason, water quality impacts of various CSO abatement alternatives must be considered in the EIS.

415. The comment/question is unclear. Surface water quality discussions related to CSO may be found in Chapters 3 and 5 of the CSO Appendix. The impacts of the various alternatives on groundwater quality are presented in a separate geotechnical report, which is presented in the CSO Addendum to the Final EIS.
416. Under any system level alternative, a two-branched tunnel would have to be built. The single most important problem with the current system is its inability to convey and treat the large quantities of infiltration and inflow (I/I). The present Jones Island and South Shore WWTPs are capable of effectively treating wastewater during dry weather. However, during wet weather, bypasses occur, and flows to the plants increase dramatically due to I/I, such that the plants are no longer capable of effective treatment. Table 4-3 of Appendix V compares existing and future flows to the wastewater treatment plants. By the end of the planning period, dry weather flow will reach 166 MGD. Maximum design wet weather flow (the treatment capacity required if no storage is provided) is 900 MGD. Within the combined sewer system, regulating devices presently bypass all flows in excess of 114 MGD, thus I/I from the separated system contributes 620 of the peak 900 MGD flow, or 68.9% of the flow. This contribution must receive major consideration in the design of a new system. Furthermore, the present secondary treatment capacity of the Jones Island and South Shore WWTPs are 140 MGD and 120 MGD respectively. Also, much of Jones Island is over 50 years old. There is no independent analysis of the MMSD's I/I Report since it was prepared by the MMSD and approved by the DNR prior to the EIS process. This program is described on page 4-30 of Appendix V. In summary, the program compared the cost of various I/I

reduction methods with the cost of treating the flow to be removed by each method. The results of the analysis showed that up to 200 MGD (32%) could theoretically be removed from the peak flow at a reasonable cost. These treatment and storage systems were evaluated using a maximum design flow of 700 instead of 900 MGD. (These estimates have been updated by the Draft SSES released in January, 1981. The preliminary results suggest that only 13% or 80 MGD can be cost effectively eliminated from the system.)

Full development of the program alternatives can be found in Chapter 3 of the EIS and Chapter 4 of Appendix V.

417. Comment noted. See response number 416.
418. The issue of peaking of wet weather flows in the separated sewer area was addressed in the I/I study which has been approved by the DNR. The flow volumes and peaking factors used in the MFP and the EIS were based on the values presented in that study. Further refinement of these flows is being undertaken in the Sewer System Evaluation Survey (SSES) and will be reviewed by the EPA and the DNR when the Final SSES Report is adopted by the MMSD.
419. It is the present policy of EPA that construction grant dollars can only be used to build or improve public facilities. It is the MMSD's legal opinion, however, that private property costs could be financed district-wide.
420. The intent of the comment is unclear. If this is a request for the location of the I/I section, it begins on page 4-30, Section 4.3 of Chapter 4, CSO Appendix V. If the comment is questioning why the screening of I/I should be a part of the Alternative Screening Chapter, it is because I/I is an integral part of the screening evaluation.
421. A delineation of the five joint CSO/Clear Water Storage Alternatives and their costs is given in Chapter 4, Section 4.4 and following. A summary of alternative costs is given in Table 4-16. Development of the final alternatives begins in Section 4.5.
422. The point of the comment is unclear. The first 38 pages of Chapter 5 present the data analyses necessary to provide a basis for comprehensive discussion of the water quality and pollutant loading section which



begins on page 39. The conclusion referred to in the comment is one of many descriptive statements representing the conclusions reached by the water quality and pollutant loading analysis.

423. The point of the comment is unclear. The values cited appear on page 5-45 and refer to the percentages of Outer Harbor sediment metal loadings and concentrations (under the different action alternatives) compared to the No Action values. The value of 93% is incorrect and has been changed to the correct value of 101%.
424. On pages 5-99 and 5-103 (Appendix V), there are direct references to the use of Chicago data. Other data from Chicago were evaluated in the EIS process, even though direct reference is not made in the text. Further references are made in response number 669.
425. This comment/question does not provide enough information for the EPA and the DNR to formulate a response.
426. The economic impact of polluting an aquifer is dependent upon the degree of pollution and use of the water. If the source of pollution is localized and there is a localized cone of depression, pollutants would migrate to, and be removed by, the wells causing the depression. If these wells were used for drinking water, an alternate source of water or casing the well may be required. If the pollutants are widespread, those wells which supply potable water would require casing and possibly deepening or abandonment. For those abandoned wells a new water source would be required. For wells using an aquifer for industrial purposes, the economic impact could be less severe. Those wells could also be cased in the Niagaran dolomite strata.
427. Appendix VIII, Interceptor Alignment, Chapter 5 discusses the alternatives and costs relating to the Menomonee Falls-Germantown Interceptor system. The effects of the various alternatives on water quality are given in Appendix VII, Water Quality, Section 1.2.3, Section 3.1.4 and Section 3.2.3.3.
428. Page 5-151, CSO Appendix V, Chapter 5, Section 5.16.1, "the typical amount of spoil expected from each of the alternatives<sup>2</sup> would, if piled 90 feet high, cover 2.8 million feet<sup>2</sup> (approximately the area of 15 city blocks)."
429. The purpose of the Jones Island discharge relocation analysis is to evaluate the sensitivity of the CSO analysis, not to evaluate the assumption that the Jones

Island outfall will be moved. It is a test of the sensitivity of the CSO evaluation methodology, not an evaluation of the impacts of outfall relocation. A detailed evaluation of outfall relocation is given in Section 4.1.1 of the revised Appendix VII, Water Quality.

430. The Milwaukee water intakes are located well beyond the Outer Harbor breakwater and were not impacted by the various CSO abatement alternatives. The MMSD presents a discussion of the potential impacts of Jones Island outfall relocation beyond the Outer Harbor (MMSD Data Support File - Environmental Assessment, Volume 2, August 1980). The MMSD consultants concluded from their preliminary analysis there was a relatively low hazard to public health for discharging effluent outside the Outer Harbor. The worst case situation of discharging unchlorinated effluent (i.e., a chlorination breakdown) could result in high fecal coliform counts at the Howard Avenue intake and Bradford Beach. Chlorination of the drinking water, which is routinely done, would reduce coliform counts to acceptable levels. The EPA and DNR concluded that there was no reason for further examination.
431. The Water Quality Appendix has been rewritten. The new appendix should better address public concerns.
432. All of the alternatives set forth in the Master Facilities Plan (MFP) and the EIS will improve the water quality conditions of the areas surface waters. If the MMSD Recommended Plan is implemented, the water quality of streams currently receiving wastewater treatment plant effluent and bypass discharges will be substantially improved. Assuming implementation of the 208 Plan recommended measures, the MMSD Recommended Plan would achieve both existing DNR and 208 recommended water quality standards for these streams. Water quality conditions of the Inner Harbor and Outer Harbor will be improved by the abatement of combined sewer overflows (CSO). Pollutant loadings into the bottom sediments of the Harbors will also be substantially reduced.

However, further analysis is necessary before it can be determined whether in-stream measures will be needed to meet water quality standards in the Inner Harbor and to identify which in-stream measures would be cost-effective. The Areawide Water Quality Management Plan, prepared by SEWRPC, designated water quality management responsibilities for local agencies. The water quality benefits of the plan alternatives are described in detail in Appendix V, Combined Sewer Overflow, and in the revised Appendix

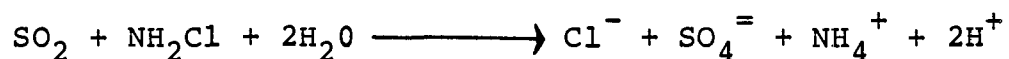
## VII, Water Quality.

433. EPA, DNR, SEWRPC, and the MMSD are just some of the Federal, State, regional and local agencies responsible for maintaining and upgrading water quality. The Soil Conservation Service (SCS), the International Joint Commission (IJC) are local and international agencies responsible for maintaining and upgrading water quality. The water quality benefits of the MFP are discussed throughout this EIS.
434. New sewer construction will affect only the sand and gravel aquifer. These sewers will exfiltrate if built above the groundwater table and infiltrate if built below. Assuming that this is the same situation as now exists, no net benefit is perceived.
435. The DNR and the MMSD disagree about who is responsible for removing heavily-polluted sediments in the Inner and Outer Harbor. The U.S. Army Corps of Engineers removes sediments from the lower reaches of the Inner Harbor, the central shipping channel, and dock area of the Outer Harbor to maintain navigation. However, the upper reaches of the Inner Harbor have not been dredged in over ten years.

The MMSD has recommended that arrangements be made to give an existing agency all necessary powers, duties, and financing capabilities to determine what specific in-stream measures (such as dredging) are required; and then to implement those measures to maintain water quality standards (MMSD, CSO Facility Plan, Chapter GF, page 6-F-32 March 1979).

The DNR has taken the position that the MMSD is required under the terms of the Dane County Stipulation to implement a program to correct the problems caused by the heavily-polluted sediments currently present in the harbor area.

436. The agencies disagree with the contention that substantial increases in chloramine formation, as a result of chlorine disinfection, would not be prevented. Sulfur dioxide (SO<sub>2</sub>) instantaneously reacts with chloramines in the following way:



Therefore, dechlorination of the effluent with SO<sub>2</sub> destroys chloramines.

The EPA-approved method for measuring residual chlorine

converts all chloramines to free chlorine and then determines both free and combined/available chlorine as residual. Therefore, any effluent standard which limits residual chlorine also limits chloramines.

The question of chlorine toxicity has been answered in response number 405. Ammonia toxicity and the zone of mixing in the Outer Harbor have been discussed in the revised Appendix VII, Water Quality, Chapter 4, Section 4.1.2.

437. A force main can only exfiltrate because of the pressure exerted on the walls of the main. Due to this pressure, force mains are usually constructed of cast iron with tightly sealed joints to minimize exfiltration. Because of the natural filtering effect of the types of soils in the planning area, the only possibility of adverse effects are to homes which rely on very shallow wells constructed near a leak in the force main. For these reasons, this situation is virtually nonexistent.
438. Historically, the MMSD and its' contractors have assumed responsibility for the correction of construction-related impacts on commercial and residential wells.
439. Total pollutant loadings to the Inner Harbor and the Outer Harbor are set forth in Chapter V of Appendix V, Combined Sewer Overflow. The loadings include contributions from upstream sources, WWTPs, and sources in the combined sewer service area. Specific loadings to the Outer Harbor and Lake Michigan are presented in the revised Appendix VII, Water Quality.
440. The agencies acknowledge the importance of this consideration in interceptor construction. This would apply to the Underwood Creek, Franklin-Muskego, Oak Creek North, and Root River Interceptor systems which pass through a floodplain. There are also post-construction recommendations available in Appendix VIII, Interceptor Alignment.
441. Collective loading of sediments to a stream would only occur if two or more of the following interceptors were built at the same time: Root River Interceptor, Hales Corners Interceptor, Franklin-Muskego Interceptor, and the Franklin Northeast Interceptor. Additive effects of sediment arising from the construction of the four interceptors could occur, although the effects would be slight. Each of the four interceptors is crossing a tributary of the Root River. The Franklin-Muskego Interceptor could affect Tess Corners Creek; however,

the water flows through the Whitnall Park Pond before entering the Root River and would experience some degree of settling in the pond. The Hales Corners Interceptor crosses another small tributary, the Hales Corners tributary, which flows through several ponds before entering the Root River. Again, settling of the sediment would occur.

Therefore, besides those effects associated with the construction of each individual interceptor, some additive effects from the construction of all four interceptors could occur, but these would be slight.

442. This question can be addressed by a site specific analysis of a particular wetland. It is difficult to assess the impacts of varying amounts of drawdown on a wetland. It is difficult to determine if drawdown would actually occur, and to what degree.
443. When private wells were affected by MMSD activities, (e.g., construction of the Hales Corners Interceptor), the MMSD undertook responsibility for supplying water. These problems occurred over a short period of time.
444. Recycling wastewater effluent is not cost-effective, environmentally sound or socially acceptable. If effluent is to be used for potable, commercial or industrial use, it would have to meet water use standards, which are much more restrictive than WPDES effluent limits and would greatly increase the costs for a new WWTP. Direct reuse of treated effluent (after wastewater and water treatment) could pose a public health threat if used for drinking water and would also be unacceptable to the public.
445. Whether a sewer will infiltrate or exfiltrate is dependent on the internal vs. external pressure differential at the structure wall. Water will always move from the zone of high pressure to the zone of lower pressure. Pressure differential will depend upon depth of the structure below the groundwater table (piezometric surface) and the depth of flow within the structure. The design of the facility will control the rate of this movement. Force mains are usually designed using cast iron, although concrete is also used. Because flows in a force main are pumped under pressure, infiltration is nearly impossible. Due to this pressure, joint construction is usually specified to withstand internal design pressures without leaking. Existing sewers are generally pre-cast concrete in 10 to 20 foot sections. Manholes are required every 400 feet and at each major direction change. While joint material is

available to eliminate leakage, concrete pipes often crack after several years due to settling, frost heave, or other causes, and tend to leak. Rock tunnels are bored through relatively impervious rock and generally require no structural support. Water movement occurs via discontinuities in the rock (cracks, fissures, bedding planes, etc.). Tunnels are constructed at depths 250 feet or more, thus the general possibility for infiltration is greater than exfiltration. Water movement has successfully been controlled by permeability modifications such as grouting or lining. Whether one structure is more susceptible to infiltration or exfiltration is dependent on site specific considerations and therefore cannot be judged on a general basis.

- 446. The MMSD does not presently operate any sludge landfills. The Water Quality section of the Addendum to Appendix IV, Solids Management compares ranges of typical leachates, Extraction Procedure (EP) toxicity maximum contaminant levels, drinking water standards and predicted MMSD leachate characteristics (based on the EP test).
- 447. The impacts to both the quality and quantity of groundwater in the planning area as a result of the deep tunnel system have been evaluated in much further detail for the Final EIS. Further information regarding the groundwater analysis is included in the Addendum to the CSO Appendix.
- 448. This information is difficult to present. It could be developed in the EIS supplements for the MMSD Site Specific Analysis for locating sludge disposal facilities.
- 449. Recharge water sources would depend on the requirements of the necessary NPDES permit for such a system.
- 450. This general question could be better answered on a specific basis. Any construction of lakefills at the Jones Island or South Shore WWTPs would not displace enough of Lake Michigan to lead to any flooding. Stream crossings would be involved with the construction of interceptors; however, the only impacts would be short-term localized erosion. Flooding caused by these crossings is unlikely. The construction of conveyance, storage or treatment facilities would probably have no long-term impact on flooding.
- 451. Air pressure tunnelling is very expensive and considered extravagant for a project such as that proposed by the MMSD. Historically, the MMSD and its contractors have assumed liability for construction related damages.

452. "Generally good quality" refers to the fact that the characteristics of the groundwater are such that it can be used as a potable water source with minimal or no treatment required.
453. Fecal coliform bacteria are contained in the waste of warm-blooded animals. Wastes from animals such as livestock and wildlife are often deposited on the soil, thus storm runoff from these areas may contain fecal coliform. However, background levels of fecal coliform are usually quite low in unpolluted water bodies. Excessive levels of fecal coliform, as exhibited in the MMSD planning area, are contributed from sources such as inadequately-treated sewage, sewage flow relief devices, combined sewer overflows, leaking sewers, and malfunctioning septic tank systems. While livestock can also contribute high concentrations of fecal coliform, there are relatively few significant livestock operations in the planning area.

The statement referred to in your comment has been deleted in the Final EIS.

454. The EPA, in a 1978 Lake Michigan study, determined that Lake Michigan may be considered mesotrophic in its nearshore waters, and between oligotrophic and mesotrophic in the open waters. The oligotrophic classification indicates a nutrient poor environment and thus generally, a condition of higher water quality. A eutrophic classification indicates a nutrient rich environment and thus a condition of poorer water quality. A mesotrophic classification indicates a point halfway between oligotrophic and eutrophic. Therefore, "still quite clean" was used to describe the oligotrophic-mesotrophic status of Lake Michigan in non-technical terms.
455. Appendix VII has been revised. A discussion of Lake Michigan's water quality is presented in Section 4.0 of the revised Appendix. While the overall water quality of Lake Michigan is very good, there is some indication of deterioration. In addition, localized problems, especially in nearshore areas, do exist.
456. Comment noted. Considerable revisions have been made to clarify the document and facilitate its use.
457. Comment noted. The development and screening of alternatives appears in Chapter 3 of the Final EIS.
458. Apart from the runoff and air pollution documentation which appears in Chapter 4 of the Secondary Growth

Impacts Appendix, the EIS assumes that implementation of the 208 Plan would prevent future development from encroaching on floodplains, environmental corridors, and prime agricultural land.

459. When issuing the Notices of Intent to prepare an EIS, the EPA determined that analyzing the secondary impacts resulting from the fiscal impacts of MMSD actions (e.g., migration of households from the City of Milwaukee to suburban communities) was not required.

However, the following factors would play an important role in assessing the degree of city to suburb migration.

- 1.) The SEWRPC population forecast for the SMSA for 1980 was 84,000 higher than the 1980 preliminary census. The 1980 SEWRPC forecast for Milwaukee County was almost 54,000 higher than the 1980 preliminary census.
- 2.) Under current Wisconsin Statutes, Milwaukee County must provide the funds requested by the MMSD for the construction of capital improvements to the MMSD sewerage system.
- 3.) Under the current contract formula, communities outside Milwaukee County have much lower charges for capital costs than communities within Milwaukee County.
- 4.) The MMSD is likely to receive less than 75% grant funding for its capital improvement program.
- 5.) The legality of district-wide financing of the CSO abatement is being challenged by a group of suburban communities.

In view of the above factors the following assumptions describe a "worst case" situation for the City of Milwaukee:

- 1.) The City of Milwaukee would finance its own CSO abatement and sewer rehabilitation.
- 2.) The current contract formula remains unchanged.
- 3.) The MWPAP is only 25% funded.
- 4.) The current estimated cost of the MFP is too low.
- 5.) Bonds are issued at a 8% interest rate.



- 6.) The future population in the planning area does not reach SEWRPC forecast levels and excessive sewer capacity is provided in outlying suburbs, which could accommodate city-suburban migration.

If all of these above conditions prevailed, the City of Milwaukee's 1985-2005 average annual equalized tax rate for the MWPAP would be about \$9.80 per \$1000 equalized value. Under the same assumptions, the average annual equalized tax rate for the typical Milwaukee County suburb's rate would be about \$4.30 per \$1000. Although most suburbs outside Milwaukee County do not use the property tax for cost distribution, charges to these suburbs would be smaller than the charges to Milwaukee County suburbs. As a result, the average annual tax to finance the MFP (1985-2005) on a \$50,000 house in the City of Milwaukee would be \$490. The average annual tax on the same \$50,000 house located in a Milwaukee County suburb (other than Shorewood) would be about \$215. This average annual difference between the City and suburbs amount to \$5,700 over the 1985-2005 planning period. Household charges in suburbs outside Milwaukee County would be even less than the household costs for suburbs in the County, further widening the tax differential between the City and suburbs.

460. Construction of the interceptors and the provision for additional treatment capacity could aid in the growth of industry in the areas which will receive sewer service. For a discussion of the fiscal impacts of the MFP on industry, see the Fiscal/Economic Appendix.
461. The fiscal impacts of the MFP are analyzed in the Fiscal/Economic Appendix. This Appendix evaluates the impacts of various methods of cost distribution, one of them being the existing contract formula.
462. It is generally the geographical location of interceptors, not the size of a wastewater treatment plant, which aids in determining the location of future growth. Additionally, residential, commercial, and industrial flows account for only about 20% of the total flow to the treatment plants in the MMSD (the remaining 80% is infiltration/inflow). It is possible, however, that excess capacity can be provided by building interceptors to undeveloped areas to serve forecast populations, if there is a subsequent areawide population shortfall.
463. This may turn out to be the case, however, the system is designed not only for sanitary flow, but also for the peak flows that occur as a result of infiltration

and inflow (I/I) during wet weather.

These wet weather flows are determined by the condition and length of the sewers. For example, the I/I introduced through roof leaders, foundation drains, sump pumps and cracked laterals is independent of the household size.

464. Agreed. Assuming the comment refers to the staging of interceptor construction, it is a possible mitigating measure to secondary growth impacts. Staging of treatment plant construction would have little effect on future development trends. Other methods of guiding development are available, such as delineation of sewer service areas and limiting the provision of other public services.
465. It means that the cost differences among alternatives exist within an accuracy range of +30 and -15 percent. If all the costs are uniformly inaccurate (or accurate), the differences among alternatives would be unchanged. If the costs turn out to be inaccurate to varying degrees, the differences among alternatives would very likely change.
466. Comment noted.
467. Table 3.18. The average annual debt service (listed in the table) is \$86,137,000 (Mosaic). The peak year debt service is \$97,917,000 (1990). The peak year debt service is 13.7% greater than the average year. See Table 19 in the Fiscal/ Economic Appendix for greater detail.

The 6% interest rate assumption was realistic at the time the analysis was conducted. For an analysis of higher interest rates see Chapter 5 as well as Appendix X and the Addendum to Appendix X, Section 3.0.

468. Tables 3.19 and 3.20 are now referenced to the following four tables in the Fiscal Impact Section of Chapter 5 which give the assumptions used in the Fiscal Impact Analysis:
- Assumption of the Fiscal Analysis Local Alternative
  - Assumption used in Fiscal Impacts Analysis for the Regional Alternative
  - Assumption used in the Fiscal Impacts Analysis Mosaic Alternative
  - Assumptions used in the Fiscal Analysis for the Combination Alternative

469. Table 3.20. See pages 47 and 49 in the Fiscal/ Economic Appendix for household income definition.
470. See the Fiscal/Economic Appendix for detailed information.
471. Table 4.10. The commentor refers to information regarding present and future numbers of households and average household sizes. The number of individual households and their respective sizes is a critical factor in determining population trends. In turn, population trends influence where sewerage facilities are located.
472. Table 4.21 is presented in the Draft EIS for informational purposes. The information requested is not necessary for evaluation of the fiscal impacts of the MFP.
473. Agreed.
474. The MMSD recommended district-wide financing of all MFP components on June 5, 1980.
475. The intent is to show the impacts of the mentioned methods of financing, not to develop a refined schedule of financing the program. This will be the responsibility of the MMSD and Milwaukee County and, possibly, the State Legislature. The risks associated with issuing bonds are discussed in Chapter 5.
476. Comment noted. These tables are incorporated into one table in the Final EIS.
477. Comment noted. The correction has been made. The fiscal analysis was carried out to ascertain if the County's debt limit would be exceeded. Once the debt limit is reached, the MFP could no longer be financed by issuing bonded debt.
478. The order of discussion has no bearing on whether an alternative is viable or not.
479. The property tax levy would be the only current legal means available.
480. Yes.
481. They have been moved to the end of the fiscal section.
482. No discussion, anywhere in the EIS, ever assumes that the County can exceed its debt limit.
483. This section has been deleted. It has been replaced

with the "Individual Community Financing Alternative", which shows the costs to other communities without CSO costs.

- 484. Comment noted. The table has been revised.
- 485. Comment noted.
- 486. Both the negative and positive impacts of the MFP have been presented in the EIS.
- 487. Comment noted.
- 488. The "worst case" in this analysis refers to where the money would have been spent, had it not been used to finance the MFP. (See Section 3.0 of the Appendix X Addendum for a worst case analysis concerning interest rates and funding assumptions.)
- 489. Comment noted. For more information on the sensitivity of interest rates see page 93 of Appendix X as well as Appendix X Addendum, Section 3.0.
- 490. The survey focused on industrial corporations, but three commercial enterprises were also interviewed. A mix of local manufacturing companies were surveyed based on size, industry, and location. The statistical validity of the survey was not stated in the study.
- 491. This statement has been deleted.
- 492. Table deleted.
- 493. For a thorough discussion of the impacts on households see Appendix X.
- 494. During the last five years, construction cost inflation and property value inflation have averaged 8% and 10%, respectively. The EIS maintained this relationship between the two rates, but increased them in an analysis in Appendix X to 10% and 12% to analyze the effect of a slightly worse inflation situation.
- 495. These comments and questions are answered in Sections 5.0 and 6.0 of the Appendix X Addendum.
- 496. These comments are addressed in Section 7.0 of the Appendix X Addendum.
- 497. At the time the fiscal analysis was conducted, 6% interest on municipal bonds was reasonable. However,

the EIS provided an interest rate sensitivity analysis on page 93 of Appendix X. This analysis shows tax rates for 6, 7, 8, and 9% interest rates. In addition, the discussion stated "For every one percentage point increase in the interest rate paid on the bonds, the average annual debt services increases 8%." Finally, Section 3.0 of the Appendix X Addendum analyzes worst case conditions, including higher interest rates.

- 498. These comments are addressed by the Individual Community Financing Alternative (Section 2.0) in the Appendix X Addendum.
- 499. Fiscal impacts to fixed and low income residents are discussed in Section 10.0 of the Appendix X Addendum. Because of inflating property values and the regressive nature of the property tax, the EIS agrees that low-income households will be among the most burdened.

500. The Fiscal/Economic Appendix made no conclusions. This Appendix identified fiscal impacts. The Appendix does not deal with the subject of cost effectiveness.
501. Section 3 of Public Law 96-483, known as the Stafford Amendment, replaces the eliminated Industrial Cost Recovery Program (ICR). The section reads:

PUBLIC LAW 96-483--Oct. 21, 1980

Sec.3. Section 201 of the Federal Water Pollution Control Act is amended by adding at the end thereof the following new subsection: "(k) No grant made after November 15, 1981, for a publicly owned treatment works, other than for facility planning and the preparation of construction plans and specifications, shall be used to treat, store, or convey the flow of any industrial user into such treatment works in excess of a flow per day equivalent to fifty thousand gallons per day of sanitary waste. This subsection shall not apply to any project proposed by a grantee which is carrying out an approved project to prepare construction plans and specifications for a facility to treat wastewater, which received its grant approval before May 15, 1980.

The MMSD has estimated that about \$114 million of the MFP would become non-grant-eligible if this Stafford Amendment was implemented.

If industry were billed directly for this industrial capacity, the ten major wet industries would have to pay \$81 million of the \$114 million.

The other alternative would be to finance the \$114 million through local property taxes. However, this may not be different from current expectations for the following reasons.

The MFP was originally projected to be grant funded to about 36% because of a \$60 million annual ceiling in available funds. Funding expectations have since fallen, and the MMSD is currently expecting state and federal grants to fund less than 36% of the MFP. Consequently, in many of the construction years, the grant eligible costs far exceed the expected funding level. For example, in 1984, the MMSD is scheduled to spend \$270 million. If it receives the full \$60 million in grants it has projected, the expenditures that year would be 22% funded. Approximately \$210 million would not be grant funded. Assuming that \$114

million of the \$270 million expenditure in 1984 was not eligible for grants and \$156 million was eligible, the \$60 million maximum expected amount of funding would be unaffected. The \$210 million would still have to be locally-financed.

In sum, the grant eligible costs of the MFP are so much greater than the expected funding level, that altering the eligible amounts may not affect the funding at all. However, it is possible that the mechanics of the funding process could function in such a way that the loss of \$114 million in eligible costs would affect the funding level. The worst case possible (which is unlikely) would be that the \$114 million loss in eligibility would bring about a \$114 million loss in grants. If this occurred, and the MMSD opted to not charge industry directly, the estimated Milwaukee County property tax rate to finance the MFP would increase an additional 10%.

502. The 1977-79 state budget bill provided for a 5-year phased exemption of Line A personal property from local taxation. Manufacturers and commercial stock (inventory) are included in the Line A category. 1980 is the fourth year of the phase out period. The 1980 amount phased out is \$846,536,375. Seventy percent of the total value of Line A property is exempt, as of 1980, from property taxation. This value is \$1,975,251,898. The final 30% (about another \$846 million) will be exempted in 1981. Thus, in 1981, 100% of the Line A property in Milwaukee County (about \$2.8 billion in 1980 dollars) will be exempt from property taxes. The total impact of exempting all Line A property from taxation in Milwaukee County (as of 1981) will be about a 14% loss to the property tax base. The MFP financial impact models incorporated this property tax base loss when they were constructed.
503. Section 7.0 of the Appendix X Addendum lists the locally-assessed 1980 property tax rates for all Milwaukee County communities. This section also shows the MFP as an increase to these local tax rates.
504. Comment noted.
505. All of the above models do assume the sale of general obligation bonds at 6% interest.

The Milwaukee County debt limit is exceeded with all of these models, except 68B. Model 68B was included to reveal a general relationship between inflation and

the debt limit. When the inflation rate of the County property value is assumed higher than construction cost inflation, the County debt limit is not exceeded.

506. A construction cost inflation rate of 15% per year is not realistic (based on recent trends). According to the Engineering News Record's Construction Cost Index, construction cost inflation has averaged about 8% per year since 1974.

A analysis of higher interest rates indicates that every percentage point increase in bond rates beyond 6% produces an 8% increase in the Milwaukee County tax rate (see page 93 of Appendix X). Further analysis of higher interest rates can be found in Section 3.0 of the Addendum to Appendix X.

Section 5.0 of the Addendum to Appendix X reveals the effect on the Milwaukee County debt limit of its Capital Improvements Program.

Section 6.0 of the Addendum to Appendix X estimates the tax rates required to finance the MFP when the debt limit is reached.

507. The Engineering News Record cost index indicates that construction costs have increased an average of about 8% per year since 1974. Milwaukee County equalized property value was \$11.171 billion in 1974, and \$19.748 billion in 1980. The difference between these figures represents an average annual growth rate of about 10%. Comparing indices, then, would mean assembling a model with an 8% construction inflation rate and a 10% property value inflation rate. Because the difference between these two rates is 2 percentage points, the result would be the same as using 10% for construction and 12% for property value, as assumed in the fiscal model 68B.
508. Incorporation of Milwaukee County's 1981-85 Capital Program into the County debt analysis can be found in Section 5.0 of the Addendum to Appendix X.
509. During the last 5 years, property value inflation has been consistently higher than construction inflation. Milwaukee County property value inflation has been about 10%, while construction inflation has been around 8%. Consequently, the EIS inflation analysis maintained this ratio between these two variables.



510. Section 6.0 of the Addendum to Appendix X shows the effect of financing the MFP after the debt limit is reached.
511. This information is presented in the requested form in Section 7.0 of the Addendum to Appendix X.
512. Comment noted.
513. It should be, and is, a total clear water program. The paragraph following describes the clear water program which includes elimination of excessive quantities of infiltration and inflow from the sanitary sewers.
514. It is the amount of infiltration and inflow to a sewer system that is cheaper to remove than to convey and treat. Beyond the cost-effective level, it becomes cheaper to treat the water than to remove it.
515. Comment noted. The correction has been made.
516. The interest rate assumed was 7%. Section 2.0 of the Addendum to Appendix X provides a more comprehensive discussion.
517. The statement is correct. The table has been deleted.
518. Comment noted.
519. Comment noted.
520. This "worst case" scenario refers to an assumption that money would have been spent had it not been used to pay taxes. A worst case analysis regarding interest rates can be found in Section 3.0 of the Addendum to Appendix X.
521. Tables 66, 67, and 68 all indicate the changes in gross output, earnings, and employment by year. In addition, the conclusion on page 123 recognizes the time difference between expenditures and payback by stating "...the basic situation of positive economic impacts, overlapped, and followed by a long period of negative economic impacts."
522. Appendix V, page 5-148, addresses the sites.
523. The MMSD and contractors are responsible.
524. It is the responsibility of the MMSD and the contractor to minimize noise and dust.

525. The MMSD and its contractors are responsible. However, by constructing in the rock formation, dewatering should be minimized and only minimal drawdown is expected.
526. The MMSD and its contractors are responsible. Blasting would only be performed in drop shafts where irregular rock formations (e.g., large boulders) are encountered. The tunnels would be driven by tunnel boring machines (TBM), and therefore no blasting would be required.
527. Blowers and pumps would be located only at access sites. These sites are expected to be located in non-residential areas.
528. Currently, these tanks (near the Jones Island WWTP) are being used to a lesser degree, because less fuel is brought in by boat. As leases to this land expire, the Milwaukee Harbor Commission has not renewed them, and will remove the storage tanks. However, gasoline seepage would occur only by a catastrophic accident, and therefore is not considered to be a real hazard to tunnel workers.
529. This is a legal issue which would be resolved by the MMSD and the contractor in court. Because of the proposed tunnel depths, the possibility of such an occurrence is unlikely for the tunnels.
530. The MMSD and its contractors are responsible.
531. Additional alternatives for the South Shore WWTP (#8 and #9) were developed in the EIS. These alternatives were not considered in the MMSD June, 1980, Facility Plan for South Shore. Because this plan (along with the Jones Island Facility Plan) requires further refinement before proceeding to design, advanced facility planning is required. The MMSD's Advanced Facility Planning (AFP) efforts are incorporated into the Final EIS. The EPA and DNR are aware of the Fish and Wildlife Service's concerns (as discussed in a June 17, 1980 letter from Mr. Richard A. Hoppe to Mr. Eugene Wojcik). Mr. Anthony S. Earl, then secretary of the DNR, stated the DNR's policy towards the MMSD's proposed lakefills at their two wastewater treatment plants. All information provided by the Corps of Engineers and Fish and Wildlife Service was used for the Draft EIS.

Section 30.12 of the Wisconsin Statutes outlines the statutory requirements for lakefill. Strict interpretation of Section 30.12 supports the opinion that the MMSD

cannot fill the lake without further action by the Wisconsin Legislature. However, the MMSD feels that they have power to fill the lake under Section 62.61 (1)(d) Wisconsin Statutes. Program Requirements Memorandum #76-4 (PRM 76-4): Coordination of Construction Grants Program with EPA-Corps of Engineers Section 404/Section 10 Permit Programs was followed in the preparation of Appendix II, Jones Island and Appendix III, South Shore of the EIS. The Corps of Engineers regulatory program has guidelines for the preparation of environmental assessments. Although the EIS does not contain the eight separate sections (outlined below), it does address the relevant issues:

- (1) Project description
- (2) Environmental setting without the project
- (3) Relationship of the proposed action to land use plans
- (4) Probably impact of the proposed action on the environment
- (5) Any probable adverse environmental effects which cannot be avoided
- (6) Alternatives to the proposed action
- (7) The relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity
- (8) Any irreversible and irretrievable commitments of resources which would be involved if the proposed action should be implemented.

The EIS, in addition to the Environmental Assessment prepared by the MMSD, should be sufficient to meet the regulations referred to. No Corps of Engineers personnel have expressed any indication of inadequacy for the EIS with respect to their requirements.

The EIS addresses the Corps requirements within the constraints of the overall project. A structured analysis could be contained in an additional appendix specifically addressing lakefills, but this information could be obtained from the EIS.

The MMSD would have to file a permit application with the Corps, and the specific environmental information could be included in a more structured format at that time. The analysis required for the permit is the MMSD's responsibility since they would be the permit applicant.

Landfill leachate will be specifically addressed in the supplemental EIS on the Site Specific Analysis of the MMSD's Total Solids Management program.

532. The EPA and DNR have revised the Water Quality Appendix VII to include recent data developed by Drs. Lee, Remsen and Brooks of the University of Wisconsin-Milwaukee on the mixing zones of the Jones Island effluent in the Outer Harbor (Lee et al., "An Analysis of Water Quality and Movement Associated with the Sewerage Effluent in Milwaukee Harbor and Adjacent Lake Michigan" Final Report to MMSD, Center for Great Lakes Studies, College of Engineering and Applied Science, University of Wisconsin-Milwaukee, December 15, 1980.). The study evaluates the circulation patterns and hydraulic residence time of the Outer Harbor, defines nitrification processes in the Outer Harbor and models the effects of discharging various ammonia-nitrogen concentrations from Jones Island into the Outer Harbor. The study indicates that although the Outer Harbor has an average hydraulic retention time of approximately 1.5 to 2.0 days, very complex double circulation patterns within the Harbor may retain water for longer periods. These circulation patterns make the estimated retention time of 1.5 to 2.0 days conservatively low. Free-floating, nitrifying bacteria are relatively low. Most nitrification occurs in the bottom sediments. The modeling data indicate that Jones Island effluent ammonia-nitrogen concentrations in the range of 6 mg/l to 18 mg/l have a negligible effect on dissolved oxygen levels. Dissolved oxygen decreases in the most heavily imparted zones of the Outer Harbor are 0.2 mg/l. However, the study notes that some low dissolved oxygen levels may develop in the north and south sections of the Outer Harbor because of the double-gyre circulation pattern in these areas. The EPA and DNR have incorporated an un-ionized ammonia-nitrogen evaluation, based upon data from Lee et al. in the revised Water Quality Appendix VII, Chapter 4, Section 4.1.2. A discussion of the un-ionized ammonia-nitrogen concentrations from the South Shore WWTP is presented in Chapter 4 of the same revised appendix, Section 4.2.
533. The EPA and DNR agree with the Department of the Interior that residual chlorine levels should be set as low as practicable below the present limit of 0.5 mg/l. Other disinfection techniques are addressed in the Addendum to Appendix II, Jones Island.

534. Priority pollutant metals (cadmium, chromium, copper, lead, nickel, and zinc) are presently below EPA maximum water quality criteria limits in both the Jones Island and South Shore WWTP effluents. Given that industrial pretreatment programs limit these pollutants at their source, future loads are expected to have less impact than present loads. A complete discussion of this issue is given in the revised Water Quality Appendix VII, Section 4.3.

535. At present, no WPDES limits for metals exist. The WPDES permits for MMSD plants have effluent limits for

- BOD<sup>5</sup> 30 mg/l (monthly)
- Suspended Solids 30 mg/l (monthly)
- Phosphorus 1.0 mg/l (monthly)
- Fecal Coliform 200#/100ml (monthly)
- pH 6.0 to 9.0 (daily)
- Free available chlorine 0.5 mg/l (daily) (proposed)

Although water quality standards exist for other pollutants (e.g. metals, ammonia), no WPDES limits exist for these substances. Metal discharges do not cause the water quality standards to be exceeded. The MMSD's Industrial Waste Pretreatment Program should reduce industrial discharges of WPDES limited and other pollutants. Existing WWTP metal removal efficiencies appear to be sufficient, and side-stream treatment for metals does not appear to be warranted.

However, ammonia does appear to be a water quality problem in the Outer Harbor. (This issue is discussed in Section 4.1.2. in the revised Appendix VII, Water Quality.) Therefore, some form of ammonia-nitrogen control appears to be necessary. Various nitrogen control measures, especially side-stream treatment, are discussed in Section 12.0 of the Addendum to Appendix II, Solids Management.

Increased pollutant loads at MMSD WWTPs due to CSO abatement have been taken into the design considerations for new facilities. Side-stream treatment does not appear to be warranted. The metal loads caused by CSO abatement are a small portion (e.g., less than 5% for Cd, Cu, Zn, Ni, and 22% for Pb) of the total metal loads to the plants. The WWTPs should be able to remove these metals since present removal efficiencies for these metals are adequate (Cd: 77%; Cu: 68%; Zn: 74%; Ni: 18%; Pb: 73%) and are expected to improve during the planning period based on pilot studies (Cd: 80%, Cu: 80%, Zn: 89%, Ni: 21%, Pb:

93%). Therefore, side-stream treatment for metals may not be warranted, but nitrogen control (by side-stream treatment) may be necessary.

536. The numbers in Table 4.5 of the Draft EIS apply to the MMSD planning area. These figures have been supplied by the 208 Water Quality Planning Agency, the Southeastern Wisconsin Regional Planning Commission. These figures represent their 2000 Land Use Plan. The figures cannot be inconsistent with the 208 Plan for environmental corridor preservation because they are part of that plan.
537. Specific discharge locations will not be identified until final design is undertaken and the exact locations of the tunnels and caverns are determined. It is expected that most of the groundwater pumped from excavation will be discharged directly to nearby storm sewers or drainage ditches, provided the water does not contain high concentrations of sediment or other pollutants. The volume of groundwater to be pumped would be minimized by grouting the water-bearing fissures of the work.

At no time would polluted groundwater be directly discharged to surface waters without treatment. Temporary ponding will be used to reduce sediment loads to surface waters. More elaborate treatment facilities would be necessary if oil, gasoline, or other hazardous materials pollute the groundwater during normal construction activities or in the case of accidental spills. These control measures will be a part of contract specifications.

538. The revised Water Quality Appendix VII incorporates the most recent data available. These revisions make the water quality values uniform throughout the EIS.
539. The EIS has chosen Wisconsin DNR and 208 recommended water quality standards as the source of comparison for present and future impacts. These comparisons are made throughout the revised Water Quality Appendix VII.
540. Cadmium, copper, and hexavalent chromium levels in the Jones Island and South Shore WWTP effluent as well as in the Inner Harbor, the Outer Harbor, and nearshore Lake Michigan waters are discussed in Section 4.3 of the revised Water Quality Appendix VII. Lead and mercury methylation, in terms of the benthic community, are briefly discussed in the CSO Appendix V, Chapter 5. The discussion is limited because data on existing

methyl mercury and methyl lead concentrations are limited.

541. A discussion of the impacts of instream measures is given in Chapter 5 of the CSO Appendix V. A discussion of attainable water quality conditions, with and without instream measures, would require knowledge of the effects of sediment stabilization on the bound pollutants in the Inner and Outer Harbor sediments. The effects of pollutant release from a richly organic, highly polluted sediment undergoing stabilization are unknown. It should be noted that the portions of three rivers comprising the Inner Harbor have been granted variances from the fish and aquatic life standards.
542. The suggestions by the Department of the Interior for mitigating measures for the parks and recreation impacts have been incorporated into Chapter 5 of the Final EIS.
543. A sentence stating that the mineral resources will not be affected has been added to Section 5.2.13, Resource Consumption, of the Final EIS.
544. Section 5.2.11, Recreation and Aesthetics, has been revised to include a discussion of the effects of the MFP on parks and the Bureau of Land Management islands.
545. Alternatives to lakefill were analyzed and discussed in the Jones Island Appendix (Section IV-K) and the South Shore Appendix (Section IV-G). The potential problems of dredging in the Outer Harbor were also presented. The EPA Recommended Plan for lakefill is presented in Chapter 3 and discussed in detail in Chapter 5 of the Final EIS.
546. Appendix VII, Water Quality, has been revised to incorporate additional Lake Michigan analyses. Direct pollution sources to Lake Michigan are presented in Section 4.2 of the revised Appendix VII, Water Quality. Table 33 in the section presents total pollutant loads directly discharged to the Lake. Localized effects concerning nutrient enrichment of the nearshore zone and ammonia discharges from the South Shore WWTP are also discussed. The Lake Michigan impacts which would result from relocation of the Jones Island WWTP outfall outside of the Outer Harbor are described in detail in Section 4.1.1 of the revised Appendix VII. The impacts evaluated include increased nutrient enrichment, ammonia toxicity effects, and public health concerns. In Section 4.2, the total phosphorus loads to Lake Michigan from the Milwaukee

area under both existing and future conditions are compared to the estimated existing and future target phosphorus loads for the entire Lake presented by the International Joint Commission.

547. A detailed analysis of the entire Lake Michigan ecosystem would require substantial data collection concerning lake currents, pollutant transport mechanisms, pollutant loadings, and aquatic biology. The consideration and comparison of other Lake Michigan pollution abatement projects would require extensive data on all point, as well as nonpoint, source pollutant loadings. These issues are beyond the scope of this EIS as set forth in the Notices of Intent (Appendix I). However, other agencies (e.g., the International Joint Commission, or IJC) are evaluating means of reducing pollution in the Great Lakes. Some IJC data have been incorporated into this EIS.
548. Appendix VII, Water Quality, has been revised to include additional state-of-the-art analyses and to provide additional quantification of the water quality impacts of the various alternatives. For example, an extensive review of inland lake impacts, using trophic state index models, is presented in Section 3.3 of the revised Appendix VII.
549. Descriptions of the methodologies used in Appendix V were presented in the introductions to individual sections. These include the following: Section 5.1.2, in which the quantification of combined sewer and storm sewer flows are described; Section 5.1.3, including Table 5-1, in which pollutant concentrations are described; Sections 5.1.4.2.1 and 5.1.4.2.2 in which pollutant loadings to the Inner Harbor and Outer Harbor are described; Sections 5.1.4.3.1 and 5.1.4.3.2 in which the water qualities of the Inner Harbor and the Outer Harbor are described; Section 5.1.4.4 in which loadings to the sediment and sediment quality are discussed; and the individual sensitivity analyses. Additional descriptions of methodology for new analyses are set forth in the Final EIS. The Addendum to Appendix V, Combined Sewer Overflow, includes several paragraphs which further explain the methodologies.
550. "Silty loam" has been changed to "silt loam" in the Final EIS.
551. The discussion of the Universal Soil Loss Equation (USLE) and consequently the "C" factor has been removed.



552. Comment noted. The correction has been made.
553. Comment noted. It was assumed when suggesting mitigating measures that such measures would include good conservation techniques. The recommendation that these practices meet the requirements set forth in the Milwaukee County Soil and Water Conservation District Technical Guide has been added to the Final EIS.
554. This recommendation could become part of the EPA Recommended Plan for Solids Management. The practice of good conservation techniques is inherent in a sludge application program regulated by the DNR and the EPA.
555. There is no reference to the alteration of creek channels, floodplains, or drainage patterns on the page to which you refer.
556. Pollution control facilities for borrow areas will be addressed by the MMSD during Step II, or design (i.e. construction plans ).
557. Per capita water consumption and flow reduction devices were evaluated in the MMSD Facilities Plan (WSP Chapter 6). The MMSD feels that the maximum reduction obtainable is a 10% reduction in base flow. A conservative portion of this amount was used in the design flows generated by the MMSD and subsequently used in the EIS. The problems plaguing the present sewerage system do not lie in the base flow, but rather in flows that enter the system via inflow and infiltration during wet weather events. In the design year, base flow is expected to be 166 MGD, whereas peak flows could reach 900 MGD. Thus, facilities are designed for peak flows.

The State of Wisconsin has passed legislation, effective January 1, 1979, requiring all new construction to contain water conserving plumbing fixtures. The law requires low-flush water closets, low-flow shower-heads and low-flow faucets in newly constructed buildings.

558. The MMSD property does border residential property directly to the north; however, the plant is only visible to those homes adjacent to the lake and MMSD property. Almost any method of expansion at the plant would have an equivalent visual effect on nearby residents. The MMSD's proposed landscaping should mitigate the aesthetic impacts of the plant expansion.

559. The format required by the Council on Environmental Quality for preparing environmental impact statements places the Table of Contents after the Executive Summary. For clarification, the Table of Contents in the Final EIS is situated in front of the Summary.
560. The MMSD adopted the Master Facilities Plan in June, 1980. The Draft EIS was published approximately five months later. In compliance with the Wisconsin Environmental Protection Act, the Draft EIS did not contain recommendations. The DNR will act upon the proposed MFP after the requirements of WEPA have been met. The Final EIS identifies the EPA's recommendation and the reasons for the recommendation.
61. Appendix IV, Solids Management (and its Addendum) is predicated on a "worst case" situation. Historical sludge data are used for all analyses, although the MMSD Industrial Waste Pretreatment Program will cause heavy metal influent loads to the plants to decrease during the planning period. Historical conditions (and the No Action Alternative) present the "worst case".
562. New analyses concerning impacts to groundwater quality and quantity appear in the Addendum to Appendix IV, Combined Sewer Overflow.
563. The impact of escalating energy costs was evaluated in Appendix VII, Interceptor Alignment. The MMSD did not escalate the costs of alternatives over the life of the project because EPA regulations prohibit applying inflation rates to the cost analyses. An evaluation of cost escalation was not made in the EIS because the selection of any inflation rate would be arbitrary, and would be applied to all alternatives. Thus, such an evaluation would not affect the overall relationship in costs between various alternatives.
564. The Clean Water Act of 1977 set up provisions for federal grant assistance for innovative and alternative (I/A) methods of wastewater treatment. I/A technology received full consideration during the MMSD facilities planning process and the EIS process. One I/A alternative which was found to have significant cost and energy savings was the land application of sludge. The MMSD is not committed to any set form of sludge disposal for the planning period. Sludge could be landfilled, or land applied or a codisposal facility could be built if necessary. Another reason for giving I/A technology full consideration is that the EPA could

fund up to 85% (as opposed to the traditional 75%) for the design and construction of those portions of wastewater conveyance, storage, and treatment facilities utilizing I/A technology.

The MMSD Master Facilities Plan allows for flexibility in the use of energy. Both the Jones Island and South Shore WWTPs would generate methane to supply a large portion of their energy needs. The need for fossil fuels would be minimized by the elimination of Milorganite production. Sludge could be transported by rail or truck for ultimate disposal, thereby utilizing different forms and amounts of energy. The sludge could be combined with solid waste to form refuse derived fuel (RDF). The RDF could be burned in special combustion units to generate energy. Alternatives minimizing energy consumption and relying on alternative forms of fuel, such as methane gas, received full consideration.

A 20-year planning period is typically used as the time frame for facilities planning and is required by the EPA (40 CFR 35, Appendix A: Cost-Effectiveness Analysis Guidelines), because it is difficult to make projections of population levels and wastewater flows and loads more than 20 years into the future.

- 565. Comment noted.
- 566. The EIS addresses SEWRPC population projections in Chapter IV of the Secondary Growth Impacts Appendix entitled "Population Forecasts". The risks associated with a population shortfall are discussed in that chapter.
- 567. The Muskego Northwest WWTP discharges to Big Muskego Lake, not Little Muskego Lake. However, nonpoint source loadings of pollution are important for both lakes. The analyses of alternatives for Big Muskego Lake assume that nonpoint sources of pollution are controlled as recommended in the Areawide Water Quality Management (208) Plan.
- 568. While a deep tunnel electrical generation system may, at first, seem feasible, it contains several flaws which are of such severity as to eliminate such a proposal from further consideration. These flaws are as follows:
  - 1. Construction of tunnel at 600 foot depths: The Maquoketa shale is not water-tight, but rather is a leaky aquiclude which passes water at a rate of

0.00005 gal/day/ft<sup>2</sup>, in addition to water passed through uncased wells open to the Niagaran and sandstone formations. While 600 feet of potential head is admittedly a more assuring deterrent to exfiltration than 300 feet, the amount of infiltration, as well as exfiltration, is also controlled by the head differential between internal and external pressures and would also increase significantly at a depth of 600 feet. While it is predicted that the Galena-Platteville aquifer is a more homogeneously tight formation than the Niagaran aquifer, less detailed information is available on this formation than the shallower formation. The MMSD is presently gathering more detail on the shallower formations to enable the accurate prediction of potential problems during construction of the proposed tunnel project. Finally, the cost of the tunnel project at 600 feet would increase significantly because all connections to the tunnel system (10 dropshafts plus return pumping facilities) would have to be extended an additional 300 feet (5700 additional vertical feet).

2. Treating sewage in this tunnel system by means of oxygenation: Oxygenation (or aeration) is only a part of the entire treatment process necessary to meet treatment standards. Oxygenation reduces the amount of organic material present in wastewater by promoting organic consumption by bacteria and microscopic organisms. However, the process does not reduce the inorganic loads. Further, oxygenation creates organic by-products (sludges) which must be removed for proper operation of the system. These sludges are best removed by sedimentation which cannot occur in an environment as turbulent as an aerated chamber. Finally, the flow and residue would have to be pumped separately to the surface for ultimate disposal. Maintenance of a treatment facility is imperative to proper operation, and is a major task at conventional treatment plants. Operating such a system 600 feet below the ground surface would severely compound the problem of maintenance.
3. Constructing a pumped storage reservoir with a hydroelectric power generating facility: The 600 feet of head created by constructing the tunnels at a depth of 600 feet could be used to produce electricity. However, the water must then be returned to the surface. Since both the generating and pumping equipment are not 100% efficient, the

amount of energy produced would not satisfy the demands of the proposed system, let alone produce excess energy. If such a system were to be used only during peak electrical demand periods, the storage reservoirs would be most feasibly constructed ahead of the tunnel system. Without such structures, energy generation could occur only during wet weather events, which would require the construction of large reservoirs within the central city area of Milwaukee to capture Milwaukee's sewage. If the storage facilities were only as large as the present proposed storage cavern (1300 acre-feet), they would have to cover several acres. These facilities would produce unacceptable aesthetic, odor, and land use impacts.

4. Constructing infiltration galleries to return water to the aquifer: Once infiltration has entered the tunnel system, there is no way to prevent its being contaminated by raw sewage. Therefore, the entire flow must be treated. Returning these flows directly to the aquifer would be more damaging than exfiltration.
569. Section 4.2.10 of the Main EIS, Archaeological and Historical Sites, has been rewritten as prescribed in the letter of January 10, 1981.
570. Section 5.2.10 of the Main EIS, Archaeological and Historical Sites, has been rewritten.
571. Section 5.13 of Appendix V, Combined Sewer Overflow, Historical/Archaeological Sites, has been rewritten.
572. There are no known archaeological sites in this area. About 40 acres of the existing South Shore site is lakefill, and most of the remaining area has been previously disturbed. EPA and DNR are not aware of the potential for destruction of archaeological and historical sites referred to in your letter. If archaeological sites are encountered during the expansion of the South Shore WWTP, construction would cease until the State Historic Preservation Officer could determine the significance of the site. Sites eligible for inclusion on the National Register of Historic Places would be avoided or recovered in compliance with the current National Advisory Council procedures.
573. A section discussing secondary growth impacts on historical and archaeological resources appears in Section 3.0 of the Addendum to Appendix IX, Secondary Growth Impacts.

574. At the time of the Draft EIS, the best estimate of the probable I/I removal rate was detailed in the MMSD I/I analysis as 48%. This value included a 60% removal rate and 80% effectiveness of removal procedures. A draft of the SSES report released on February 6, 1981, indicates that the actual I/I removal would probably be closer to 13%. The increased flows due to the decrease in I/I removal would be accommodated in the deep tunnel storage system by expansion of the underground storage facilities. This increase, however, further justifies the elimination of a flow-through system because of the increased capacity requirements at the plants. Expansion of the tunnels represents an increased cost for construction and an increased energy requirement for annual pumping from storage and treatment. To some extent, these increased costs would be mitigated by a reduction in the costs of repairing and rehabilitating the sanitary sewers in the MMSD service area.
575. The geotechnical consultant's report addressing the issue of deep tunnel storage and its effect on groundwater quality is included in the Addendum to Appendix V, Combined Sewer Overflow.
576. The correction is made in the Addendum to Appendix V, Combined Sewer Overflow.
577. This comment first refers to Exhibit B of the submitted SEWRPC material, an October 10, 1980 letter from SEWRPC to DNR. This letter primarily addresses the preliminary draft of the EIS. Subsequently, a meeting was held on December 10, 1980, between SEWRPC, EPA, and DNR to discuss the remaining issues outlined in the 10/10/80 SEWRPC comment letter. These issues were resolved at that meeting, before publication of the Draft EIS.

The comment also refers to Exhibit C of the submitted SEWRPC material, which suggests wording revisions to page 2-23 of Appendix IX. As a result, page 2-13 of the Appendix reads as follows (underlined portions are those revisions suggested by SEWRPC and incorporated into the text):

"Secondary Impacts (Germantown and Northwest Side)

The level of population and housing units projected under an action alternative is consistent with the Regional Plan. It is not, however, in accord with the City of Milwaukee's more recently prepared forecasts for the Northwest Side. There is a difference of 20,000 people between the City of Milwaukee and SEWRPC

forecasts for the Northwest Side in the year 2000. This number is about equal to the forecast increment for Germantown by 2000. Thus, these alternatives could have the effect of facilitating development in Germantown without allowing the northwest side of the City of Milwaukee to develop to its full capacity, as envisioned in the City forecast. However, development in Germantown would essentially conform to the agreement achieved among the involved communities as participants in the preparation of the regional land use plan for year 2000.

#### "Effects of Population Shortfall

The Regional Plan specifically identifies policies of revitalizing the Central City and maintaining the existing population of the City. In the event of a population shortfall, these alternatives could lead to a pattern of development that is contrary to this policy. In addition, the pattern of development may leave a great deal of undeveloped land in the Northwest Side of Milwaukee while Germantown becomes more developed.

#### "Mitigation Prospects

Other alternatives which could mitigate some of the secondary effects include a smaller local plant expansion, a joint venture with Menomonee Falls, or a smaller connection to the 57-inch interceptor. These may suffice through the entire planning period for a lower population forecast, or at least until the 1990s. Germantown could consider implementing local growth controls which would reduce the overall level of development. Other institutional measures which could be considered include a more restrictive 208 Plan service area boundary for the year 2000 and staged service area boundaries for 1985, 1990, and 2000. Some of the mitigative measures would require a major revision of SEWRPC's adopted Regional Plan, as well as the local plan developed by Germantown to implement the Regional Plan recommendations. Such revisions would preferably be made in the same type of inter-governmental discussion used to develop the Regional Plan."

A suggestion by SEWRPC to revise a sentence on page 2-18 was not incorporated.

The EIS discussion of the Franklin Northeast Interceptor in the Secondary Growth Impacts Appendix concurs with the statement that "the planned (SEWRPC) population to

be served by the year 2000 in the Franklin Northeast Trunk Sewer Service area could not be accommodated by the developable acreage which would be served under the alternative to upgrade six existing pumping stations." However, the EIS analysis also indicated that whether or not the Franklin Northeast Interceptor is built should have no impact on the future population of the City of Franklin (i.e., the City of Franklin will attain the same population with or without construction of the interceptor). Additionally, as pages 2-22 through 2-24 indicate, if the interceptor is constructed, a shortfall in the regional population could result in a scattered, non-contiguous pattern of development which would not conform to local and regional plans.

The decision on whether or not to recommend construction of the Franklin Northeast Interceptor depends on the analysis of all the criteria outlined in Chapter 3 of the EIS, including consideration of the "need" for the interceptor, not solely on the secondary growth impacts of the interceptor.

The analysis of the indirect fiscal impacts (resulting from future development in Franklin) of the Action and No Action Alternatives appears in the New Analysis section of the Addendum to Appendix IX, Secondary Growth Impacts.

578. Based upon the cost-effectiveness analysis in the MMSD's June, 1980 Solids Management Report (SMR), the disposal of sludge on agricultural land has the lowest cost when evaluating each wastewater treatment plant (WWTP) on an individual basis. When the MMSD paired the alternatives, they found that landfilling Jones Island sludge and land spreading South Shore sludge had the lowest total costs. The EIS analysis also considered a total land spreading program and developed a landfill contingency plan. This contingency plan was considered by the DNR Solid Waste Bureau, and they determined that the landfill backup could be planned, designed and approved by the DNR after the land for the site was purchased. The MMSD proposed nine-month storage facility could allow sufficient time for sludge storage during the preparation of the already purchased contingency site. This contingency plan is discussed further in the "Flexibility" section of Appendix IV, Solids Management.

The cost data developed in the SMR were used in the EIS analysis and any revisions to SMR costs were incorporated into the EIS. Milorganite production was



evaluated in the EIS Technical Memorandum on the Total Solids Management (TSM) Program (June 1979) and was not found to be cost-effective. Milorganite inventories have been building up recently due to a lack of sales. In 1979, the MMSD applied sludge to approximately 5,000 of the 62,000 acres approved by the DNR as part of the existing sludge spreading program for South Shore WWTP. Major problems in continuing or expanding the program are not expected to occur.

- 579. The requested changes to the values used in the main text of the Draft EIS have been incorporated into the Addendum to the CSO Appendix (Errata). We cannot, however, be responsible for corrections necessary in the MMSD's CSO Facility Plan (page 8-71 and Table 8-24).
- 580. Both the EPA and DNR recognize the value of wetlands and wildlife habitat as integral parts of the environment. The eight wetlands used in the preliminary screening of alternatives were considered for general comparative purposes only. If marsh application of sewage effluent had been determined to be cost-effective and had been included in the more detailed analysis of the alternatives, a rigorous review of the environmental impacts upon wetlands would have been conducted.
- 581. All of the air quality emission loads in the Final EIS have been checked and changes have been made where necessary.
- 582. This page of the EIS has been revised to include information on the frequency of overflows.
- 583. Comment noted.
- 584. The reason for not including the number of septic tanks that would be eliminated with construction of each interceptor is that the data sources used for the EIS generally differed substantially. No recent, detailed, septic tank survey information is available.
- 585. This point has been clarified in Chapter 3 of the Final EIS.
- 586. Comment noted.
- 587. Comment noted.
- 588. Response 577 discusses the EIS analysis of the Franklin Interceptor Service Area.

589. The EPA and DNR concur with your comment. In Table 8 of the revised Appendix VII, Water Quality, it is shown that abandonment of the Muskego Northeast WWTP would substantially reduce concentrations of biochemical oxygen demand, total nitrogen, total phosphorus, and chlorine in Tess Corners Creek. In addition, Table 16 of the revised Appendix indicates that the concentration of total ammonia-nitrogen would be reduced upon abandonment of the plant.
590. The water quality discussion in Chapter 5 has been revised to reflect the benefits of the elimination of malfunctioning septic systems.
591. The corrections using SEWRPC data from the 1/12/81 K. Bauer letter were made to this section. All resultant changes have been noted in the EIS Errata.
592. This is a typographical error. The correct value is "50.9". The correction has been incorporated into the text.
593. The additional analysis concerning relocation of the Jones Island WWTP outfall is in Section 4.1.1 of the revised Appendix VII, Water Quality. Discussion of the impacts of increased ammonia discharge from the Jones Island WWTP is set forth in Section 4.1.2 of the revised Water Quality Appendix.
594. Groundwater impact analysis of the deep tunnel and cavern system proposed by the MMSD has been considerably expanded in the Final EIS. This additional analysis may be found in the Combined Sewer Overflow Appendix Addendum (in Volume 3 of this document) and in Chapters 3 and 5 of the Final EIS.
595. This sentence has been revised in the Final EIS.
596. The discussion of wetlands in the section cited refers to possible disturbance of the wetland during the construction of a new pump station. The only wetlands which are directly affected by discharge from the Muskego Northwest WWTP are the wetlands which surround Big Muskego Lake. Discussion of effects of WWTP discharge to Big Muskego Lake is set forth in Section 3.3.1 of the revised Appendix VII, Water Quality.
597. While it is true that construction of the interceptors will accomplish all of the benefits you mention, the intent of this paragraph is to explain the effects of the interceptors on the development patterns outlined in the Year 2000 Land Use Plan.

- 598. Correction noted in Final EIS, Chapter 5.
- 599. A discussion of the benefits of eliminating malfunctioning septic tanks is included in the Final EIS, Chapter 5.

600. Comment noted. It was determined that available data did not warrant more conclusive statements than those given in the text. EPA and DNR acknowledge the benefits of pollution abatement upon Southeastern Wisconsin recreational activities, however the degree of improvement is difficult to assess in quantitative terms.
601. The Sludge Management Facilities Plan and the EIS do parallel each other, and criteria used to analyze alternatives did change from phase to phase. However, these are not reasons to doubt the validity of the results of either report. During each phase of the Facilities Plan analysis, the EPA, DNR, and EIS consultant reviewed all criteria and conclusions. In each phase, analysis criteria were kept constant for all alternatives in order to produce valid relative rankings. Exchanges of information between the EIS and Facilities Planning Consultants were made on a regular basis during each analysis phase to refine criteria and assumptions and to insure consistency between the two work efforts. Due to this system of continuous analysis and review, the conclusions of both the EIS and Facilities Planning consultant were in total agreement through phase I and II.

With regard to SEWRPC's specific comment, "... it appears that the low cost benchmark alternative which was the basis for an early screening, did not survive screening to the final evaluations to be considered feasible," the least cost alternatives in phase I were J16 and S12 based on cost per ton of sludge processed. These alternatives were carried through all phases of the analyses.

602. The MFP described both the existing DNR and 208 Plan recommended water use objectives and supporting water quality standards. The Wastewater System Plan Environmental Assessment determined the effects of wastewater treatment plant (WWTP) discharges under all flow conditions, which is consistent with the 208 Plan approach. In addition, dissolved oxygen impacts were determined during low stream flow ( $Q_7, 10$ ) conditions, which is consistent with the DNR approach for evaluating dissolved oxygen impacts. However, only the 208 Plan recommended standards were used by the MMSD to evaluate the impacts to water quality of the various system-level alternatives. As stated on page 4 of the MMSD Summary Support Data File Environmental Assessment, Volume 2, August 1980, "The MMSD decided that the most appropriate water quality objectives to use in the MWPAP planning process were those consistent with the most likely future

603. Comment noted. Clarification has been made in the Errata section of the Addendum to the Local Alternatives Appendix.
604. The eight marshes mentioned in the EIS were identified by the MMSD. The marshes are Wayne Marsh, Jackson Marsh, Cedarburg Bay, Vernon Marsh, Wind Lake Marsh, and Forest Hill Marsh.
605. Comment noted.
606. Based on preliminary planning figures developed by the MMSD, it appears that these two alternatives could be mutually exclusive. The tentative land application site in Vernon has an area of 185 acres (Wastewater Systems Plan Planning Report Chapter 8). The requirements for infiltration/percolation systems for the Muskego Alternative B WWTP and the Regal Manors WWTP are 115 and 80 acres, respectively, or a total of 195 acres. Because these area requirements include buffer zones, it is possible that the total acreage requirements of the two systems could be reduced by sharing buffer zones. Additionally, the system layouts could be modified. If these two modifications were not possible, there is a 307-acre site located west of County Road F which could be used for the Regal Manors land application system. That site was evaluated for land application of wastewater from the Muskego Northwest and New Berlin Southeast WWTPs. Neither of these alternatives would be built if the Muskego Alternative B and Regal Manors land application WWTPs were built. Therefore, this land would be available.
607. Comment noted.
608. This issue is further evaluated in the Local Alternatives Appendix Addendum.
609. This issue has been further clarified in the Errata section of the Local Alternatives Appendix Addendum.
610. Clarification of this point has been made in the Errata Section of Addendum to Appendix V.
611. Clarification of this point has been made in the Errata Section of Addendum to Appendix V.
612. Clarification of this point has been made in the Errata Section of the Addendum to Appendix V.
613. Comment noted.

614. Comment noted.
615. Comment noted.
616. A complete annotation of this table can be found in the Table 1 which follows. The original footnotes were abridged in the interest of clarity and space in the text.
617. The deposition of pollutants into the bottom sediments is described in more detail in the Errata Section of the Addendum to Appendix V, Combined Sewer Overflow (page 5-22, for the Outer Harbor only, and to page 5-29, for both the Inner Harbor and the Outer Harbor).
618. In addition to metals, the impacts of hazardous substances in sediments are discussed in Section 5.1.5.2.1, Sediment Quality of Appendix V. This section discusses sediment oxygen demand, methylation of mercury and lead and anaerobic decomposition. Existing total phosphorus, sediment and chemical oxygen demand, organic nitrogen, ammonia, lead, cadmium, copper, zinc, and PCB concentrations in the sediments are discussed in section 3.2.5 of Appendix V. EPA priority pollutants, some of which may pollute sediments, are discussed in Section 4.5 of the revised Appendix VII, Water Quality.
619. The sentence is revised as follows: "Based on sediment loadings of biochemical oxygen demand presented in Table 5-8, about 80% of the organic pollutants in the Inner Harbor sediments are contributed by combined sewer overflows under existing conditions. Under future CSO abatement alternatives, the contributions of the total organic load, from the CSSA to the sediments would decrease by between 76% and 82% when compared to the total organic load contributed from the CSSA under the No Action alternative."
620. This phrase has been corrected in the Errata Section of the Addendum to Appendix V.
621. The sentence is revised in the Errata Section of the Addendum to Appendix V.
622. The impact of scouring on sediment oxygen demand (SOD) is quantified below in a table from Meinholz et al., (1979a). Under future alternative conditions, existing data and analytical techniques allow only the relative assessment of water quality impacts due to scouring.

Table 1  
(Response 616, continued)

EXISTING POLLUTANT CONCENTRATIONS IN STORM RUNOFF,  
UNTREATED SEWAGE, AND COMBINED SEWER OVERFLOWS

<u>Pollutant</u>	<u>Street</u>	<u>Storm Runoff Roof</u>	<u>Total</u>	<u>Untreated Sewage</u>	<u>Combined Sewer Overflows</u>
Suspended Solids	370 mg/l <sup>c</sup>	50 mg/l <sup>b</sup>	250 mg/l <sup>a</sup>	370 mg/l <sup>d</sup>	309 mg/l <sup>e</sup>
Total Phosphorus	1.6 mg/l <sup>i</sup>	0.2 mg/l <sup>i</sup>	1.1 mg/l <sup>h</sup>	8.4 mg/l <sup>f</sup>	2.0 mg/l <sup>g</sup>
Biochemical Oxygen Demand	52.6 mg/l <sup>l</sup>	7.5 mg/l <sup>k</sup>	35.4 mg/l <sup>j</sup>	630 mg/l <sup>m</sup>	140 mg/l <sup>n</sup>
Ammonia Nitrogen	0.9 mg/l <sup>p</sup>	0.1 mg/l <sup>p</sup>	0.6 mg/l <sup>o</sup>	14.6 mg/l <sup>t</sup>	2.0 mg/l <sup>q</sup>
Lead	1.0 mg/l <sup>w</sup>	0.02 <sup>v</sup>	0.6 mg/l <sup>u</sup>	0.3 mg/l <sup>t</sup>	0.6 mg/l <sup>s</sup>
Cadmium	0.02 mg/l <sup>z</sup>	0.004 <sup>v</sup>	0.01 mg/l <sup>y</sup>	0.04 mg/l <sup>t</sup>	0.02 mg/l <sup>x</sup>
Copper	0.2 mg/l <sup>z</sup>	0.005 <sup>v</sup>	0.1 mg/l <sup>y</sup>	0.2 mg/l <sup>t</sup>	0.1 mg/l <sup>x</sup>
Zinc	0.6 mg/l <sup>z</sup>	0.18 <sup>v</sup>	0.4 mg/l <sup>y</sup>	0.6 mg/l <sup>t</sup>	0.9 mg/l <sup>x</sup>
Fecal Coliform	4.0 x 10 <sup>3aa</sup> MFFCC/100ml	10 <sup>bb</sup> MFFCC/100ml	3.0 x 10 <sup>3aa</sup> MFFCC/100ml	6.2 x 10 <sup>6cc</sup> MFFCC/100ml	7.2 x 10 <sup>5dd</sup> MFFCC/100ml

<sup>a</sup> Derived from major storm (large enough to generate a combined sewer overflow) runoff measurements set forth in Meinholz et al., (1979). The measured values were adjusted slightly lower to represent average annual storm runoff suspended solids concentrations.

<sup>b</sup> Meinholz et al. (1979).

<sup>c</sup> Calculated based on the assumptions that if 38% of the total storm runoff is generated from rooftops with a suspended solids concentration of 50 mg/l, and the total storm runoff concentration is 250 mg/l, then the remaining 62% of the runoff, from street surfaces, would have a suspended solids concentration of about 370 mg/l.

<sup>d</sup> Calculated from data presented in MMSD (1980).

<sup>e</sup> MMSD (1979) and Meinholz et al. (1979).

<sup>f</sup> Calculated based on Jones Island WWTP influent data (MMSD, unpublished) and by assuming, based on BOD data, that untreated sewage in the CSSA has 3.14 times higher concentrations than does untreated sewage in the non-CSSA.

<sup>g</sup> MMSD (1979) and Meinholz et al. (1979).

<sup>h</sup> Calculated based on the assumption that if the total CSO phosphorus concentration is 2.0 mg/l and the dry-weather untreated sewage portion of the CSO, which represents about 10% of the flows, is 8.4 mg/l phosphorus, then the remaining 90% of the CSO flow, from storm runoff, would have a concentration of about 1.1 mg/l phosphorus.

<sup>i</sup> Calculated based on the assumptions that if the total storm runoff phosphorus concentration is 1.1 mg/l; 38% and 62% of the total storm runoff flow is generated from rooftops runoff and street runoff, respectively; and, based on suspended solids data, the street runoff concentration is about 7.4 times high than the rooftop runoff concentration, then the phosphorus concentrations in street and rooftops runoff would be about 1.6 mg/l and 0.2 mg/l, respectively.

<sup>j</sup> Meinholz, et al. (1979) presented an average storm runoff 5-day BOD concentration of 23.6 mg/l. This value was multiplied by a factor of 1.5 to estimate a BOD<sub>ultimate</sub> value of 35.4 mg/l.

<sup>k</sup> Meinholz et al. (1979) presented a rooftop runoff 5-day BOD concentration of 5.0 mg/l. This value was multiplied by a factor of 1.5 to estimate a BOD<sub>ultimate</sub> value of 7.5 mg/l.



(Response 616, continued)

<sup>l</sup>Calculated based on the assumption that if 38% of the total storm runoff is generated from rooftops with a BOD<sub>ultimate</sub> concentration of 7.5 mg/l, and the total storm runoff concentration is 35.4 mg/l, then the remaining 62% of the runoff, from street surfaces, would have a BOD<sub>ultimate</sub> concentration of about 52.6 mg/l.

<sup>m</sup>MMSD (1980) presented an average untreated sewage BOD<sub>5</sub> concentration of 420 mg/l. This value was multiplied by a factor of 1.5 to estimate a BOD<sub>ultimate</sub> concentration of about 630 mg/l.

<sup>n</sup>BOD<sub>5</sub> concentrations set forth in Meinholz et al. (1979) and MMSD (1980) were averaged and multiplied by a factor of 1.5 to estimate a BOD<sub>ultimate</sub> concentration of 140 mg/l in combined sewer overflows.

<sup>o</sup>Meinholz et al. (1979)

<sup>p</sup>Calculated based on the assumption that if the total storm runoff ammonia concentration is 0.6 mg/l; 38% and 62% of the total storm runoff flow is generated from rooftop runoff and street runoff respectively; and the street runoff concentration is about 7.4 times higher than the rooftop runoff concentration, then the ammonia concentrations in street runoff and rooftop runoff would be about 0.9 mg/l and 0.1 mg/l, respectively.

<sup>q</sup>Meinholz et al. (1979) and MMSD (1979).

<sup>r</sup>Calculated based on the assumption that if the CSO concentration of ammonia is 2.0 mg/l and the storm runoff concentration is 0.6 mg/l; and 90% and 10% of the CSO flow is contributed from storm runoff and untreated sewage respectively, then the average ammonia concentration in untreated sewage would be about 14.6 mg/l.

<sup>s</sup>Meinholz et al. (1979) and MMSD (1979)

<sup>t</sup>MMSD (1980)

<sup>u</sup>Calculated based on the assumptions that if the total CSO lead concentration is 0.6 mg/l; and 90% and 10% of the CSO flow is contributed by storm runoff and untreated sewage, respectively; and the untreated sewage concentration of lead is 0.3 mg/l, then the average lead concentration of storm runoff would be 0.6 mg/l.

(Response 616, continued)

v Because little data were available on heavy metal concentrations in rooftop runoff and because these metals are primarily contributed from near-surface transportation activities and industrial sources, it was assumed that the concentrations of metals in rooftop runoff would be negligible.

w Calculated based on the assumptions that storm runoff lead concentration is 0.6 mg/l; and 62% of the total storm water flow is from street runoff, then the average street runoff concentration of lead would be about 1.0 mg/l.

x Meinholz et al. (1979) and MMSD (1979)

y Meinholz et al. (1979)

z Calculated based on the assumptions that if the total storm runoff concentration of cadmium, copper and zinc, are 0.10, 0.1, and 0.4 mg/l, respectively, and 62% of the total storm water flow is from street runoff, then, the average street runoff concentration of cadmium, copper, and zinc would be about 0.02, 0.2, and 0.6 mg/l, respectively.

aa Meinholz, et al. (1979)

bb No measured data were available. Fecal coliform levels in rooftop runoff are assumed to be very low.

cc MMSD, Purification - Analytical Data - Jones Island WWTP. March 1979 - July, 1980.

dd Detention Tank for Combined Sewer Overflow, EPA-600/2-75-071. 1971.

Source: ESEI

BENCH SCALE DETERMINATIONS OF SEDIMENT OXYGEN<sup>1</sup>  
DEMAND UNDER UNDISTURBED AND DISTURBED CONDITIONS<sup>1</sup>  
(Response 622, continued)

<u>Location Description</u>	<u>Undisturbed SOD, gm/m<sup>2</sup>-day</u>	<u>Disturbed SOD, mg/m<sup>2</sup>-day</u>
Kinnickinnic River at First Street	0.65	430
Mooring Basin in Inner Harbor	1.40	1,370
Milwaukee River at RR Bridge	2.10	800
Menomonee River at Great Lakes Coal	1.70	270
Milwaukee River at Highland Avenue	1.40	360
Milwaukee River at Hubbard Park	0.33	66

<sup>1</sup>The laboratory sediment oxygen demand determinations were carried out at a temperature of 20 ± 0.5°C.

Source: Meinholz et al. (1979a).

623. The Verification Study (Meinholz et al., 1979b) results indicated that scouring of sediments occurs at a water velocity of 0.1 feet per second or greater. The study noted that CSO discharged at 12.0 feet per second from a 48-inch diameter outfall, measured 1 foot above the sediments and 30 feet out parallel to the discharge direction of the pipe. The following formula can be used to provide a rough estimate of the outfall diameter (or diffuser size) needed to reduce the outfall velocity from 12 feet per second to 0.1 feet per second.

Where

$$\begin{aligned} Q &= VA \\ Q &= \text{Flow (ft}^3/\text{sec)} \\ V &= \text{Velocity (ft/sec)} \\ A &= \text{area of outfall (ft}^2\text{)} \\ Q &= 12 \text{ ft/sec} \times 12.57 \text{ ft}^2 \\ Q &= 150.8 \text{ ft}^3/\text{sec} \\ &= \underline{150.8 \text{ ft}^3/\text{sec}} \\ &= 0.1 \text{ ft/sec } 1508 \text{ ft}^2 \text{ area} \\ &= \text{or a 43.8 foot diameter} \\ &= \text{outfall fully filled} \\ &= \text{with water.} \end{aligned}$$

Water depths in the Inner Harbor vary from 6 to 20 feet. This simple calculation indicates that an excessive area would be needed to adequately diffuse the flow from combined overflows to prevent scouring of bottom sediments.

624. The seasonal loading analysis is based on simulated flow data from the STORM model run for 37 years of precipitation record. Because snowmelt processes could not be adequately characterized by the STORM model, snowmelt events were not simulated and therefore were not included in the seasonal loading analysis. However, spring rainfall events were included in the analysis. Section 4.1.1 of the revised Appendix VII, Water Quality includes additional discussion of impacts of outfall relocation on Lake Michigan and on the water supply intakes.
625. These costs are discussed in the Addendum to Appendix V.
626. The requested costs are presented in the revised following Table.

TABLE 5-28

COMPARISON OF MARGINAL COSTS TO  
MARGINAL WATER QUALITY BENEFITS  
UNDER LOP ALTERNATIVES  
(Response 626, continued)

<u>LOP</u>	<u>Incremental Cost (\$x10<sup>6</sup>)</u>	<u>Percent BOD<sub>5</sub> Load Removed</u>	<u>Cost per Percent BOD<sub>5</sub> Load Removed (\$x10<sup>6</sup>/% removed)</u>	<u>% Fecal Coliform Load Removed</u>	<u>Cost per Percent Fecal Coliform load Removed (\$x10<sup>6</sup>/% removed)</u>	<u>% Improvement in Dissolved Oxygen Concentrations</u>	<u>% Improvement in Fecal Coliform Concentrations</u>
0.4	1.1	1.3	0.85	1.1	1.00	0.8	1.0
0.5	6.6	6.3	1.05	4.7	1.40	4.9	4.4
1.0	1.0	0.9	1.11	0.5	2.00	0.1	0.5
2.0	9.8	1.9	5.16	1.4	7.00	0.7	1.4
5.0							

Source: MWPAP/CSO 1980 and ESEI

627. The last sentence of the first full paragraph is revised as follows: "In addition, it should be recognized that nonpoint source control programs which rely on urban housekeeping practices may be more difficult to implement because they are more labor-intensive than other technology-based alternatives."
628. Some corrections have been made to this Section. We did not, however, receive Mr. Wilson's memo.
629. Construction period conditions are addressed in Chapter 3 of the Final EIS. For discussion of unknown wells, see response 695.
630. This has been corrected in the Errata Section of the Addendum to this Appendix.
631. Page IV-18: The alternative of upgrading the Wildwood pump station was identified as a mitigating measure for the secondary growth impacts of the interceptor.
632. The EIS analyzed the Root River Interceptor alternatives proposed in the Facilities Plan. However, some developments occurred after publication of the Draft EIS. The Root River Interceptor was granted a Finding of No Significant Impact (FNSI), or Negative Declaration, by the EPA on January 13, 1981. The Root River Interceptor Facility Plan was approved by the EPA on February 16, 1981. The EIS concurs with the MMSD documentation of the interceptor alignment change made in the Final Draft of the Root River Facility Plan. Specifically, a variation in the alignment between Cold Spring Road and Oklahoma Avenue was made to avoid construction through a wooded area between Morgan and Howard Avenues (east of the Root River). Finally, prior to the issuance of the FNSI and the Facility Plan approval, a wetland area was identified south of Morgan Avenue in the path of the proposed interceptor. The documentation addressing this issue is provided in the Interceptor Alignment Appendix Addendum and in an addendum to the Root River Facility Plan - Environmental Assessment, dated 1/23/81.
633. The gas turbine efficiency is discussed at length in the EIS - TSM Technical Memorandum.
634. The title of the table is revised as follows:

TABLE III-7

ANNUAL POLLUTANT LOADS FROM THE JONES ISLAND WWTP  
BYPASS: 1978

635. A detailed analysis of the water quality impacts of the relocation of the Jones Island WWTP is presented in Section 4.1.1 of revised Appendix VII.
636. Comment noted.
637. Table VI-1 has been changed to incorporate results of the revised Appendix VII, Water Quality. The new table is in the Addendum to Appendix II.
638. Comment noted.
639. The quality of the Jones Island WWTP effluent and the Outer Harbor under both existing and future conditions is set forth in Table 24 of the revised Appendix VII, Water Quality. Pollutant loadings to the Outer Harbor are presented in Table 23 of the revised Appendix VII. Annual loadings, rather than Outer Harbor water quality conditions, are presented in the Jones Island Appendix because they emphasize the difference between existing and future conditions.
640. Discussion of the impacts of ammonia discharged from the South Shore WWTP is presented in Section 4.2 of the revised Appendix VII, Water Quality.
641. A discussion of chlorine as a disinfectant is included in Addendum to the Jones Island Appendix. This information is also applicable to chlorine disinfection at the South Shore WWTP.
642. Comment noted.
643. The loads in Table VI-1 are estimated average annual loads.
644. There is a typographical error in the existing effluent load of cadmium. The load should be 1,700 pounds per year, not 17,000. The future effluent load of cadmium increases to 2,500 pounds per year due to increased flow from the WWTP.
645. As stated in the table, the units are total tons of pollutants emitted during the construction period.
646. The revision is made in the Errata Section of the Addendum to the South Shore Appendix, listed by Page VI-84.

647. The evaluation of the three additional CSO abatement alternatives was undertaken in the Draft EIS as a means of identifying other alternatives which could meet the requirements of the U.S. District Court while possibly minimizing some of the impacts of the Inline Storage Alternative. The four alternatives (Modified Total Storage, Modified CST/Inline Storage, Inline Storage, and Complete Sewer Separation) were evaluated for a number of potential impacts including cost, fiscal burden, water quality, construction disruption, and groundwater. The Draft EIS and the Draft Combined Sewer Overflow Appendix identified these and other impacts for each of the four alternatives. No conclusions were drawn at that time. However, as required by the National Environmental Policy Act (NEPA), the EPA has made a recommendation in the Final EIS. The EPA recommendation for the abatement of CSO is explained in detail in Chapters 3 and 5 of the Final EIS.
648. It is recognized that the achievement of water quality goals will require control of numerous sources of pollution, both point and nonpoint. It is also recognized that the control of some of these pollution sources is beyond the responsibility of the Milwaukee Water Pollution Abatement Program. The statements on pages 1-1 and 3-45 in the EIS summarize the requirements of the Dane County Court Stipulation. The DNR, along with the MMSD, SEWRPC, and other water quality management agencies, will continue to coordinate efforts to meet the water quality goals set forth in the existing DNR regulations and in the areawide water quality management plan.
649. The following statement was added to Section 1.4.2:  
"Because the Hales Corners and Menomonee Falls Wastewater Treatment Plants would be abandoned prior to 1985 (beginning of the planning period), they were not included in the facilities planning process and consequently in the Notice of Intent for the EIS. This Notice, which identifies what the EIS should address, is set forth as Appendix I."
650. A statement that extensive private property work is required has been added to Table 1.4. Private property work is also discussed in later chapters when describing this alternative.
651. A statement was added to the Sewer Separation Alternative to note that excess flows, which would require 550 acre-feet of storage, would be stored in the 20-foot diameter tunnels. Excess flows from the separated



system for the Modified CST/Inline and Modified Total Storage would be tributary to 30-foot diameter tunnels. Storage requirement for flows from the separated sanitary system are detailed in subsequent chapters.

- 652. Comment noted and corrected in Final EIS.
- 653. The cost for non-lakefill expansion alternatives are being prepared by the MMSD and will be included in the Addenda to Appendix II, Jones Island and Appendix III, South Shore.
- 654. Tunnel lining is one method of groundwater control. However, its effectiveness is questionable due to the porosity of concrete and its tendency to crack under the large pressure differentials which could be encountered. Included in proper construction methods are extensive pre-construction geologic investigation, deep grouting of all fissures encountered, and detailed plans for groundwater control on a site specific basis during construction. The cost of tunnel linings is \$615/linear foot for 20-foot diameter tunnels and \$840/linear foot for 30-foot diameter tunnels. About 90,000 ft. of tunnels are estimated for all alternatives.
- 655. These corrections have been made in the Final EIS.
- 656. These corrections have been made in the Final EIS.
- 657. The corrections have been made in the Final EIS.
- 658. "All excess flows from the separated system will be conveyed to and stored in the 30-foot diameter tunnel system." This statement has been added to descriptions of Alternatives 2 and 3.
- 659. The flow has been corrected to  $0.02 \text{ m}^3/\text{sec}$ . The 0.46 MGD is the correct value. The value of 0.24 MGD refers to the design average capacity. While the plant is presently meeting standards in dry weather, it is treating flows in excess of its theoretical design capacity.
- 660. Table 4-52 has been amended to include Franklin and the last column has been updated to show 1980 costs.
- 661. A. Table 5.53 - The Gross Output Positive value has been amended to read \$4,544,452.  
B. Table 5.53 - The Employment (Man-years) negative value now reads 72,197.

C. Table 5.53 - The Employment (Man-years) Net Impact value now reads - 17,100.

662. Comment noted. The correction has been noted in the Errata section of the Local Alternatives Appendix Addendum.
663. The EIS supplements for 1982 and 1983 concern the specific location of the MMSD's sludge disposal facilities. Since the MMSD's work will not be finished until that time, it is not possible to publish the EIS supplements at an earlier date. Appendix IV, Solids Management of the EIS (and the associated addendum) addresses the impacts of various solids handling alternatives considered by the MMSD. A review of Appendix IV and its addendum will show that solids handling was not left out of the EIS.
664. The EIS Fiscal/Economic Impact Analysis quantified the impacts to communities and households resulting from implementation of the final alternatives. No final alternative was developed which included an option for Elm Grove to dissociate itself from the MMSD.
665. Section 2.0 of the Appendix X Addendum quantifies the impact of Milwaukee and Shorewood having to finance all the costs of CSO abatement. The model that quantifies those impacts is called the "Individual Community Financing Alternative." This financing alternative assumes the MMSD-recommended CSO solution. However, the capital cost of sewer separation is similar to the Inline Storage Alternative, and the tax rates would be similar also.
- Please see Section 2.0 of the Appendix X Addendum for a complete analysis of the Individual Community Financing Alternative. This section identifies the fiscal impacts of a financing arrangement consistent with past MMSD practice.
666. Because the differences in total present worth costs between the final CSO abatement alternatives were all within the level of accuracy of the costing techniques, other criteria were used during the EIS evaluation and comparison of the alternatives. Criteria of specific importance included groundwater impacts, construction impacts, water quality impacts, and engineering feasibility. Based on these evaluations, the EPA has made a recommendation for the abatement of CSO which will meet applicable water quality standards. The recommendation and reasons for that recommendation are given in Chapter 3 of the Final EIS. A detailed impact analysis of the recommendation is presented in Chapter 5.

The issue of the cost distribution of the various CSO abatement alternatives is addressed in Chapter 5 of the Final EIS and in detail in Section 2.0 of the Addendum to the Fiscal/Economic Appendix. The fiscal analysis in the addendum shows the cost to each community in the MMSD planning area assuming both District-Wide financing and Individual Community financing.

667. The EIS instituted a public participation program separate from the program for the Facilities Plan. The Citizens' Advisory Committee provided input to the EPA and DNR on the Draft and Final EIS. The EIS was not responsible for overseeing the MMSD public participation program.

All comments submitted on the Draft EIS have received a reply. These appear here, in Appendix XI, Public Comments.

668. According to the MMSD CSO Facility Plan, Appendix 6D, Complete Sewer Separation would require an average of 190 construction workers per year for ten years to complete the main line sanitary sewer construction. In addition, a minimum average of 150 workers per year, for ten years, would be required for building separation (including residential, commercial and industrial buildings). The Complete Sewer Separation Alternative would require 340 (190+150) man years per year for ten years, for a total of 3,400 (340x10) man years. It should be emphasized that this is a modest estimate.

According to the MMSD's CSO Facility Plan, Chapter 8, the MMSD recommended CSO abatement alternative would require an average of 310 construction-related personnel per year, for 9 years, for a total of 2,790 man years. If all 2,790 employees came from the local economy, the employment comparison would be: 3,400 man years for complete sewer separation vs. 2,790 man years for the construction of new storm sewers and storage facilities (MMSD Recommended Plan).

However, if it is assumed that 10% of the work force for the Recommended Plan would be imported, then the comparison would be: 3,400 man years required for complete sewer separation vs. 2,511 man years for the MMSD recommended CSO alternative.

Although the Complete Sewer Separation Alternative has the potential to employ greater numbers of local construction-related workers, the rather intense

disruption to businesses in the Combined Sewer Service Area (CSSA) caused by the Complete Sewer Separation Alternative could offset the positive impact of greater local employment.

The Complete Sewer Separation Alternative does not provide for the greatest reduction of pollutants to the Inner or Outer Harbors (see Tables 5-2 and 5-3 of the Appendix V, Combined Sewer Overflow). Sewer Separation prevents sanitary wastes from reaching the rivers, but all storm water runoff will reach the rivers. At present, some of the storm water is treated. The Modified Total Storage Alternative will result in the greatest reduction in pollutant loads.

669. The original \$1.5 billion estimated for TARP was for the entire 131 miles of tunneling. This estimate was based on mining costs, as data for such tunnels were not available at the time (the program was originally a pilot study). Mining objectives are not consistent with the objectives of the deep tunnel sewer. The MMSD had the benefit of contract data from Chicago to refine their cost estimates. It should be noted that the TARP program consists of 131 miles of tunnel whereas Milwaukee would be constructing only 17 miles. TARP tunnels are designed mainly for conveyance while Milwaukee's would be mainly for storage and thus would not be subjected to the same hydraulic problems of TARP. Finally, TARP is a joint CSO and flood control program which has caused funding and construction problems; while Milwaukee's tunnels would be for sewage only. The only similarities between Milwaukee and TARP tunnels are their use of Tunnel Boring Machines (TBM) and their construction in similar rock formations.

Operational costs have been included in all cost estimates. Because inflation is unpredictable, it is not, by Federal Regulation, included in any cost estimates.

From a treatment standpoint, treatment of concentrated sewage is more cost effective. However, from the standpoint of the entire system, the cost of treating clearwater must be compared with the cost for removing it. Such an analysis has been made and study is continuing in more depth by the MMSD's SSES team.

670. The EIS did not evaluate the issue of community representation on the Sewerage Commission because the process of appointing MMSD commissioners is a local responsibility. Changes to the existing governance structure are currently being reevaluated by ad hoc committees at the State and County level. Any changes in the existing governance structure must be made by the State Legislature with the concurrence of the Governor.
671. The EPA has determined, based on MMSD analysis to date, that a CSO abatement alternative which would provide a 1/2-year level of protection (LOP) will be eligible for EPA funding. Further MMSD hydraulic analysis of the entire planning area sewer system has shown that regardless of the level of I/I removal, an Inline Storage system sized large enough to eliminate bypassing in the separated sewer system would have sufficient capacity to also provide a 1/2-year LOP for CSO even without partial separation in the CSSA. This system would be eligible for 75% EPA funding. Specific components such as near surface collectors and near surface storage facilities built to serve the CSSA only would also be eligible for 75% funding. The level of funding established by this alternative would apply even if another, more expensive CSO abatement alternative would be implemented in order to meet more stringent requirements such as those of the U.S. District Court Order. Any costs not funded by EPA would have to be raised locally or possibly through other funding sources such as the Wisconsin Fund.
672. The quantity of excavated material and potential disposal techniques are addressed in Chapter 5 of the Final EIS.
673. The long-term effect of storing raw sewage within the aquifer would be minimal as long as the raw sewage is contained in the storage structure. Any impact would, in this case, be related to aquifer dewatering due to infiltration to the tunnel. The geotechnical consultant, Converse Ward Davis Dixon Inc., stated in a report to DNR and EPA that due to the proposed tunnel construction methods (use of tunnel boring machines, grouting of discontinuities and linings), "piezometric levels in the surrounding aquifer may not be significantly lowered."

Cones of depression would increase the possibility of exfiltration if they lowered piezometric levels in the tunnel corridor to below the static water level within the tunnels.

Effects of contamination of the aquifer on future water supplies is dependent upon the quantity and extent of exfiltration. If there is no exfiltration, there would be no sewage-related contamination. If exfiltration is minimal, contaminants could be either: 1) drawn back into tunnel when infiltration conditions are resumed, 2) drawn to and removed from, the aquifer by nearby wells; many of which are used for cooling water, or 3) drawn into the sandstone via abandoned wells. If exfiltration is severe and contaminants cannot be controlled, widespread contamination could occur. In the last case, the aquifer could not be used as a drinking water source without some treatment. It is most likely that exfiltration, if it occurs, would be slight due to permeability modifications of the tunnel walls and would affect only areas very near the tunnel as described in situations 1 and 2 above.

674. No costs were added for the additional operation and maintenance requirements at the treatment facilities because the total flow to the facilities under each of the CSO abatement alternatives had not been finalized at the time the Draft EIS was released in November, 1980. These total flows have still not been finalized at the time of this publication. However, it is expected that the final flow quantities and their subsequent impact on the operation and maintenance (O&M) costs at the Jones Island and South Shore Wastewater Treatment Plants will be available from the MMSD prior to the EPA and DNR final action on the Master Facilities Plan (MFP). This additional information will be reviewed by both the EPA and the DNR as part of the MFP review and approval process. It will also be available for public review and comment.
675. Each of the issues raised has been addressed by the EPA and the DNR during the preparation of the Final EIS. The quantity of excavated material and potential disposal techniques are addressed in Chapter 5. Pumping costs are addressed as part of the operations and maintenance (O&M) costs of each alternative. Solids removal is also addressed in Chapter 5. A detailed investigation of the potential impacts to groundwater is presented in the Addendum to the Combined Sewer Overflow Appendix. The results of that analysis have also been incorporated into Chapter 5. Impacts of salty, cold spring runoff have also been addressed. A worst-case analysis of a high intensity spring storm having all street runoff tributary to a central combined sewer

overflow storage facility showed that the salt in the captured CSO was at a concentration far too low to affect wastewater treatment plant efficiency.

The impacts of these and other issues have been considered by the EPA during the formulation of its Recommended Plan. This Recommended Plan is presented in Chapter 3 of the Final EIS.

676. The EPA and DNR did not conduct an in-depth study of local real estate values. However, the Tax Assessor for the City of South Milwaukee performed such an assessment study, which is discussed in the Addendum to the South Shore Appendix.
677. The EIS is used as a decision-making document by the agencies in order to determine whether the MMSD Master Facilities Plan (MFP) should be approved. If the EPA and DNR approved the MMSD MFP based on the EIS and public comments on the EIS, the MMSD can receive Federal and State funds for the design and construction of the facilities. If the EIS process and review of the MFP demonstrate to the agencies that the MFP cannot be approved, then the MMSD would have to make the necessary changes to their Plan as determined by EPA and DNR in order to receive funding. The Draft EIS contains no conclusions or recommendations.
678. See responses 679 and 681.
679. In response to the three scenarios listed.
- (1) A well could create a localized cone of depression in the groundwater pressure which, if it reduced piezometric pressures to below the elevation of the flow depth in the tunnel, would cause localized exfiltration. The hydraulic gradient of the cone of depression would cause any exfiltration to migrate toward that well.
  - (2) Sewage in the tunnels could rise to the top in surcharge situations. The tunnels are in a conceptual design state and alignments, elevations and control equipment have not been finalized by the MMSD. It is assumed that a properly designed system would have control structures ahead of the tunnels and pumping capacity to provide positive head control. Assuming good engineering design, all controls would have backup systems.

(3) The water table could drop over the operational life of the tunnel if use of the aquifer as a water supply increased significantly or if large amounts of infiltration to the tunnels depressed piezometric levels. Use of groundwater in the City of Milwaukee has been declining during the past 3 decades; however groundwater use is expected to increase in the future in the western suburban areas. Wells are generally open to both the sandstone and Niagaran aquifers. By comparing the ability of the two aquifers to transmit liquid (25,000 to 10,000 gpd/ft vs. 5000 to 500 gpd/ft, respectively), it is safe to assume the majority of flow would come from the sandstone aquifer. Permeability modifications (grouting and lining) are expected to significantly reduce any infiltration to or exfiltration from the tunnels.

680. The Wisconsin Administrative Code Section NR 112.20 prohibits "the use of any well for the disposal of solid wastes, sewage or surface or wastewater drainage." Since the tunnels are neither wells nor ultimate disposal methods, the citation does not apply. The tunnels are large sewers, and this regulation would not apply to the tunnels as it does not apply to all sewers in the state.

681. The Infiltration/Inflow Study prepared by the MMSD documented that excessive infiltration and inflow (I/I) occurs in the local sanitary sewer system of every community in the planning area. This I/I, when combined with the dry weather sanitary flow, exceeds the capacity of the Metropolitan Interceptor Sewer (MIS) system as well as the Jones Island and South Shore Wastewater Treatment Plants (WWTPs), resulting in sewage bypassing throughout the planning area. Accordingly, the issue of excessive I/I is an areawide problem.

In order to solve this problem, the MMSD has recommended the construction of a "deep tunnel" system to intercept, store, and convey peak wastewater flow at key locations in the sewer system, so that there is adequate capacity in the entire sewer system to prevent bypassing. In addition to the storage of peak wastewater flows, the deep tunnels would also store CSO for subsequent treatment at the Jones Island and South Shore WWTPs. The abatement of CSO would provide substantial water quality benefits as discussed in Chapter 5 of Appendix V, Combined Sewer Overflow. If the 208 plan and upstream measures are implemented (in addition to the abatement of CSO and bypassing in the separated sewer area), all streams in the MMSD planning area would meet existing DNR and



208 recommended water quality standards. The benefits of this water quality improvement would be available for all citizens in the planning area.

682. To identify all existing and abandoned wells, the MMSD is using information from property owners, well drillers, Wisconsin Geologic and Natural History Survey well records, tax records, and personal interviews. The inventory process is classifying each well as active or inactive. In addition, information is being collected concerning pumping rates for active wells, and whether inactive wells are capped, completely sealed, or if the pump is intact. The inventory also identifies the depth to which the well is drilled and the static water level in the well.

The depth of the well will dictate its potential for impact. Deep wells which are open to both the Niagaran and sandstone aquifers would have the greatest potential for impact because they form a direct connection between the two aquifers. These types of wells would generally have high capacity and have the most extensive records. As such wells would only be required by water intensive industries, their locations should be easily determined. Wells which penetrate the Niagaran formation would cause impacts only if they are active. These active wells are also easily located. Wells which do not penetrate to the Niagaran aquifer would not be affected by the tunnels and are therefore not a major concern.

The potential for impacts could be mitigated by reopening and properly sealing all improperly abandoned wells that extend into the deep sandstone aquifer.

683. To "determine with absolute certitude that ground-water contamination will not occur" is not possible. This project, contains some risk, and the best effort is to minimize that risk.
684. The decision to approve or to disapprove the MFP is the responsibility of the EPA and DNR. These agencies will use the EIS as a tool for decision-making. The purpose of the EIS is to examine and disclose the impacts of the implementation of the MFP.
685. The annual O&M expense of \$26.88 million for complete sewer separation includes costs to operate the wastewater treatment plants and the entire MIS system as well as the new separated sewers. This figure is comparable to the 1980 MMSD operating budget of approximately \$29.7 million.

686. The following table describes the projects that the Milwaukee County Planning Commission has recommended for the period 1981-1985. Milwaukee County is not responsible for constructing sewerage facilities. It is required by Wisconsin Statutes to provide funds to finance capital projects undertaken by the MMSD.
687. In commenting on the proposed alternative solutions, it must be remembered that the U.S. District Court Decision requires elimination of discharge of all human fecal material to surface waters. Further, the Dane County Court Stipulation requires achievement of water quality standards by 1993. Many of the proposed solutions were considered by the facilities planners, but were eliminated from consideration because they did not solve the problems faced by the MMSD either independently or in combination; i.e., they did not eliminate combined sewer overflows.
688. The comment states that the Draft EIS does not characterize water quality under adverse hydrological conditions similar to Q<sub>7,10</sub>. It is assumed that the reference is only to CSO-affected river reaches, as the water quality of all stream reaches not affected by CSO was analyzed under Q<sub>7,10</sub> conditions (see the revised Water Quality Appendix). For CSO-affected stream reaches, a Storm Event Quality Analysis (Section 5.1.6.5) was done, in which the average flow and loads were doubled to allow an analysis of a "worst case" situation. Data (Meinholz 1979a) indicate that the maximum CSO flow is typically less than 1.5 times the mean or median flow values.

The comment also states that dissolved oxygen (D.O.) conditions in the Inner and Outer Harbors are not documented in the Draft EIS. Low D.O. concentrations are not usually found in the Inner and Outer Harbors. Instances of low dissolved oxygen are considered to be the result of sediment scour occurring during CSO events. Therefore, with the elimination of CSO events, there will be a concurrent elimination of low dissolved oxygen situations. However, the EPA, DNR and EIS consultant did evaluate the effect of sediment oxygen demand and low flow conditions on the Milwaukee River oxygen budget. This discussion is presented in Section 5.1.5.2.2 of Chapter 5 in the CSO Appendix V. Table 5-15, which accompanies the text, gives the impact of sediment oxygen demand under mean and low flow conditions.

Finally, the effects of flushing tunnels were taken into account during the water quality analyses. It is not clear to the EPA and DNR what the comment means by "the problem of so-called 'flushing tunnels'."

MILWAUKEE COUNTY PLANNING COMMISSION RECOMMENDATIONS  
1981-1985 GENERAL COUNTY CAPITAL PROGRAM BY FUNCTIONAL AREA  
(Response 686, continued)

<u>FUNCTIONAL AREA</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>	<u>1985</u>
Parks, Recreation & Culture	\$ 7,754,185	\$ 4,805,585	\$ 5,343,485	\$ 5,686,485	\$ 6,071,785
General Government	1,533,950	4,903,200	3,191,400	5,125,000	5,280,000
Transportation	16,994,500	16,911,000	18,535,000	19,034,114	20,900,500
Public Health and Social Services	3,308,495	5,311,816	7,850,000	8,239,000	8,300,000
Public Safety	<u>1,035,300</u>	<u>1,036,981</u>	<u>495,000</u>	<u>0</u>	<u>0</u>
TOTAL COUNTY DOLLARS REQUIRED	\$30,626,430	\$32,968,582	\$35,414,885	\$38,084,599	\$40,552,285

3-128

Source: Milwaukee County Planning Commission

689. The effects of increased ammonia concentrations in the Jones Island effluent are discussed in detail in Section 4.1.2 of the revised Appendix II, Water Quality. The revised Appendix incorporates the results of the Lee, et al. (1980), study on the Outer Harbor.
690. A detailed discussion of the behavior and effects of ammonia discharge in the Outer Harbor is presented in Section 4.1.2 of the revised Water Quality Appendix.
691. The pH value used in the revised Water Quality Appendix is 7.9 and is based upon the MMSD Environmental Data Management Systems, Support Data Files, 1980. Further, an independent check using data from Outer Harbor stations during the months of June, July, August, and September reported by Lee et al. gave an authentic mean of 7.9 for pH. A temperature value of 18°C was used in the revised Water Quality Appendix.
692. Data reported in Lee et al. "An Analysis of Water Quality and Movement Associated with the Sewerage Effluent in Milwaukee Harbor" (1980) allowed for a nitrogen to phosphorus ratio to be determined. The ratio was found to be 18 to 1, indicating that phosphorus was the limiting nutrient, since at any ratio greater than 14 to 1 the limiting nutrient is phosphorus (DNR, 1976).
693. It was not the intention of the Draft EIS to make a recommendation regarding the location of the Jones Island outfall.
694. While the downtown area is highly impervious to rainfall, it covers only 1.5 square miles. The entire combined sewer area covers 23.5 square miles and is estimated to be approximately 49% impervious (p. 5-4 Appendix V). Estimates by the MMSD have shown that separation in the downtown area would be more technically demanding and costly than most other areas of the CSSA.

The Plumbing Code of the City of Milwaukee requires that all new buildings constructed within the CSSA be equipped with a separated plumbing system and that laterals be connected to the combined sewers.

Infiltration and inflow (I/I) are major problems throughout the separated sewer system. As a consequence, flow is increased five-fold in wet weather. The MMSD I/I and SSSES studies were intended to identify sources of I/I, quantify their contributions, and evaluate which sources

could be corrected at a reasonable cost. Preliminary results of the SSES indicate that only 13% of this flow could be cost-effectively removed (comparing correction to conveyance and treatment). In order to adequately treat all wastes which arrive at the treatment plants, it was determined that, from an environmental, engineering, and financial standpoint it was more feasible to include storage in the system to reduce peak flow quantities than to expand the treatment facilities to handle such flows. It should be understood that these peak flows are created not only by contributions from the combined sewers (which are limited by diversion structure capacities), but also from I/I entering the sanitary sewers throughout the separated sewer area. The purpose of the tunnels is, therefore, to provide conveyance and storage capacity as well as to optimize the treatment plant efficiencies and avoid the "excessive dose of chlorine... required as compensation."

The use of surface storage rather than underground storage would require large amounts of land. Proposed near-surface storage structures are to be built beneath parks and vacant lands which could be used for recreational purposes once construction is complete. Eliminating deep tunnel storage in favor of total surface storage would require large tracts of land not readily available in the dense urban environment of the central city. Further, it is doubtful that large open lagoons containing raw sewage would be considered acceptable.

695. The total roof area in the CSSA is between 25 and 30% of the area. Many industrial and large commercial roof drains in the CSSA are connected internally to the sanitary plumbing system and would require extensive revamping if disconnection were desired. Eliminating these roofs from consideration, the roof area is approximately 25% of the total CSSA. Disconnection of downspouts would thus reduce flows by 25% in smaller storms. However, in larger storms, due to the hydraulic capacity of the gutter and downspouts (downspouts are usually 3" diameter pipe) gutters often overflow, thus reducing the amount of flow to less than 25%. Gutter overflows become surface runoff and enter the combined sewers via street catch basins. Infiltration beds would have to be constructed lower than the frost line in order to be effective in colder weather as in the early spring when large overflow events usually occur. In older areas, small yards would limit or eliminate the possibility of construction of such beds. Downspouts were originally connected to the sewer to control icing problems on streets and sidewalks which represented a safety hazard.

By disconnecting downspouts, ice would again become a problem. Finally, by placing infiltration beds in yards, the soil moisture is increased. This increase would result in larger contributions from foundation drains or cracking and clearwater-related problems in basement walls.

Pervious pavements is only as effective as the bedding porosity beneath it. The pervious pavement would be effective in small storm events, but in larger storms, the porous pavement would be inundated quite rapidly. The excess flow would become surface runoff. Porous pavements must be occasionally flushed to remove sediments which block flow through the pavement, limiting its effectiveness. Further, this pavement would be ineffective in cold weather when the subsoil is frozen and ice obstructs pores in the pavement.

The estimate of \$40,000 to \$50,000 per acre to re-pave seems somewhat low. Current City of Milwaukee Department of Public Works estimates are \$65.00/lineal foot to reconstruct a typical 32 foot wide residential street, not including curb, gutter, walk or utility work (or approximately \$89,000/acre). While street costs could be publicly financed, the cost for reconstruction of parking lots would have to be borne by the property owner.

696. Infiltration into the tunnels would be controlled by an extensive grouting project and concrete tunnel lining. In Chicago, all cracks were grouted to depths up to one tunnel diameter away from the tunnels. Grout is a cement-like material which is pumped under pressure into cracks. Lining was not required in the tunnel segments constructed by a boring machine. It was decided that, because of the smoothness of the finished bore, the small amount of groundwater encountered, and the effectiveness of the grout program, the lining would provide no additional benefit. The rock structure and construction methods used in Chicago are similar to those proposed in Milwaukee. All flows entering the proposed tunnel system would be treated at the WWTPs.
697. Environmental impacts that have been identified in the Solids Management Appendix are based upon scientific studies. New analyses and further studies are presented in the Addendum to the Solids Management Appendix. Both documents contain references for all scientific evidence used in the determination of impacts. In addition, all applicable EPA and DNR guidelines have been considered.

The results of chemical analysis of MMSD sludge indicate that it does not qualify as a toxic or hazardous waste under the 1976 Resource Conservation and Recovery Act (RCRA). Although the sludge contains elevated levels of cadmium, concentrations are not considered to be toxic. Even so, application rates and duration of the application period (in years) must be regulated with respect to the potential toxicity of cadmium, should it be allowed to accumulate beyond recommended levels. Maximum application rates and accumulation levels recommended by EPA and DNR (45 FR 33247, 43 FR 53462, DNR Tech. Bull. 88) are considered to be safe. The MMSD is bound by these standards.

698. a) In order to protect human health, the EPA regulates the application of solid waste to land used for the production of food chain crops (44 FR 53449, September 13, 1979), especially with respect to cadmium and PCBs. EPA's approach to managing cadmium (44 FR 53454) includes four controls for applying sludges high in cadmium to minimize the increase of cadmium in the human food chain. These are summarized briefly below:

- 1) Only animal feed may be grown under this option;
- 2) The solid waste and soil mixture must have a pH of 6.5 or greater at the time of solid waste application or at the time the crop is planted, whichever occurs later;
- 3) A facility operating plan must be developed in order to demonstrate how the animal feed will be distributed and what safeguards are utilized to prevent the crop from becoming a direct human ~~feed~~ source;
- 4) There must be a stipulation in the land record or property deed stating that property has received solid waste at high cadmium application rates and that food chain crops should not be grown.

Whether farmland receiving sludge containing cadmium is devaluated or damaged is a matter of opinion. The DNR and EPA regulate cadmium accumulation in soils to prevent toxicity to, and misuse of, valuable farmland.

b) Chapter 144 of the Wisconsin Statutes dealing with water, sewage, refuse, mining, and air pollution addresses compensation. A Waste Management Fund is established

(Section 144.441 (3)) to provide for 1) long-term care of a site or 2) repairing environmental damage caused by a site. Some of the monies for this fund are received as fees paid by landfill operators as part of their requirements for licensing. As land application sites are not licensed by the DNR, the Fund received no monies from these operations. Regarding liability, it is the legal right of any citizen to file suit against anyone he or she chooses. The choice of the party named in the suit is up to the citizen. The liability of that party would be decided in a court of law.

699. Farmers accept MMSD sludge for incorporation into their crop land solely on a voluntary basis. Future responsibility is addressed in the response to the previous comment.



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100  
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700. According to MMSD estimates, the cost of monitoring would be a small percentage of the O&M cost of sludge disposal, and therefore they did not include it. The MMSD estimates that they only need 35,000 acres (or 8%) of the 414,000 acres that can accommodate sludge application in the SEWRPC region for the 20-year planning period.
701. Scientific data support the use of soil pH and cation exchange capacity (CEC), as well as physical characteristics, to determine the suitability of a soil to be amended by sludge (DNR Tech. Bull. 88). In addition, before sludge can be applied, crop requirements for nitrogen and phosphorus must be determined. Together, these factors indicate what type of sludge can be used and the rates and cumulative amounts that can be applied. The assumption that CEC is the sole criterion used is incorrect.

The issue of the possible adverse impacts of plasticizers in sewage sludge was addressed in "Report on Priority Pollutant Sampling Program" by John Moser et al., MMSD, November 21, 1980. That study reported trace amounts of phthalate compounds (often used as plasticizers) in South Shore and Jones Island WWTTP sludges. South Shore sludge contained 777 mg/kg (dry weight basis) phthalate esters and Jones Island Milorganite contained 184.9 mg/kg (dry weight basis) phthalate esters. At the request of the MMSD Research Group, Dr. Richard Harkin, an organic chemist and professor of Soil Science at the University of Wisconsin-Madison, addressed the impact of phthalate esters and polynuclear aromatic hydrocarbons (PAH) in agricultural applications. Dr. Harkin stated that it would be unlikely that these organic compounds could be transported across plant cell walls. In addition, phthalates tend to hydrolyze and rapidly degrade in soils. The PAH compounds are tightly bound to the organic fraction of soil particles and are not taken into plant tissues.

Acid rain is discussed in the Section 2.0 of the Addendum to the Solids Management Appendix (IV).

702. This fact is noted in the Addendum to the Solids Management Appendix IV in Section 15.2. Del Monte appears to be the only company in the 725 member National Food Processors Association that has taken this course of action. It is the MMSD's policy to apply sludge to land used for crops that will not be consumed by humans (as also recommended in DNR Technical Bulletin No. 88). Del Montes' action, therefore, would have no effect on the MMSD's sludge spreading program.

703. The points raised are valid, but the EPA and DNR standards that exist today are based upon present research into these areas. The EPA application standards for cadmium involve a reduction in annual application rates until 1986 when they become the most restrictive (44 FR 53462). The MMSD follows the policy (based on EPA and DNR recommendations) that their sludge should not be applied on land used to grow crops for human consumption. Requiring the deed to make note of application of sludge is currently under consideration by the MMSD. The Food and Drug Administration suggest an approach to cadmium control for high cadmium sludges that requires the land record or property deed to state that the property has received solid wastes at high cadmium application rates (44 FR 53454). Also, see response 698.

704. The MMSD monitors sludge application at a level that exceeds the requirements given in its permit. For further discussion of monitoring, the reader is referred to Section 11.0 of the Addendum to the Solids Management Appendix.

705. The reader is referred to Response Number 697, written in answer to Mr. Pampel's introductory remarks. For further information on cadmium toxicity, the reader is referred to the Addendum to the Solids Management Appendix, Section 15.0.

706. Industrial wastes are discussed in Section 7.0 of the Addendum to the Solids Management Appendix. The extension of industrial pollution deadlines is discussed below.

The MMSD, at the recommendation of the Industry Policy Committee, which consists of MMSD commissioners and industry representatives, has extended deadlines by up to seven months to allow industries to install pretreatment systems which will allow them to meet MMSD cadmium limits. Milwaukee area industry will also have to meet EPA pretreatment standards and deadlines within three years after they are set by the EPA. Most of these deadlines will have to be met before the start of the planning period. The MMSD (or the committee) will not be able to grant extensions to deadlines set by EPA.

707. Comment noted. The title for Appendix IV, Solids Management will not be modified.

708. The EIS position on inflation is explained on page

27 of the Fiscal/Economic Appendix.

Interest rate analyses can be found on page 93 of Appendix X as well as in the "worst case" analysis (Section 3.0) in the Addendum Appendix X.

709. Such a system has not been used, and therefore no scientific documentation to assure feasibility is available for a system of this scale. However, simplified versions of such a system are quite common. Two situations, while simplistic, can be considered parallel. The first is a sewer community which relies on groundwater for its water supply; the other is a community which is served by septic (or sewage holding) tanks and uses groundwater for their potable water supply. As stated, these examples are simplistic but these systems have performed safely and successfully for many years.
710. Necessary controls to protect groundwater are addressed in Chapter 5 of the Final EIS as mitigating measures.
711. Dewatering of the tunnel during construction would be accomplished by pumping. It is presently anticipated that all discontinuities in the rock will be grouted during construction to reduce infiltration to the tunnel during construction. In tunnels prior to grout, Converse Ward Davis Dixon Inc. (CWDD) has estimated inflow to range from 1,200 to 14,000 gpm/mile. (See Addendum to Appendix V, Combined Sewer Overflow, Attachment 1). Using crude flow nets, a reduction in piezometric head of 1 to 3% was predicted at 1,000 feet from the tunnel. In conclusion, CWDD stated "In actual construction, the contractor may pre-grout, or grout during construction, to preclude significant water flow into the tunnel, and thus piezometric levels in the surrounding aquifer may not be significantly affected."
712. As noted, the number of wells in the central city has declined in recent years. This occurrence would lead to an increase in piezometric levels in the dolomite in this area. While pumpage in the western suburbs will increase, as predicted by SEWRPC Technical Report No. 16, these wells are open to both the sandstone and Niagaran formations. There is no evidence as to the percentage of flow contributed to these high capacity wells by the Niagaran aquifer. By comparing transmissivity rates between the sandstone (10,000-25,000 gpc/ft) to the Niagaran (500 to 4,000 gpd/ft) it would seem, however, that the majority of flow would be from the sandstone aquifer. The interconnection between the sandstone and Niagaran is confined only to those wells

open to both aquifers and the leakage which occurs through the Maquoketa shale. If known inactive wells were properly sealed, the only avenue to transport pollutants to the sandstone would be by active wells not in service and through the shale. The vertical conductivity of the shale is estimated by several sources as ranging 0.00001 to 0.00005 gpd/ft<sup>2</sup>. Further, not all flow through the shale is downward but depends on the pressure differential between the two aquifers. It is therefore questionable whether the lowering in the sandstone will also cause drastic lowering of piezometric levels in the Niagaran formation. This can be further documented by examining well levels as reported by Erickson (WGNHS circular No. 21). In this document it can be seen that in most wells open only to the dolomite, water levels remained fairly constant, whereas water levels in the wells open only to the sandstone or both aquifers showed marked decreases over time. Some dolomite-only wells are within two miles of the deep wells.

713. The tunnels are expected to be physically inspected several times per year, at which time cracks and small breakages would be patched. The lining (if lined) could also be replaced when deterioration requires it. Temperatures at proposed depths show very little variation; thus, tunnel walls should only deteriorate from deleterious effects of sewage and hydraulic wear. With present technology, a lining could be cast which would be unaffected by these forces.
714. Contaminants only migrate to wells once they have entered the well's cone of influence. If exfiltration occurs due to a localized cone of depression, the contaminants would be drawn directly to the well creating that cone. In the event that this well is being pumped, the contaminants will be drawn from the aquifer through that well. Inactive wells could act as conduits to transport contaminants to deeper levels of the Niagaran or into the sandstone aquifer. Inactive wells, with pumps intact, and wells not connected to drinking or food processing systems (i.e., cooling water wells) could be activated during exfiltration events. Inactive wells should be properly abandoned, as described in the Wisconsin Administrative Code, to minimize verticle migration of contaminants.
715. The typical method of infiltration control during tunneling is to pump only the accumulated water from the construction site. Grouting would also be done on waterbearing cracks to reduce the quantity of inflow. Other options available are pre-grouting (pumping

grout into known discontinuities before excavating into the discontinuity zone), freezing, or pressurized tunnel construction. However, pre-grouting would be used only when large known discontinuities would be encountered. Pressurized tunnel construction is expensive and has many technical problems. Freezing is an expensive process but could be used in localized problem areas until other control measures could be implemented.

- 716. The drawdown in the well 1000 feet away would be minimal. Converse, Ward, Davis and Dixon made a rough estimate that, at 1000 feet horizontally from the tunnel, the drop in piezometric head would be 1% to 3%. This value would be decreased by such measures as crack grouting and tunnel lining. Further, dewatering of the Niagaran formation will not employ dewatering wells, but will pump accumulated water from the tunnels.
- 717. There is an area of low piezometric head near County Stadium. In this area, wells which are continuously active or frequently used could be cased through the dolomite. If this is not possible, the alignment of the tunnels could be changed to avoid the depressed area. Wells which are inactive could be sealed and properly abandoned. Further, tunnel grouting and lining would reduce the flow of exfiltration by reducing the permeability of the rock.
- 718. This comment does not specify the information upon which it is based and is of such a general nature that no response can be provided.
- 719. All known public and private wells along the tunnel routes are being classified by the MMSD as active, standby, capped or plugged and identified as to their capacity and depth. The tunnels would be aligned to have the least impact on the most active wells. The City of West Bend is more than 20 miles north of the proposed north shore main tunnel.
- 720. The fault noted was first postulated by Distelhost and Milnes in 1967 based on boring logs. Additional logs and further investigations by the MMSD have not determined whether this formation is a fault or fold. This structure crosses the proposed tunnel route. The tunnel could safely traverse such a feature. By intersecting the feature perpendicularly and pre-construction grouting the feature, serious problems could be mitigated. The MMSD Advanced Facilities Planning (AFP) and predesign program would carry out

numerous borings to identify, with a high degree of accuracy, the expected conditions which will be encountered along the final tunnel route.

721. Theoretically yes, but practically no. It is feasible to construct a tunnel which is subject to relatively small amounts of infiltration under most conceivable circumstances, and to convey and treat any infiltration.
722. Exfiltration can occur only if the tunnel walls are permeable and if the static pressure of the water in the tunnels is greater than the piezometric pressure of the surrounding groundwater.
723. During normal operation, such exfiltration conditions would generally not prevail. Localized occurrences are possible, but the extent of the system subject to exfiltration would depend upon the ultimate horizontal and vertical tunnel alignments and operating procedures. This information would be developed by the MMSD during the predesign or design phases.
724. If the tunnels and cavern are filled to design capacity (this assumes the caverns are filled to a freeboard of 9.5 ft.), the entire tunnel system would be surcharged under heads ranging from 30 to 100 feet. The MMSD estimates that the tunnel portion of the system would surcharge into the caverns twice per year, and would fill to the crown of the tunnels six times per year. When designing a system to meet the U.S. District Court's Judgement Order, the caverns would fill to capacity only in the event of a storm larger than the storm of record. (Records are available since 1939). Because of the slight slope of the tunnels (1 foot per 1000 feet) the lowest end of the tunnels would begin to pressurize at 144 acre-feet of storage; when the upstream end of the tunnel is filled to the crown, the lower end would be pressurized to 70 feet of head. This event would occur at 650+ acre-feet ("+" is added because some flows would be entering the tunnels which at present proposed locations could be filled to a depth of 30 feet). Such an event could fill the system to between 68% and 75% of capacity.
725. Exfiltration will only occur when the piezometric pressure of the surrounding groundwater is less than the static pressure of the water in the tunnels. The MMSD has estimated that the 550 acre-feet tunnels will be filled six times per year. The tunnels will surcharge into the caverns twice per year and should surcharge the caverns, under Judgement Order designs,

only under storm conditions larger than the largest storm of record (based on 37 years of record, 1939-1976). However, if the tunnel enters a cone of depression where piezometric levels are drawn down below the tunnel grade, exfiltration would occur when standing water in the tunnels reaches this area.

Based upon the two previous responses, it could be stated that with the application of mitigating measures, the tunnels will not exfiltrate during normal operating conditions. If the tunnels become surcharged to the point that the liquid elevation in the dropshafts is greater than the piezometric surface elevation, exfiltration will occur, but only after the failure of all systems for preventing a surcharge. This condition might last several days before the system could be partially pumped out. The estimated volume of exfiltration under such conditions are presented in the CWDD report.

- ~~726.~~ If exfiltration should occur, there will be degradation of the groundwater quality. The degree of degradation would be a function of the time period of exfiltration and the porosity of the tunnel walls.

Loss or restriction well use could occur along the tunnel route if unforeseen circumstances occur. Extensive subsurface investigations will be carried out by the MMSD prior to ultimate design of the system in order to gain as much information as possible to minimize the possibility of unforeseen factors which could impact the operation on construction of the tunnels.

727. Converse, Ward, Davis and Dixon estimates that drawdown during construction could occur over 1000 feet from the tunnels. They further state that "after the tunnel is grouted and/or lined, preconstruction groundwater piezometric levels are likely to re-establish themselves." The MMSD and its contractors have in the past and will continue to assume liabilities for construction related storages.
728. The permeability of the Niagaran formation is primarily due to the network of joints and fractures in the rock mass (CWDD). Thus, any movement of contaminants through the silurian dolomite is via these joints and fractures. Present conceptual plans by the MMSD are to force grout into all cracks and joints encountered. For example, in the TARP program in Chicago, cracks were grouted up to the extent of one tunnel diameter out from the tunnel. This grouting has been used to limit water flow up to 53% (MMSD, 1981) in other projects. The

tunnels will also be built in the middle to lower ranges of the dolomite. The frequency of discontinuities between the upper and lower elevations in the Niagaran is about a three-fold reduction (MMSD, 1981 Inline Appendix 4A).

729. A near-surface system would have no advantages over a deep system in relation to groundwater pollution potential. Such a system would, however, have several disadvantages. First, the permeability of the glacial till is much higher and more homogeneous than the dolomite. Secondly, the hydraulic pressure potential of the groundwater is equivalent to the groundwater table in this zone. Because both the groundwater table and the design depth of such structures would be very near to one another, the potential for exfiltration is high. Third, construction in the softer soils would require a more extensive construction dewatering program.
730. According to the City of Milwaukee Health Department, there have been no outbreaks of waterborne disease in the past 20 years. The department does not keep statistics on how the disease is transmitted unless the cause is known for certain. In most cases, while the disease could have been waterborne, there are several other more likely causes of the disease, especially human-to-human contact.
- ~~731~~. The ultimate profile of the inline system has not been determined and will not be determined until all geological investigations have been completed by the MMSD. Present indications show a promising alignment with the upstream invert at an elevation of +300 feet MSL with a general slope of 1 ft/1000 ft.
- ~~732~~. By recommending the enclosure of solids handling facilities, the abandonment of sludge storage lagoons, and the screening the plant from view, the EPA has shown its concern for the health and welfare of the citizens of South Milwaukee. While the DNR does not make recommendations in the Final EIS, it believes these measures are appropriate.
- ~~733~~. The EPA and DNR do not intend to perform a study at this time. The MMSD Recommended Plan should eliminate any significant gaseous emissions from the solids handling processes. These processes, which are the primary sources of unpleasant odors, will be enclosed in buildings. Other odor prevention and control methods will be instituted at the WWTP. Possible measures are discussed in the Addendum to Appendix IV, Solids Management.



734. The MMSD proposed to empty these lagoons before 1985.
735. The expansion to the north would not have a significant effect on fishing, swimming and picnicing near the WWTP.
736. There would be no significant impacts to wildlife common to the area. However, some fish spawning areas would be permanently removed.
737. See response 676.
738. The DNR would review the design of the facilities to ensure proper design. The plan of operation would also be reviewed so as to prevent damage to leachate collection systems.
739. The Delafield landfill was approved in 1971. Since then, DNR requirements have become more restrictive. The DNR has set a September 1982 date for closure of this site. The Site could not be closed earlier because Waukesha County needs time to find a new landfill site.
740. On June 5, 1980, the Metropolitan Sewerage Commissioners decided, on the basis of recommendations of their engineering staff, that the Inline Storage Alternative was the most feasible alternative. The Draft EIS did not recommend any alternative. While the cost-effective solution to CSO abatement would be desirable, the final solution chosen must meet the strict requirements of the two court orders.
741. In any engineering analysis, there are some inherent risks. It is the present position of the EPA and DNR that the possible risks could be minimized. This position is, however, dependent upon the results of further investigations by the MMSD. Based on information to date, there is adequate evidence that a safe tunnel system could be built.

Concerning long-term exfiltration possibilities, the EIS assumed that positive head control devices would be installed ahead of the tunnel system to limit the depth of flow in the system. This assumption has received confirmation from the MMSD. The EPA and DNR realize that groundwater levels are not static, but fluctuate with meteorologic conditions and groundwater usage. There is sufficient documentation that groundwater use in central Milwaukee is declining. While use of high capacity wells, open to both the sandstone and dolomite is increasing toward Waukesha, it is reasonable to

assume that due to the differences in transmissivities between the sandstone and Niagaran formations (10,000 to 25,000 gpd/ft vs. 500 to 5000 gpd/ft respectively) the majority of water comes from the sandstone and not the dolomite aquifer. Water levels in the Niagaran could be further enhanced by sealing inactive wells at least to the top of the Maquoketa shale, stopping the flow of water to the sandstone aquifer via these wells. The grout and lining are not assumed to preclude all possibility of exfiltration (or infiltration), but rather to reduce exfiltration from (or infiltration to) the tunnels by reducing the permeability of the tunnel walls.

742. Comment noted. The Final EIS has included additional analyses of the potential for aquifer pollution from a deep tunnel system. A special geotechnical report was prepared and is included as part of the Addendum to the Combined Sewer Overflow (CSO) Appendix. That report has been used in preparing the groundwater impact analysis in Chapter 5 of the Final EIS.

The EIS has analyzed both CSO abatement alternatives and alternatives which were developed to control the excessive wet weather flows which occur in the separated sewer area as a result of infiltration and inflow (I/I). As was shown in the Draft CSO Appendix, it appeared that regardless of what action was taken to control CSO, some type of storage system would be necessary to prevent bypassing from the separated system due to the I/I problem. The impacts of various storage systems were evaluated in the Draft EIS with the Complete Sewer Separation, Inline Storage, Modified CST/Inline Storage, and Modified Total Storage CSO Abatement and I/I control Alternatives evolving as the most feasible alternatives. These analyses have been updated and expanded in the Final EIS. Based on the information contained in both the Draft and Final EIS, its appendices and addenda, the EPA has made a recommendation for CSO abatement and I/I control. This recommendation and its justification are located in Chapter 3 of the Final EIS. The detailed impact analysis of this EPA Recommended Plan is located in Chapter 5.

743. A portion of the 250 people required to operate and administer each tunnel boring machine, (see Attachment A of letter), would most likely come from the local economy. If outside firms are retained, they would not, for economic reasons, rely on non-local workers. They probably would only bring in the key people. The estimate of 250 people refers to administrative personnel,

TBM operators, maintenance mechanics, as well as all skilled and unskilled labor required to carry out the contract. Sewer Separation would require several small crews annually. See response number 268 for further discussion.

In addition, the use of shallower near-surface structures was evaluated. Facilities constructed in the overburden layer would have to overcome structural problems not encountered by construction in the limestone formations, because of the structural stability of the rock. Probabilities of exfiltration would also be greater from near surface structures, because of the lower piezometric pressure exerted by the surrounding groundwater at higher elevations. Finally, as the article points out, use of tunnel boring machines improves the safety for workers in the subsurface facilities.

744. The time frame of the program is dictated by court mandate which does not necessarily mean it would be realistic. The Milwaukee Deep Tunnel System would only be 17 miles. Forty-seven of TARP's 131 miles have been constructed in the 8 years since construction began. The question of construction of a system to handle only sanitary sewage is related to the problem of whether it is more costly to eliminate a clearwater source or to store and treat the infiltration.

745. In examining any problem, it is necessary to understand the background of the problem. The combined sewers were constructed prior to 1920 and utilized the best technology of the day. Present day technology has shown the benefit of constructing separated sewer systems. The combined sewer area includes the heart of Milwaukee which has been and remains the cultural and economic center for the region, an area benefiting all communities in the area.

While the tunnel system will benefit the CSSA, it will also benefit the separated sewer areas in that large peak flows during wet weather, to which the entire sanitary sewer system contributes, could be stored until the treatment facilities can handle them. This storage allows for construction of smaller treatment plants which can more effectively treat sewage without requiring facilities large enough to treat large infrequent flow peaks.

746. This comment is addressed in the previous responses: 742, 694, 669, 424, 743, 744, 755.

747. Your comment has been noted and considered during the formulation of EPA's Recommended CSO Alternative. See Chapter 3 of the Final EIS for the entire EPA Recommended Alternative.
748. Detailed analyses of the impacts on water quality resulting from the various alternatives studied in the EIS are presented in the revised Water Quality Appendix (Appendix VII) and the Combined Sewer Overflow Appendix (Appendix V).
749. It would be incorrect to report that there would be no potential for soil or groundwater contamination when there might be even the slightest chance of such a situation occurring. Therefore, the risks are not discussed in "either/or" terms, but in relative terms. Actions such as informing farmers of the potential hazards of land application of sludge and requiring adherence to DNR and EPA regulations can only reduce, not eliminate, the possibility of some sort of soil or groundwater contamination.
750. The capital cost of connecting all of the communities in the planning area that now operate their own treatment plants to the MMSD is about \$22 million. This figure is only 1.3% of the total MFP capital cost. More than 98% of the \$1.676 billion would have to be spent even if those communities maintained local plants.

The MFP planning process used SEWRPC year 2000 population forecasts. The Facility Plan indicated that it would be less costly and more environmentally sound to treat the sewage resulting from that growth (SEWRPC year 2000 population forecast) by a regional system.

If local communities were to prepare facilities plans for local treatment plants, they would probably also use year 2000 population projections. As a result, a local treatment plant would have a design capacity similar to the design capacity of the interceptor built to serve that community under the Regional Alternative.

Communities have the option of controlling their rates of growth despite the form of sewer service.

751. Other alternatives were examined besides the Deep Tunnel Alternative (which relies on non-local firms for portions of its construction).
752. The DNR and the 208 Plan have established water use objectives for streams in the planning area. These

water use objectives define the recreational uses and fish and aquatic communities which are desired. and can be achieved. They take into account numerous factors such as in-place pollutants, irreversible alterations to the stream by man, and the flow characteristics. The EIS analyses evaluated the ability of the streams to meet the existing DNR and recommended 208 water use objectives and supporting water quality standards under alternative pollution abatement strategies. The abandonment of a WWTP never precluded the achievement of the established DNR or recommended 208 water use objectives. While the "character" and biological communities of some streams may change if the local WWTPs are abandoned, this change was not identified as either a beneficial or adverse impact on the stream. The advantages of localized treatment were evaluated with regard to all EIS criteria, including water quality, cost, fiscal impacts, aquatic biota, and engineering feasibility.

753. With regards to operating and construction practices that would protect groundwater, the Executive Summary had to be brief. Fail-safe procedures and backup practices include an extensive predesign/preconstruction subsurface investigation to identify all possible problems which could be encountered due to geologic conditions, an extensive grout program which would seal all fissures encountered, and a monitoring and control program to limit the flow depths in the tunnels to levels below the piezometric surface of the groundwater. Since the tunnels are in conceptual design phase, exact procedures and control facilities for the tunnels can only be theorized. The tunnels will be pumped out via a pump station at Jones Island. The cost of the pump station and force main is:

	<u>Capital</u> <u>(x \$10<sup>6</sup>)</u>	<u>Annual</u> <u>O&amp;M</u>	<u>NPW</u> <u>(\$x10<sup>6</sup>)</u>
Pump Station	\$13.97	\$80,000	\$14.66
Force Main	7.30	400	6.66
Total	21.27	80,400	21.32

Electricity would be supplied by the Wisconsin Electric Power Company.

754. The MMSD feels that the 9.5 acres at Jones Island and 30 acres at South Shore needed for lakefill are the most cost-effective, environmentally sound, and politically acceptable methods for the MMSD to acquire new land while minimizing impacts to existing land use.

However, the DNR and the EPA have requested that the MMSD consider alternatives to their recommended lakefill plans. The DNR and the EPA options included smaller lakefill's or no lakefill at all. These alternatives are discussed in Appendices II, Jones Island and III, South Shore, and their accompanying addenda.

755. Your comments and suggestions have been noted.

756. The sentence referred to on page 18 regarding the step 3 funding assumption reads "For Step 3, however, only 60% funding was assumed (Wisconsin Fund only), with an annual maximum contribution of \$20 million." Table 11, the pessimistic funding assumption, shows the annual grant-funded dollars. These annual grant amounts reflect \$20 million (maximum) from the Wisconsin Fund for step 3 and 75% funding of steps 1 and 2. The result is, as the table indicates, that the total MWPAP is only 23% funded under the pessimistic assumption.

If it is felt that 23% is high, please refer to the worst case analysis in Section 3.0 of the Appendix X Addendum which assumes 0% funding. Assuming there would be 0% funding (and assuming 6% interest on the bonds), the average annual 1985-2005 equalized tax rate (for the MWPAP) would increase from \$4.37/\$1000 equalized value to \$6.80/\$1000 equalized value (an increase of 56%).

757. The land used in Franklin represents a fraction of the nearly 70,000 acres that can receive MMSD sludge. In a given year, the MMSD might apply to 5,000 acres.

758. For an assessment of groundwater impacts see the geotechnical report in the Addendum to Appendix V, Combined Sewer Overflow Abatement.

759. For a discussion of the effects of various funding assumptions and cost distribution methods, see the Fiscal/Economic Appendix and Section 3.0 of the Addendum to Appendix X.

760. Comment noted.

761. For a discussion of the fiscal impacts of the MFP on renters and citizens with fixed incomes, see Sections 9.0 and 10.0 of the Addendum to Appendix X.
762. The revised Water Quality Appendix (Section 1.1) describes the effects of the pollutants studied in the water quality analyses. These include ammonia, biochemical oxygen demand, cadmium, chlorine, copper, dissolved oxygen, dissolved solids, fecal coliform bacteria, lead, nitrogen, pH, phosphorus, suspended solids, temperature, and zinc. The Addendum to Appendix IV, Solids Management discusses the impacts of toxic substances on land application and landfill in the sections on industrial wastes, priority pollutants, public health, and water quality.
763. The form and bio-availability of plutonium is controlled by a receiving waters pH and dissolved solids composition, not its oxidation state. In Lake Michigan, most plutonium enters the lake system through atmospheric loading and is deposited in the Lake's bottom sediments (Alberts J.J., et al., Environmental Science and Technology, Volume II, #7, pp 673-675, July 1977). Chlorination processes in a WWTP have little or no impact on the lake assimilation processes involving plutonium.
764. Long-term health problems are discussed at length in the Addendum to Appendix IV, Solids Management and again in the Addendum to Appendix II, Jones Island. Industrial waste pretreatment is also discussed in the Addendum to Appendix II.
765. Comment noted.
766. Comment noted.
767. Fish caught in Lake Michigan and sold commercially are regulated by the U.S. Food and Drug Administration when sold for interstate commerce and by the Wisconsin Division of Health when sold for intrastate commerce. The PCB limit allowed under both regulations is 5 ppm. No qualification is made with regard to a certain amount of fish per week.

Because fish caught in Lake Michigan by sportsmen may exceed the PCB standard, the Wisconsin Division of Health advises that "consumers avoid eating more than one meal or 1/2 pound per week of the fish listed below; and that lactating mothers, expectant mothers, and any females who anticipate bearing children, not eat any of these fish. The Division of Health also

recommends that children ages 6 and under not eat these fish.... (C) Lake Michigan - Trout and salmon over 20 inches in length and carp." (Wisconsin Fishery Regulations 1985-1982).

- 768. The Addendum to Appendix II, Jones Island, discusses alternative forms of disinfection, including chlorination/de-chlorination, bromine chloride, and ozone. UV light is briefly discussed. Algae and muriatic acid disinfection were not feasible alternatives. In addition, the addendum addresses safety and hazards of handling chlorine liquid and gas.
- 769. The intent of the quoted statement was to point out that an extensive boring and subsurface investigation program was being conducted by the MMSD, and final data were not available from the District at the time the draft was published. These data have since been released and are included in the geotechnical addendum.
- 770. See Section 3 of the Fiscal/Economic Appendix Addendum for a 0% funding alternative.



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