

**TECHNICAL PROPOSAL AND JUSTIFICATION
FOR REVISING THE 1987 ANNUAL/BIENNIAL
REPORTING FORMS AND DATA SYSTEM**

DRAFT

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TABLE OF CONTENTS

<u>Chapter</u>	<u>Page</u>
1. INTRODUCTION.....	1-1
A. BACKGROUND.....	1-1
B. ADVISORY COUNCIL RECOMMENDATIONS.....	1-2
C. ORGANIZATION OF PROPOSED REPORTING FORMS.....	1-4
D. IMPLEMENTATION OF THE REVISED FORMS.....	1-12
E. REQUIRED REGULATORY CHANGES.....	1-13
F. OUTLINE OF THE REPORT.....	1-14
2. REGULATORY STATUS.....	2-1
A. INTRODUCTION AND OVERVIEW.....	2-1
B. ADMINISTRATIVE REQUIREMENTS FOR THE DATA.....	2-1
C. POLICY OPTIONS.....	2-2
D. DATA AND INFORMATION REQUIREMENTS.....	2-3
E. USEFULNESS OF CURRENT DATA.....	2-5
F. DESCRIPTION OF THE PROPOSED FORMS.....	2-6
G. SAMPLE OUTPUTS AND USES OF THE DATA.....	2-10
H. PROS AND CONS OF THE PROPOSED SYSTEM.....	2-19
3. WASTE QUANTITY AND PROCESS TRACKING.....	3-1
A. INTRODUCTION AND OVERVIEW.....	3-1
B. ADMINISTRATIVE REQUIREMENTS FOR THE DATA.....	3-2
C. POLICY OPTIONS.....	3-3
D. DATA AND INFORMATION REQUIREMENTS.....	3-3
E. USEFULNESS OF CURRENT DATA.....	3-7
F. DESCRIPTION OF THE PROPOSED FORMS.....	3-10
G. SAMPLE OUTPUTS AND USES OF THE DATA.....	3-14
4. WASTE CHARACTERIZATION.....	4-1
A. INTRODUCTION AND OVERVIEW.....	4-1
B. ADMINISTRATIVE REQUIREMENTS FOR THE DATA.....	4-2
C. POLICY OPTIONS.....	4-2
D. DATA AND INFORMATION REQUIREMENTS.....	4-3
E. USEFULNESS OF CURRENT DATA.....	4-6
F. DESCRIPTION OF THE PROPOSED FORMS.....	4-7
G. SAMPLE OUTPUTS AND USES OF THE DATA.....	4-8
5. CAPACITY ASSESSMENT.....	5-1
A. INTRODUCTION AND OVERVIEW.....	5-2
B. ADMINISTRATIVE REQUIREMENTS FOR THE DATA.....	5-2
C. POLICY OPTIONS.....	5-3
D. DATA AND INFORMATION REQUIREMENTS.....	5-3

TABLE OF CONTENTS (cont'd)

<u>Chapter</u>	<u>Page</u>
E. USEFULNESS OF CURRENT DATA.....	5-7
F. DESCRIPTION OF THE PROPOSED FORMS.....	5-7
G. SAMPLE OUTPUTS AND USES OF THE DATA.....	5-9
6. WASTE MINIMIZATION.....	6-1
A. INTRODUCTION AND OVERVIEW.....	6-1
B. ADMINISTRATIVE REQUIREMENTS FOR THE DATA.....	6-1
C. POLICY OPTIONS.....	6-3
D. DATA AND INFORMATION REQUIREMENTS.....	6-4
E. USEFULNESS OF CURRENT DATA.....	6-4
F. DESCRIPTION OF THE PROPOSED FORMS.....	6-5
G. SAMPLE OUTPUTS AND USES OF THE DATA.....	6-10
H. PROS AND CONS OF THE PROPOSED SYSTEM.....	6-10
7. ANNUAL/BIENNIAL REPORTING SYSTEM.....	7-1
A. PROJECT OVERVIEW AND SYSTEM CONCEPT.....	7-1
B. SYSTEM OVERVIEW AND DATA FLOWS.....	7-3
C. ISSUES.....	7-7

APPENDICIES

- A. Draft Revised Forms for the Annual/Biennial Report.
- B. Draft Instructions for the Revised Forms
- C. System Flow Diagrams for Report Data System
- D. Project management Plan for the Report Data System

CHAPTER 1

INTRODUCTION

A. BACKGROUND

A proposal for revising the EPA standard forms used by generators, treaters, storers, and disposers of hazardous waste in reporting their hazardous waste activities to States and EPA regional offices is presented in this paper. EPA requires states to collect hazardous waste information on a biennial, annual, or more frequent basis under the Resource Conservation Recovery Act (RCRA) of 1976, for use by the agency, and State agencies, in the planning and evaluation of hazardous waste regulatory programs. The information is also valuable for reporting to Congress, state legislatures, and the public on locations, quantities, and disposition of the waste. The mandate for EPA to require handlers of regulated wastes to submit reports biennially appears in 40CFR, sections 262.41 and 264.75. In addition to addressing well-known problems with the current biennial report (see "Designing a More Effective Hazardous Waste Reporting System: A Background Paper," National Governors' Association, Center for Policy Research, January 30, 1987), the proposed new forms have been designed not only for covering wastes regulated as hazardous under RCRA, but to be suitable as well for state-regulated hazardous wastes. This design feature has been incorporated to encourage state adoption of the form for their own reporting purposes.

The proposed forms included in this paper are an outgrowth of two prior meetings of the RCRA Annual/Biennial Reporting System Advisory Council, each preceded by widely circulated discussion papers. The first meeting was conducted on February 11, 1987, and the second on April 30 - May 1, 1987. The Advisory Council, which was formed at EPA's request by the National Governors' Association (NGA), consists of representatives from States, the RCRA regulated community, interested outside information users (including environmental groups), and EPA's Office of Solid Waste (OSW) and Regional Offices. In addition to recommending the revised form to EPA, the Council, in subsequent meetings, will consider three remaining aspects of the biennial reporting system:

- Reporting Considerations -- Mechanisms that may ease handlers' reporting burdens, including the use of electronic data-transfer techniques;
- Data Processing -- Development of an automated system for managing data reported on State and EPA computers, including screen entry, automated editing, and retrieval of standard reports;
- State Reporting to EPA -- Issues concerning the flow of data from States to EPA, including the extent of EPA access to handlers' reporting records, and interfaces between State Annual/Biennial Report data bases and the Resource Consideration and Recovery Information System (RCRIS).

In its first meeting, the Advisory Council reached consensus on five

priority information areas that deserved attention in revising the RCRA reporting system and EPA's standard forms:

- Waste Quantity and Processing Tracking -- Quantities of RCRA and State hazardous wastes generated, the sources of such quantities, and the manner in which such quantities are subsequently managed including quantities transported off-site and their various destinations, the specific quantities managed both on-site and off-site in intermediate storage and treatment processes, and the actual quantities of hazardous wastes ultimately disposed of.
- Waste Characterization -- Nature of wastes regulated under RCRA and associated State regulatory programs including data on intrinsic hazards posed by such wastes, their physical form and chemical composition, and other information necessary to assess the human health and environmental risks posed by managing such wastes.
- Regulatory Status -- Reporting year status of hazardous waste handlers regulated under RCRA and associated State regulatory programs including that which is necessary to determine which handlers are required to report, and the numbers of handlers falling within general categories of RCRA and State hazardous waste regulatory programs during the reporting period.
- Waste Minimization -- Handlers' practices and accomplishments in reducing both the quantities of hazardous waste generated at the source and its residuals, and the nature of the hazards posed by such wastes.
- Capacity Assessment -- Amount of capacity remaining at the end of the reporting period for processes used in treating, storing, and disposing of hazardous wastes including information describing any changes in process capacity that occurred during the reporting period, and the extent to which remaining processing capacity is available to meet future demands or the overall supply of such capacity.

B. ADVISORY COUNCIL RECOMMENDATIONS

In addition to general comments like "keep the form as simple as possible," and to the extent possible, "the annual/biennial report process should make use of the data available in the 'manifest' system, and be compatible with it," specific requirements for each of the five information areas above were identified during the Council's second meeting. These requirements were used by staff to guide them in producing the current drafts of the revised EPA forms. The following section summarizes these requirements:

- Waste Quantity Tracking
 - Generators should identify and quantify each waste type generated during the reporting period at the reporting establishment.

- Generators should indicate for each waste type their understanding of the ultimate method of disposal.
- Mode of transport and destination should be reported for generated wastes which are treated and disposed of off-site.
- TSDs should indicate the generation source for each waste type received from off-site.
- TSDs should report sequences of handling methods applied to each reported waste type.
- Handling method codes used for TSD reports should include all 3 character codes listed in EPA's current hazardous waste regulations.
- Quantities of intermediate products in a sequence of handling methods will not be required.
- Hazardous residues of handling methods should be reported as generated wastes.
- A 3-character code for "transfer station" operations should be included as a handling method.

Provision should be made for reporting what happens to hazardous wastes that are fuel-blended.

- Process Quantity Tracking

- TSDs should report aggregate quantities of hazardous waste handled by each handling method.
- Waste handlers should submit information describing their "permitted and available" handling capacity for hazardous wastes.
- Information on hazardous waste handling capacity available to persons other than the respondent should be collected including "how much is for them and how much is for others".
- Waste handlers should indicate any plans (e.g., as exemplified by a permit application, etc.) to make changes in their waste handling capacity.
- Some indication should be provided as to whether the available handling capacity is dedicated for hazardous waste or that may be used for both hazardous and non-hazardous waste.

- Waste Characterization

- Waste stream data should be characterized on the basis of: (1) the current 4-character EPA Waste Codes; (2) physical form; and

(3) a limited number of other characteristics. Possible candidates include: (1) acid/base; (2) percent solid/liquid; (3) organic/inorganic; (4) halogenated/non-halogenated; and (4) presence of reactive anions.

- Regulatory Status

- All regulated parties except for small quantity generators should report detailed, quantifiable, hazardous waste handling information. Small quantity generators would be required only to update relevant regulatory status information.

- Waste Minimization

- Generators should provide general information on their efforts to minimize waste along with data on their past practices. All information would be provided on a waste stream basis by SIC code.

- Subjective questions should be avoided as well as questions about future practices.

- The instrument should include some sort of production change indication ratio per SIC code by facility.

- Toxicity should be addressed in narrative form.

- All of the information collected should be quantifiable to the extent possible.

For the most part, the draft forms included in this proposal follow closely the guidance provided by the Advisory Council. There are several exceptions, most notably in the areas of: (1) waste characterization where complementary waste description code information is solicited for the purpose of compiling basic information on the physical and chemical nature of reported wastes; (2) waste quantity tracking, where a new listing of handling codes is recommended; and (3) process quantity tracking, where information is sought regarding the "availability" of waste handling capacity. Differences between the guidance provided the Advisory Council and the draft forms were mainly due to requirements identified by EPA as necessary in fully carrying out its regulatory mandates and are included for the Council's consideration. Other extensions to the forms were necessary in order to make the Annual/Biennial Report data more compatible with other EPA data collection efforts (e.g., RCRIS).

C. ORGANIZATION OF PROPOSED REPORTING FORMS

Copies of the draft reporting forms are included in Appendix A. The complete set consists of ten individual forms, including a respondent identification form, a form to assist handlers in determining who must report and what forms are to be reported, and a Regulatory Status form. A complete list of the proposed reporting forms and their functions is provided below:

- Form IC: Identification and Certification

- Confirm or report location and mailing addresses.
- Report 4-digit SIC codes for site.
- Report tank accumulation capacity.
- Sign standard certification statement.

- Form FS: Form Selection

- Indicate whether site generated (large quantity), shipped, or received RCRA hazardous wastes.
- Indicate whether site generated wastes required to be reported only by the state.
- Indicate whether site processed hazardous wastes in RCRA or RCRA-exempt units (excluding accumulation), or whether such units exist at the site.
- Indicate whether site has "active" (i.e., not formally withdrawn) Notification or Part A status for activities not occurring in reporting year (directs appropriate sites to Regulatory Status form).

- Form RS: Regulatory Status

- Indicate whether site was a RCRA small quantity generator, a RCRA conditionally exempt small quantity generator, or a generator regulated under state quantity limits.
- Indicate whether specifically excluded wastes were generated or processed at the site.
- Indicate whether the site has ever generated or processed hazardous wastes, if such wastes are expected to be generated or processed in the future and, if not, why the site filed a Notification or Part A.

- Form WD: Waste Description

- Describe all hazardous wastes generated, shipped, received, or processed during the reporting year.
- Establish reference number for use on remaining forms.
- Processors provide extended characterization.

- Form PG: Primary Waste Generation

- Quantify all hazardous wastes generated from primary processes during the reporting year (excludes hazardous wastes generated as a result of hazardous waste processing operations (e.g., incinerator ash from F001)).
- Reference wastes described on Form WD.
- Provide comparable quantities for previous year to assess waste minimization.
- Describe industrial process(is) or other process(is) that generate hazardous wastes.

- Provide production ratio(s) for hazardous waste generating operations.
- Indicate changes in toxicity and reasons for changes in toxicity or volumes from previous year.
- Indicate management sequence for waste (general codes for generators; detailed codes for processors).
- Form WM: Waste Minimization
 - Answer Yes/No and Multiple Choice questions about waste minimization efforts and activities at the site.
- Form SO: Waste Shipped Off-Site
 - Reference wastes described on Form WD.
 - Report quantity shipped or to be shipped, ID number of receiving facility, number of shipments, transport mode, transport container, and off-site management sequence (general codes).
- Form RO: Waste Received From Off-Site
 - Reference wastes described on Form WD.
 - Report quantity received, ID number of generator, number of shipments received, and on-site management sequence (detailed codes).
- Form OI: Off-Site Identification
 - Indicate the name, location, and ID number for each facility that hazardous wastes were shipped to, or generator hazardous wastes were received from, and the site's relationship to the generator/facility.
 - Indicate ID numbers and name only for all transporters used during the reporting year.
- Form PS: Waste Management Process Summary
 - Describe all existing hazardous waste management processes (including RCRA-exempt processes that handle hazardous wastes but not including accumulation tanks or containers).
 - Report remaining capacities for each process (different formats for storage, single unit treatment, multiple unit processes, and landfills), and indicate limiting factors affecting calculation.
 - Describe planned changes in process capacity, and indicate when changes are expected to occur.
 - Quantify and generally describe total influents to process; indicate percent hazardous.
 - Quantify and generally describe non-hazardous effluents from process.
 - Quantify and reference wastes described on Form WD that are hazardous residuals from the process.

The organization of the proposed form package is the result of considerable deliberation. A number of alternative organizational approaches were evaluated. Emphasis was placed on minimizing aggregate respondent burden by grouping items common to specific classes of handlers together on the same forms. Clarity in identifying which handlers are required to file and in instructing respondents to the appropriate forms was also stressed. In addition to addressing the functional specifications developed by the Advisory Council, the development team considered ways in which the reporting forms could be used to support State-specific reporting requirements, and be tied into other existing reporting systems such as manifest reporting, waste registration systems (as in Texas), etc.

The proposed set of reporting forms are distinguished from EPA's current reporting forms in two significant ways: (1) there are a greater number of data elements required to be reported; and (2) these data elements are spread across a greater number of forms. The increase in the number of reportable data elements is somewhat deceiving because many of the items that appear as new questions or columns on the proposed forms were, in fact, required on the existing forms in less formal ways. Many of the items on the Primary Generation form, for example, describe the process that generated a hazardous waste. While these items do not appear as formal elements in the existing forms, a careful reading of the instructions to the narrative waste description item will reveal that similar or identical information about the process was asked for the waste description. Similar statements can be made about many of the items on the Waste Description form and the Waste Minimization form. Accordingly, the increase in the number of reportable elements is not as great as the sheer increase in forms would suggest. Much of the increase is a result of formalizing existing requirements to ensure that the data obtained through these requirements are useful.

There is, nonetheless, an increase in the amount of information to be reported in the proposed forms. There are two major reasons behind this increase: a greater emphasis on supporting sound waste minimization analyses (at both the site level and industry-wide); and the Advisory Council's decision to expand the reporting system to support analyses of hazardous waste processing capacities. Waste minimization is emerging as perhaps the key issue to be addressed in the long-term development of the RCRA and other waste management regulatory programs. Significant new legislation in this area is pending in Congress and in many state Legislatures. Accordingly, increasing the waste minimization reporting requirements beyond the simple narrative statement required for 1985 is clearly warranted. In addition to providing necessary information to federal and state regulators, waste minimization reporting can be helpful to the regulated community in demonstrating the results of their own efforts to reduce the quantity and toxicity of their hazardous wastes.

The decision to expand the reporting system to support capacity availability analyses was made largely in response to the new state capacity certification requirements enacted in the Superfund Amendments and Reauthorization Act (SARA). Previously, the RCRA reporting system dealt primarily with the demand side of the capacity equation, focusing on quantifying hazardous waste generation. With the increasing emphasis on

knowledge of available processing capacities brought on by the SARA requirements and the need to establish effective dates for land disposal restrictions, the need for comparable information on the supply side of the capacity equation became apparent. Obtaining data to support both sides of the analysis from a single source, the RCRA reporting system has the advantages of consistency in definitions and scope, efficiency in avoiding duplication in reporting requirements, and convenience in analyzing data already assembled into a single repository. Much of the expansion in the number of reportable items results from the capacity concern.

Aside from the increases related to capacity and waste minimization analyses, there are not a great many new reporting items in the proposed forms. The organization of these reporting items has, however, changed significantly. This change in organization is due to the need to include more reporting items, but is driven primarily from concerns about ambiguities that result from the current organization. The two-form format represented by the 1985 forms lumps a number of functions together, resulting in substantial difficulties in analyzing the reported data. Hazardous waste generation, for example, is difficult to determine in many cases under the two-form format. The current Generator form is in actuality a shipper form, since it addresses primarily wastes that were shipped off-site during the reporting year. Not all wastes shipped off-site during a reporting year were actually generated during that year, but such wastes do show up in manifest tracking systems and are reported currently as if they all were generated in the reporting year. Additional generation quantities are reported on the current Facility form. Here, however, hazardous waste generation that is actually "regeneration", or generation resulting from the processing of already reporting hazardous wastes, can not be distinguished, resulting in double, triple, and further counting of waste quantities.

Accordingly, a premium was placed on designing the new forms to clearly quantify "primary" generation (all hazardous waste generation except that generated as treatment or other residuals from hazardous waste processing operations). Waste shipments and receipts are reported separately to avoid confusion over what quantities were actually generated at a site. Previously, these functions were all combined.

A second organizational area that distinguishes the proposed forms from the 1985 forms is in how waste processing operations are reported. The 1985 forms lump processing and generation together under a single quantification, resulting in an inability to quantify actual processing quantities. Much extrapolation is currently required to perform comparisons of quantities of hazardous wastes land disposed vs. quantities treated in incinerators, etc. The proposed forms address this concern, pursuant to the Advisory Council's guidance, by obtaining quantities of hazardous wastes processed in-total for each process. Processing patterns for individual generated hazardous wastes are reported as a sequence of codes associated with the total quantity of the waste generated during the reporting year. These two items allow for waste management by process for different types or different generators of hazardous waste, and enable aggregate comparison of the utilization of different types of processing techniques.

The item that most clearly distinguishes the proposed forms from the 1985 forms is the waste referencing system built into the proposed forms. All wastes managed at a site are described in one place, the Waste Description form, and are then referenced by Waste Description form page and line number on the Primary Generation form (if any of the waste was generated from primary processes at the site), the Waste Shipped Off-site form (if any quantity of the waste was shipped off-site during the reporting year), the Received From Off-site form (if any of the waste was received from off-site), and the Process Summary form (if any of the waste was generated as a result of hazardous waste processing operations). Use of a referencing system has a number of advantages over the current system. One major advantage is that facilities that manage similar or identical wastes from many different sources or customers need only describe the waste once. The waste is then simply referenced when identifying the quantities received from each generator. Solvent processors that deal with numerous customers are prevented in this way from having to repeat descriptions of largely identical wastes. Commercial disposal facilities that receive similar wastes from different sources will also benefit from the adoption of a referencing system. The referencing system is necessary for greater clarity in distinguishing quantities generated from those shipped or received. Currently, a single quantity identifies generation and shipment. Under the referencing approach, the actual quantity of a waste that was generated at the site is reported in one place, the quantity of the same waste that was shipped off-site during the reporting year is reported in another. These two quantities are frequently not identical, as quantities shipped may include quantities that were generated in previous years, and all of the waste that was generated during the year may not have actually been shipped off-site during the year. Under the referencing approach, these quantities are each linked to single place where the waste stream is fully described. The referencing system avoids the need to repeat waste descriptions whenever different management operations associated with the waste are described. In this way the referencing system has enabled the proposed reporting forms to be printed on standard 8.5 by 11 inch paper.

The waste referencing system also has a long-term advantage in that it can be related easily to separate waste reporting systems. In the State of Texas, for example, where generators are required to "register" their hazardous wastes with the State by providing extensive descriptions and characterizations, the waste referencing system could simply reference the State-assigned waste registration number, provided that the wastes generated or otherwise managed at the site still fit the descriptions submitted previously to the State. EPA is currently investigating the need for a RCRA testing rule that would require development of the same kinds of data that are required to be reported under the new forms. To the extent that such rules take effect, characterizations developed in accordance with them may simply be referenced, not repeated in each year's Annual or Biennial Report.

The waste referencing system also enables states to obtain information beyond that required in the proposed forms by developing additional forms of their own and including the waste referencing item, as opposed to redesigning the proposed forms to build in their own items. In this way, for example, the State of Washington can require handlers to report the quantities of each

waste shipment, including reporting the manifest number of each shipment and any additional data that are not already known from items that appear on the proposed forms. The sum of the quantities shipped over the year to each different facility, as well as the total number of shipments, should equal the numbers reported by the handlers on the proposed Waste Shipped Off-site form, enabling easy checks on the accuracy of the State-required data.

Recognizing that adoption of a referencing mechanism adds a degree of complexity to the reporting requirements, emphasis is placed on making it easy for handlers to use. The page and line number approach minimizes the likelihood of reporting error, since the only variable that is not actually preprinted on the form is the Waste Description form page number (this is because only one page of each form type is expected to be included in State mailouts; handler will make copies of multiple page forms). Accordingly, the waste referencing system is seen as a significant enhancement of the reporting system, easing respondent and processing (reduced key-entry) burdens and providing links to other existing and future state-specific reporting requirements, all without increasing the likelihood of respondent error.

Another distinguishing feature of the proposed reporting forms over the 1985 forms is that managers of facilities that process hazardous wastes are asked to provide more waste characterization information than are handlers that simply generate hazardous wastes and ship them off-site. The rationale for this distinction is that operators of waste processing operations are more likely to have the desired data on hand for reporting purposes than are those who generate only. Most commercial facilities require substantial waste characterization information to be developed prior to processing the wastes they receive. On-site managers need to ensure that the wastes flowing through their processes meet their design or permit requirements. Concern over the quality of information reported suggested that the extended characterization items be obtained only from those most able to provide them, the facility managers. On the other hand, information about the processes responsible for generating hazardous wastes (except for hazardous wastes regenerated from hazardous waste processing operations) is obtained only from the generators, not from facilities that only manage other handlers' wastes. A similar distinction in generator vs. facility reporting is made in the description of the processing sequence applied to a waste. Currently, the federal forms do not require generators to supply any information about what happens to the wastes they generate other than to identify the facility to which their waste was shipped. Facility operators were only required to report the final disposition of the wastes they managed. Under the proposed reporting forms, generators are asked to report in general terms what they expect to happen to the wastes they ship off-site (similar to the New York requirements), and facility managers are asked to report the actual sequence of management processes, using more detailed codes, that were applied to the wastes they managed. The distinction between generator and facility reporting here is based on assessments that generators are less likely to know the details of the waste management process, but ought to know the ultimate disposition of the waste they generate, while facility operators can reasonably be expected to report the actual processes that they applied to the wastes they manage (note, however, that pursuant to the Advisory Council's guidance, facility

managers need only report the sequence of management process codes and do not have to identify the quantities of each waste as it enters each subsequent process).

State and EPA Regional Office processing burdens were also considered extensively in the design of the reporting forms package. The forms are designed to be accompanied by computer-generated mailing and site location labels. The mailing label is affixed to the outgoing envelope. The location labels are to be affixed by handlers to any forms they are required to complete. The handler Identification and Certification form is designed to minimize implementor data entry by asking first whether the information included on each label type is correct. Only data that are incorrect on the labels need be reported by handlers and entered by implementors. Bar-coding the RCRA identification numbers on these labels is being investigated to further ease processing burden through the use of optical character readers and wands. Furthermore, having handlers affix preprinted labels on each page of their report reduces respondent burden and the likelihood of errors in either reporting or key-entering RCRA identification information. Use of the labeling system will make it easier for implementors to process the large volume of reports from small quantity generators who, unless instructed to complete further reporting by their State (as in New York), are required only to complete the Identification, Form Selection, and Regulatory Status forms. For this large group of respondents, the only data that will need to be key-entered if existing data are correct are the site's RCRA ID number (which may be optically read) and less than ten Yes/No answers requiring single key strokes for entry.

The final significant difference between the proposed forms and the 1985 forms is that handlers that process hazardous wastes in units or processes that are exempt from RCRA permitting requirements (e.g., NPDES-permitted tank treatment of hazardous wastes) are none the less required to report information about such processes and the hazardous wastes they manage in such processes. The rationale for this requirement is that exempt processes account for the management of large quantities of generated hazardous wastes (see Figure 1). It is important that these quantities be reported in determining the total quantity of hazardous wastes generated, and that the management of these large quantities be properly accounted for in the hazardous waste system. Under the proposed system, all wastes that meet the definitions of hazardous wastes are reported, even if they are subsequently managed in processes exempt from RCRA permitting requirements, enabling for the first time a complete assessment of the nature and scope of the entire hazardous waste system. Exempt processes are clearly identified, as are the wastes that flow through them. Concerns over the large volumes of wastewater that are frequently reported as hazardous wastes are also addressed in this manner, allowing for separation of these quantities and processes in reporting hazardous waste information to Congress, legislatures, and the public.

The form package divides instructions into a separate booklet. This allows handlers to refer to instructions or definitions without turning away from the form they are working on, easing respondent burden. All terms that might require definition are printed in italics and formal definitions are included in the instructions. A conservative approach was taken here: when in

doubt about the familiarity of a term, the term is defined.

The reporting form design team recognized that implementation of the proposed reporting forms during the 1987 reporting cycle would present problems due to the lack of prior notice to handlers as to what would be required to be reported. Some of this concern is addressed in differentiating generator and facility reporting requirements, asking for necessary data only from those most likely to have it without prior notice. The report forms also allow handlers to report data at many different levels of aggregation, even though the data are desired at specified levels of disaggregation. If, for example, waste quantities at a site can not be broken out by individual generating process for 1987, waste quantities can be grouped up to whatever level of detail the site can report. Economic activity information associated with the generating processes, required to evaluate changes in generation from those same processes, would then also be aggregated to the same level as the waste quantities, ensuring consistency in the reported data.

Nonetheless, it is expected that many handlers will not be able to complete certain items included in the proposed forms for the 1987 reporting cycle. The elements included, however, represent the elements deemed necessary to support sound regulatory analyses and management of the regulatory program, within the guidance parameters specified by the Advisory Council. These are the items that are needed now and in the future. Including them on the 1987 forms is an effective way of communicating the reporting requirements to the regulated community, so that in the future, required data will be available from existing records maintained by handlers. The 1987 reporting cycle is also a testing cycle for the revised reporting system, so it is desirable to include all elements that are anticipated to comprise the system during the test phase. NGA and the report form design team will, however, work with industry groups during the month prior to the next meetings of the Advisory Council to better assess the acceptability of the proposed forms.

D. IMPLEMENTATION OF THE REVISED FORMS

Use of the revised reporting forms is meant to be voluntary during the 1987 reporting cycle for all non-authorized states and mandatory in 1989 (1988 if an annual reporting cycle is adopted), thus providing a field test of the revised standard EPA forms. A recent NGA survey indicated that 25 states were interested in using the revised forms during the 1987 reporting cycle, the final number being dependent upon their complexity and eventual date of availability. Many other states would have opted to use the forms during the first year, but because of the need for possible changes in State regulations were unable to do so.

Few problems are anticipated in the ability of the respondent to fill out the revised forms. The Form Selection questionnaire (Form FS) should help to clarify and properly direct the respondents to those forms which must be filled out and, thus, should reduce any confusion in this regard. Additionally, the detail provided in the Regulatory Status questionnaire (Form RS) should allow the handler to readily determine those forms that apply to their site.

Small facilities may have some difficulty in completing the detail on processes, waste characterization, and available treatment, storage, and disposal capacity. If they are unable to provide this information, certain gaps will exist in the national data base being developed but this will mainly be with respect to the level of detail. The forms have been developed so that, at the very least, the more aggregate information will still be available at the national level. Through the use of statistical techniques and recent survey data, it will be possible to fill-out the missing data.

E. REQUIRED REGULATORY CHANGES

With regard to generators, only active, large quantity generators are subject to the biennial reporting requirements under the present regulations. However, the alternative selected for the Regulatory Status section also requires that small quantity generators (SQG's) and inactive generators (including conditionally exempt SQG's) with ID numbers to file the Regulatory Status section of this report.

This additional reporting requirement for small quantity and inactive generators could, legally, be implemented through the use of Section 3007 of RCRA which requires all generators and handlers to provide information on hazardous waste activity when requested by the Agency. EPA has used this authority to conduct a variety of surveys. It was also the authority cited in the 1985 Mail Survey. A similar approach would be to use 40 CFR 262.43, which allows the Administrator to request that generators furnish additional information on the generation and deposition of hazardous wastes. Small quantity generators are subject to this requirement even though they are exempt from the Biennial Report under 261.44. The advantage of invoking Section 3007 of RCRA or 40 CFR 262.43 is that the time requirements are much shorter than is the case for a regulatory change. Given the tight time constraints, this approach is advantageous for the 1987 Survey. The major disadvantage of using 3007 of RCRA and 40 CFR 262.43 is that OMB approval would be needed each year the Biennial Report survey is conducted. 40 CFR 262.43 has the additional disadvantage that it may not apply to conditionally exempt small quantity generators since they are not subject to Part 262 of RCRA.

Because of the disadvantages of using Section 3007 or 262.43 on an annual or biennial basis, a regulatory change would be desirable for the 1989 and subsequent surveys. One approach for such a change would be to expand the special reporting requirements of small quantity generators, outlined in 40 CFR 262.44, to include the Biennial Report. However, generators with EPA ID's who are inactive or who are conditionally exempt small quantity generators, during a survey year, would still be exempt from the Biennial Report in those years that these conditions apply. Thus, a better approach would be to alter 40 CFR 262.12 which covers notification of generation activities. As 262.12 presently reads, this notification is required only once, at the time of obtaining an EPA ID number. An additional requirement could be added to 262.12 requiring annual/biennial notification of regulatory status for all generators with an EPA ID number. The Annual/Biennial Report could be the stipulated vehicle for accomplishing this requirement.

With regard to TSD facilities, Part 264.75 (and 265.75) is not clear if these facilities are required to file a Biennial Report for a survey year in which they are inactive. Consequently, a regulatory change would likely be necessary to clarify the reporting requirements for these sites. However, given the tight time constraints for the 1987 survey, use of Section 3007 of RCRA would likely be necessary to clarify the reporting requirements of inactive TSD facilities.

F. OUTLINE OF THE REPORT

Each of the five information areas identified by the Advisory Council is addressed in a separate chapter of this background paper. Each discusses the rationale of staff in responding to the guidance provided by the Advisory Council, along with the legal requirements for the information sought, policy options from which the pertinent questionnaire section was selected, information required to address the policy issues, and the usefulness of relevant data which is currently available. Each chapter also provides a description of the proposed form section, sample outputs and analyses planned for the data, and perceived advantages and disadvantages of the proposed form.

In addition to this introduction, the outline of the report is as follows. Chapter 2 discusses regulatory status, Chapter 3 discusses waste and process tracking, Chapter 4 discusses waste characterization, Chapter 5 discusses capacity assessment, and Chapter 6 waste minimization. Finally, Chapter 7 provides a discussion of the data processing system being proposed and several issues that require the attention of the Advisory Council. A series of Appendices are also included in this report including copies of the revised draft forms and instructions, data flow diagrams, and a project management plan for development of the reporting data system.

CHAPTER 2

REGULATORY STATUS

A. INTRODUCTION AND OVERVIEW

The regulatory status section of the biennial report form serves the following two major objectives:-

- To establish that regulated activities were actually conducted at reporting sites during the survey year, and to signal to these sites that they must answer all applicable parts of the biennial report.
- To identify reasons why inactive (including small quantity) generators and/or facilities did not, during the reporting year, conduct specific regulated activities listed in Notification Forms or Permit applications for their site.

A secondary but still important objective of including a regulatory status section in the biennial report is to clarify who is subject to the reporting requirements in any new year. Such clarification is important to members of the regulated community, as they must determine reporting responsibilities, and also to State and Federal officials, who are responsible for enforcing the reporting requirements. A well designed Regulatory Status section could provide useful information on the nature and scope of the regulated community as a simple by-product of instructing the members of that community on what forms, if any, they are required to file for the reporting year.

This chapter describes the staff's approach to accomplishing the above objectives. A draft form is presented (in the Appendix), sample outputs are shown, and the uses of these data are discussed in detail. This discussion, however, is preceded by several sections which present the rationale for collecting regulatory status information. The topics covered include administrative requirements for the data, optional approaches, data and information requirements, and the usefulness of currently available data sources.

B. ADMINISTRATIVE REQUIREMENTS FOR THE DATA

State and Federal managers of the RCRA hazardous waste regulatory programs have a need to describe the numbers and types of handlers subject to Subtitle C regulatory requirements. These data are primary inputs to program planning, implementation (including enforcement) and evaluation activities.

All of the existing data sources, however, are inadequate to satisfy this need. The inadequacy of the data sources is discussed in detail in Section E. But in general, the major drawback of the existing data sources is that they are incomplete, inconsistent, and not updated routinely. These shortcomings are further compounded by the fact that some sites have differing levels of hazardous waste activity from year to year, which can change a site's status under the regulations. Additionally, in the early days of the RCRA program, many sites that did not need to file, filed protectively. Not

all of these sites have been removed from the existing HWDMS data bases.

As a result of these shortcomings, State and Federal managers are generally hard-pressed to report the number of sites at which regulated hazardous waste generation activities are actually occurring in any given year. While the situation is somewhat improved when describing the facility population, due to the greater degree of scrutiny applied to this subset and the more rigid requirements governing regulatory status (e.g., facilities continue to be regulated until formal closure proceedings have been conducted and specific reports filed), difficulty persists in distinguishing between allowed activities and activities actually conducted. The lack of a clear, current picture of which types of regulated activities are occurring complicates program planning, implementation (including program enforcement), and evaluation activities at both the State and Federal levels.

The annual/biennial reporting system offers an opportunity to augment the data describing allowed activities with reports on activities actually conducted during the reporting year. This information, combined with a regulatory status section, which carefully questions a respondent on why their site is exempt from the biennial reporting requirements, will result in more accurate, up-to-date counts of the population regulated under Subtitle C requirements. It will also help determine which facilities should not be included as part of the regulatory system and allow them to be removed from the list of regulated facilities. Additionally, RCRA program managers can distinguish between inactive and active sites, and determine if an inactive site will remain inactive. This improvement in data accuracy and quality will help State and Federal managers to better plan their RCRA regulatory programs. Additionally, if the regulatory status section is carefully structured, it will provide a mechanism for assessing compliance with the reporting system and also serve to instruct respondents on what their reporting requirements are under RCRA.

In summary, data on regulatory status can provide answers to the following policy questions:

- How many sites were subject to regulation in the survey year?
- Which sites were active during the survey year?
- Which sites should be removed from the regulatory program?
- Are sites correctly complying with the reporting requirements?

C. POLICY OPTIONS

This section briefly summarizes options which were considered as possible approaches to designing the Regulatory Status section and discussed in the paper presented at the Advisory Council meeting in May. The two major issues addressed in developing regulatory status options were:

1. What populations, within the universe of handlers subject to regulation under Subtitle C, should be required to comply with annual/biennial reporting requirements?

2. What information should be required for submission by various populations that are required to comply with the reporting.

With regard to the first issue, the broadest spectrum of populations considered required reporting by all entities that are required to obtain or have ever obtained EPA identification numbers under RCRA. The narrowest spectrum of populations considered required reporting by only active large quantity generators. The two reporting options considered were full reporting (i.e., completes all applicable quantity sections) and regulatory status reporting (i.e., reports regulatory status, only). These range of population/reporting options were combined such that six alternatives were developed for generators and two were developed for facilities. These alternatives are summarized in Table 2-1.

Alternative 2 was chosen for generators, requiring reporting from all sites which have an EPA ID number. Large quantity generators must complete the entire set of forms while small quantity and inactive generators with an EPA ID number need complete only the Regulatory Status form. This alternative provides critical information on small quantity generators and inactive generators without subjecting them to the much more burdensome quantity reporting. As such, this alternative represents the best compromise between: (1) minimizing the reporting burden for respondents, states, and regions, and (2) data availability for RCRA program managers. An additional advantage of Alternative 2 is that it provides those states that want quantity information from small quantity generators with the flexibility to obtain this information.

Alternative 1 was chosen as the alternative for treatment, storage, and disposal facilities because, of the two options examined, it provides the most complete information towards answering the policy issues raised in Section B. Additionally, it does not represent an increased reporting and processing burden either to the regulated population or to the states, because it is the approach used for the 1985 report.

D. DATA AND INFORMATION REQUIREMENTS

The main purpose of the Regulatory Status form is to determine why a site did not fill out the detailed "waste handling" sections of the Biennial Report. The regulatory section can indicate which sites: (1) should be removed from the regulatory programs (e.g., non-generators and non-handlers); (2) are periodic or one time generators; and (3) are subject to regulation but are not required to report. As such, the regulatory status section must cover the main reasons why a site is not providing information on the generation and handling of hazardous waste. To assure that respondents properly choose the options which correctly describe their reasons for not filing, the options listed in the regulatory status section must be carefully organized and worded. The selections must also clearly reflect the requirements and intent of the RCRA regulations.

To this end, six main reasons why a site would be exempted from providing detailed waste handling information were initially developed as follows:

Table 2-1

ALTERNATIVES DEVELOPED FOR PREVIOUS
ADVISORY COUNCIL MEETING
(May 1987)

Generators Reporting System Alternatives

Generator Population Group	Alternatives					
	1	2	3	4	5	6
Active	CA TX	FL OR	NY and NJ		EPA, 1985	-- --
Large Quantity	FR	FR	FR	FR	FR	FR
Small Quantity	FR	RSR	FR	RSR	--	--
Inactive						
Large Quantity	RSR	RSR	--	--	RSR	--
Small Quantity	RSR	RSR	--	--	--	--

Facility Reporting System Alternatives

Facility Population Group	Alternatives	
	1	2
Active	FR	FR
Inactive	RSR	--

Notes: FR = Full reporting required (Regulatory Status sections and any applicable "Quantity" sections).

RSR = Only Regulatory Status Section is required to be completed.

-- = No Reporting Required.

- The site meets the requirements of a small quantity generator or conditionally exempt small quantity generator;
- The site generates/processes only excluded or delisted or wastes;
- The site has never generated/processed hazardous waste;
- The site has stopped previous hazardous waste activities;
- The site is a periodic or intermittent generator/processor of hazardous waste; and
- The site has never generated/processed hazardous waste, but intends to in the future.

Under each topic a series of more detailed, selections were developed which help answer the policy questions raised in Section B: (1) how many regulated sites exist, (2) which sites are active, (3) which sites no longer belong in the regulatory system, and (4) are sites properly complying with the reporting requirements? To help answer the fourth question, a form selection section was added to regulatory status, which through a series of brief "yes" and "no" questions directs the respondents to those forms which they must complete. Additionally, it provides EPA and the states with enough information to determine if respondents are completing the proper sections of the form.

E. USEFULNESS OF CURRENT DATA

There are three major sources of regulatory status information: (1) Hazardous Waste Data Management System (HWDMS); (2) 1981 Mail Survey; and (3) State Uniform Manifest Systems. HWDMS is a large data base maintained by the Office of Solid Waste (OSW), containing information on sites regulated by RCRA. It includes several fields, which can be used together, to describe regulatory status. These indicators were utilized to develop the sample survey used as a cross-check of 1985 Biennial Report data. A major disadvantage of using these data fields for regulatory status is that they are not applied uniformly across states and regions. Additionally, this information is not available for all sites and it is not always complete for those sites which do have regulatory status information. This lack of completeness and consistency makes it difficult to answer the type of policy issues raised above. Also, there is no well developed mechanism to change the data in these fields to reflect a site's status change through time. A modification to this information occurs only through closure and the rare case where a site happens to file a modification.

The data from the "Notification of Hazardous Waste Activity Form" (EPA Form 8700-12) is a subset of HWDMS. This form must be completed by all sites handling regulated quantities of hazardous waste. The notification form does provide some information on regulatory status, but these forms are typically not updated. Consequently, they provide a static, outdated picture of the status of generators and facilities.

Data from Part A and Part B applications are also part of HWDMS. These

applications apply only to treatment, storage and disposal facilities, and thus, do not provide information on the status of generators. Another disadvantage of the permit information is that it reflects what activities are allowed to occur at sites, and often overstates or otherwise fails to describe the activities that are actually occurring at those sites. As such, the information does not address the distinctions necessary to completely answer the policy questions raised in Section B above. Additionally, when filling out a Part A application, facilities sometimes file protectively by reporting activities that they may initiate in the future rather than reporting what actually exists. Although inspections have helped to distinguish between expected and actual activities, the bulk of the Part A applications have not been verified with an inspection.

The 1981 Mail Survey probably does the best job of reporting regulatory status, since a series of detailed questions addressing this issue were included on this form. However, only a statistical sample of generators and facilities were surveyed. Consequently, such data are available for only a subset of the sites and, as such can not fully answer the policy questions raised in Section B. Additionally, this survey provides information on 1981 activities, only. Consequently, while useful from a historical prospective, it cannot accurately answer questions on current regulatory status.

The Uniform Manifest System provides information on hazardous wastes which are transported off-site and it does provide a way to determine active facilities and generators, who are transporting waste off-site for treatment and disposal. However, when a site does not transport hazardous waste off-site or receive it, the manifest system does not provide a way to determine why a site is or has become inactive (e.g., one time generator/handler; stopped hazardous waste activities; all hazardous wastes were delisted). Additionally, there isn't a direct method of distinguishing inactive sites from generators who handle their hazardous waste totally on-site, without cross-checking with past history and permit applications.

F. DESCRIPTION OF THE PROPOSED FORM

The regulatory status portion of the Biennial Report will consist of two forms. The first, Form Selection (FS), uses a series of brief "yes/no" questions to direct respondents to those parts of the Biennial Report that they must complete. The second section, Regulatory Status (RS), is answered by only those facilities which are not subject to quantity reporting, and it serves to determine specifically why a facility is not providing quantity information. This two-staged approach to regulatory status was used, because, as was explained in detail in the background paper presented at the April 30th meeting, the following two questions are integral to describing regulatory status: (1) who must report, and (2) what must be reported. Rather than use the 1985 survey's approach of allowing respondents to develop and answer these questions for themselves, a more structured approach is proposed which walks the respondent through a series of questions that are key to determining a site's reporting status and what must be reported for that site. This approach has the following three advantages in that it provides:

- (1) more control over (a) who provides quantity and handling information, (b) what is reported, and (c) where this information is reported,
- (2) a clear and straight forward mechanism for respondents to determine what they must fill out; and
- (3) a mechanism for helping RCRA program managers assess if sites are properly complying with the reporting requirements.

The Form Selection (FS) and Regulatory Status (RS) forms are presented in Appendix A. The contents of each section are discussed in separate subsections below.

1. Form Selection

As was stated above, the Form Selection form makes it clear who must file quantity information and directs the respondent to those forms of the report which must be filled out. To resolve the issue of who must file, the Form Selection section consists of three main questions. The first addresses hazardous waste generation activities, the second addresses off-site shipment of hazardous waste, and the third section addresses hazardous waste processing (treatment, storage, recycling and disposal). Under each question are a series of subquestions which serve to further delineate specific sections of the form the respondent is required to complete. Below, the rationale for each question is briefly discussed.

1. Question 1: During the reporting year, did this site generate hazardous waste in sufficient quantities to be subject to Full RCRA Regulation, and were at least some of these quantities generated from primary sources?

The purpose of this question is to distinguish between large quantity generators (LQGs) and all other generators (e.g., small quantity, conditionally exempt, inactive, etc.) and it directs LQGs to those sections dealing with generation.

2. Question 1A: During the reporting year, did this site generate quantities or types of hazardous wastes subject to reporting only by this state?

This question, which is considered optional, should be included by those states who want quantity and handling information for generators who do not meet the federal requirements for a LQG. A "yes" answer to this question will allow an easy method for distinguishing between EPA LQGs and those generators providing generation and handling information because the state they are located in has more stringent requirements than those of the Federal government.

3. Question 1B: Has this site filed and nor formally withdrawn an EPA Notification of Hazardous Activity form (EPA Form 8700-12) indicating Generator or Small Quantity Generator

Sites which did not meet the reporting criteria outlined in Questions 1 or 1A, fill out regulatory status if in the past they have notified EPA of hazardous waste generation activity. A respondent answering "yes" to this question is directed to the Regulatory Status section which is designed to determine why this site did not generate hazardous waste during the report year even though its owner/operator has notified EPA of generation activities. The information will help reconcile biennial report data with other data sources as well as provide Federal and State RCRA program managers with better estimates of the number of regulated generators for the report year.

4. Question 2: During the reporting year, did this site ship regulated hazardous wastes off site?

This question directs respondents, who ship hazardous waste off-site, to fill out forms dealing with this activity. Off-site shipment is covered by a separate set of forms and a separate question in Form Selection, not only to obtain information on such shipments, but to deal with the situation where a site neither generated nor managed hazardous waste during the report year, but did ship hazardous waste off-site. This information should help reconcile generated waste estimates, from the biennial report, with manifested waste estimates.

5. Question 3: During the reporting year, was any hazardous waste processed at this site (including processing in exempt units)?

This question directs those sites, which processed hazardous waste during the report year, to answer that section (Waste Management Process Summary) of the report dealing with hazardous waste processing. Sites using only exempt handling methods are also directed to this section. The rationale for requiring reporting by these sites is dealt with in Chapter 3, which discusses waste quantity and process tracking.

6. Question 3A: Did this site receive hazardous waste from off site?

This question directs respondents whose sites received wastes from off-site during the survey year, to fill out forms dealing specifically with this activity. The rationale for dealing with this topic on a separate form is discussed in Chapter 3, which addresses waste quantity and process tracking.

7. Question 3B: Does a hazardous waste management process (exempt or nonexempt) exist at this site?

Only those sites that did not process hazardous waste during the report year (i.e., answered no to Question 2) will answer the questions; it directs respondents whose sites contain inactive hazardous waste processes to the Waste Management Process Summary so that the status of these processes can be tracked. The reasons for collecting this information and what the information is intended for is discussed in Chapter 3, which covers waste quantity and process tracking.

8. Question 3Bi: Did this site file an EPA Part A - Permit Application at any time in the past that has not been formally withdrawn?

This question's purpose is to have respondents, who have filled out Part A applications in the past and who did not process hazardous waste during the report year, fill out the Regulatory Status form. The Regulatory Status section will help: (1) determine why the site did not process hazardous waste during the survey year; (2) reconcile biennial report data with information from other surveys; and (3) estimate more accurately the number of active TSD facilities. As was discussed in Section B of this chapter, this latter estimate is important to RCRA program planning, implementation, and evaluation activities.

2. Regulatory Status

The purpose of the Regulatory Status forms is to determine why a site that has notified EPA of hazardous waste activities (i.e., obtained an EPA ID) and/or filed a Part A application, has either not generated regulated quantities of hazardous waste or not processed hazardous waste during the survey year. To this end, four major reasons why this situation might have occurred were developed and are represented by the four questions which appear on the form shown in Appendix A. After each question are several subquestions which further specify why the site is exempt from quantity reporting. The rationale for each of the four major questions is discussed below.

1. Question 1: Was this site a generator of hazardous wastes that was not, during any single month of the reporting year, subject to full RCRA regulation due to RCRA small quantity rules and exemptions?

This question and its associated questions deal with quantity exemptions and are designed to distinguish between small quantity generators and conditionally exempt small quantity generators. This is also the section where states can add additional subquestions if their quantity limitation for conditional exempt small quantity generators and for small quantity generators is different than those used by the EPA. The information provided by this question and its subquestions is necessary to obtain an accurate count of federally regulated facilities and to place generators within the proper grouping relative to their status under federal and state hazardous waste regulations. As the 1985 form is currently constructed, sites subject to the Federal quantity exemption are sometimes difficult to distinguish from those which are not subject to these exemptions.

2. Question 2: During the reporting year, did this site generate or process wastes that are specifically excluded or exempted from regulation under RCRA?

This question addresses wastes which have either been excluded from the regulations or have been delisted. The subquestions distinguish among: (1) wastes excluded by 261.4, (2) recyclable wastes excluded by 261.5a3; and 3) wastes delisted under 260.20 and 260.22. Additionally, subquestions can be added to delineate specific excluded or delisted wastes. Information on excluded and delisted wastes is necessary because such wastes, in many cases,

would be considered hazardous, although they have been exempted from regulation. Consequently, they still are of concern, and this series of questions allows tracking of these wastes for a minimal amount of reporting burden. Thus, if a future assessment of these wastes is desired by the Agency or Congress, information will be available.

3. Question 3: Did this site generate or process RCRA-regulated hazardous wastes at some point prior to the beginning of the reporting year and are such wastes not expected to be generated again in the future?

This question addresses sites which are past generators/processors of hazardous waste, but that have stopped these activities and do not intend to begin them again in the future. The four subquestions under this question deal with the following four possibilities: (a) the generated/processed hazardous waste was a one time event (e.g., spill clean up), (b) the site has terminated its generation/processing activities but the site is still in business, (c) same as "b," but the site is no longer in business, and (d) all hazardous waste processes at the site are in closure or post-closure.

4. Question 4: Does this site expect to generate or process RCRA-regulated hazardous wastes in the future?

This question in combination with information from Question 3 was included to help delineate the following two situations:

- Sites which are intermittent or periodic generator/processors of hazardous waste -- It is important to identify such sites because RCRA program managers may not want to include these sites in all analyses, since their handling levels fluctuate from year to year causing over estimates for some years and under estimates in others. Being able to identify such sites allows greater accuracy of such estimates and allows RCRA program managers to know more about the activities of sites which are not necessarily subject to regulation each year.
- Sites which have not as yet generated/processed hazardous waste, but intend to in the future -- This information is important for projecting future hazardous waste activities.

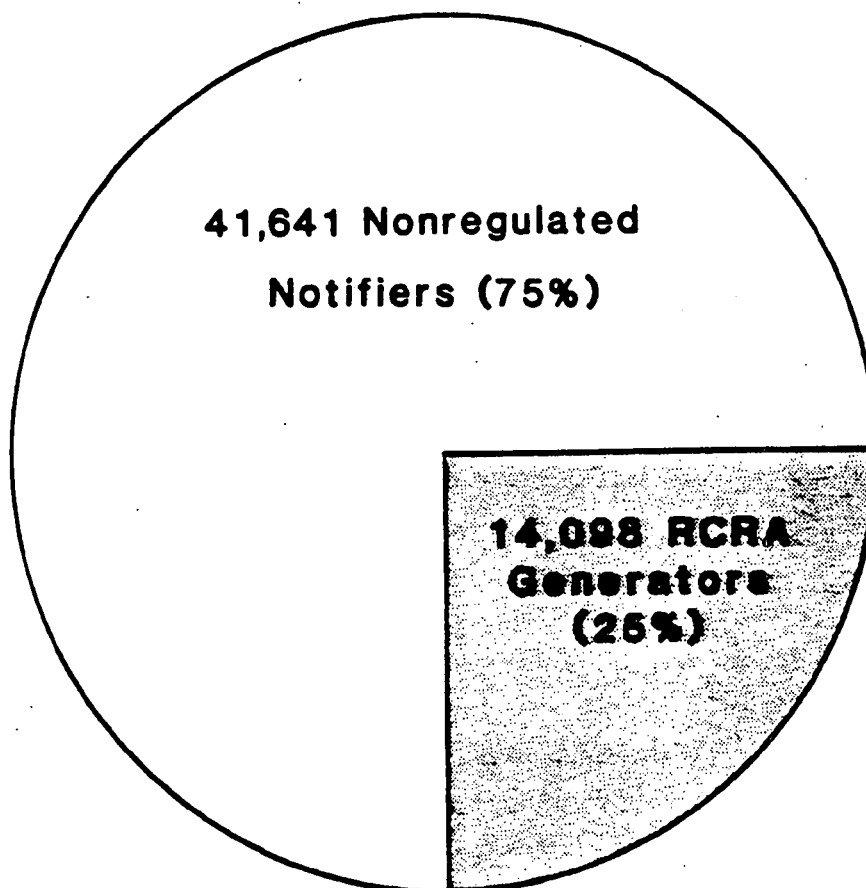
In addition, this question is designed to distinguish from all other sites, those sites which have notified and/or filed a Part A, but have never generated nor processed hazardous waste and have no intention of doing so in the future. This distinction is necessary to identify those sites which should not be included in the count of presently regulated sites nor should they be included in RCRA program planning projections for the future.

G. SAMPLE OUTPUTS AND USES OF THE DATA

The types of questions the Regulatory Status section of the form are designed to answer were listed in section B. Exemplary output are included in Exhibits 2-1 through 2-8.

EXHIBIT 2-1

**PORTION OF NOTIFIERS THAT GENERATED RCRA-REGULATED
QUANTITIES OF HAZARDOUS WASTE IN 1981**



55,739 Notifiers

Source: HWDMS, 8-1-82

EXHIBIT 2-2

**Characteristics of Nonregulated Notifiers that
Responded to the Survey**

<u>Description</u>	<u>Percent</u>
Non-generators	43%
Potential Future Generators	18%
Small Quantity Generators	18%
100% Recyclers	4%
Recently Retired Generators	3%
Delisted Waste Generators	1%
Nonregulated Notifiers	
<u>NSK, NEC*</u>	<u>13%</u>
Total	100%

*NSK = not specified by kind
NEC = not elsewhere classified

REPORT

MASTER HANDLER RE

REPORT DATE: 06/10/87

ID NUMBER, NAME AND LOCATION

ID NUMBER, NAME AND LOCATION	----- LEGAL -----		--- AS REPORTED ---			
	REG BY	DESCRIPTION	REG BY	DESCRIPTION		
AK1210022157 USARMY FORT RICHARDSON MILITARY RESERVATION 30 MILES AWAY FROM EVERYTHING FORT RICHARDSON (US ARMY), AK 99505-1234	GENERATOR: TSD: TRANSPORTER: BURNER/BLENDER:	RCRA RCRA ----- RCRA	GT 1000 KG RECYCLER ----- -----	----- ----- ----- -----	NOTIF RECEIPT: 12/30/86 PART A RECEIPT: 12/30/86	
AK1570028638 USAF CLEAR STATION 13 MISSILE WARNING SQUADRON CLEAR AFB, AK 99704-1111	GENERATOR: TSD: TRANSPORTER: BURNER/BLENDER:	BOTH STATE ----- -----	GT 1000 KG UNRESTRICTED ----- -----	----- ----- ----- -----	NOTIF RECEIPT: 12/30/85 PART A RECEIPT: 12/30/85	
AK1570028646 USAF EIELSON AFB 5010 CSG/DEE EIELSON (AIR FORCE BASE), AK 99702-0047	GENERATOR: TSD: TRANSPORTER: BURNER/BLENDER:	STATE ----- ----- -----	100-1000 KG ----- ----- -----	----- ----- ----- -----	NOTIF RECEIPT: 12/30/85 PART A RECEIPT:	
AK3210022155 USARMY 172 INF BDE(AK) FORT GREELEY SOUTH OF DELTA JCT HWY 4 DELTA JUNCTION, AK 99737-4663	GENERATOR: TSD: TRANSPORTER: BURNER/BLENDER:	OTHER RCRA OTHER RCRA	LT 100 KG ----- COMMERCIAL -----	----- ----- ----- -----	NOTIF RECEIPT: 12/30/85 PART A RECEIPT: 12/30/85	
AK4170024323 USNAVY ADAK NAVAL STATION 51-54N, 176-45W ADAK ISLAND, AK 99599-2372	GENERATOR: TSD: TRANSPORTER: BURNER/BLENDER:	RCRA OTHER ----- OTHER	GT 1000 KG ----- ----- -----	----- ----- ----- -----	NOTIF RECEIPT: 02/20/86 PART A RECEIPT: 02/20/86	
AK6210022426 USARMY FORT WAINWRIGHT ELMENFORF AFB ELMENDORF AIR FORCE BASE, AK 99506-0065	GENERATOR: TSD: TRANSPORTER: BURNER/BLENDER:	RCRA ----- RCRA RCRA	GT 1000 KG ----- ----- -----	----- ----- ----- -----	NOTIF RECEIPT: 05/30/86 PART A RECEIPT:	
AK9690330742 USDOT-CB KODIAK SUPPORT CTR ELMENFORF AFB ELMENDORF AIR FORCE BASE, AK 99506-9475	GENERATOR: TSD: TRANSPORTER: BURNER/BLENDER:	STATE BOTH RCRA BOTH	GT 1000 KG ----- COMMERCIAL -----	----- ----- ----- -----	NOTIF RECEIPT: 05/30/86 PART A RECEIPT: 05/30/86	
AKD000E43239 SOUTH ALASKA- PRUDHOE BAY PRUDHOE BAY PRUDHOE BAY, AK 99740-9904	GENERATOR: TSD: TRANSPORTER: BURNER/BLENDER:	STATE ----- ----- -----	GT 1000 KG ----- ----- -----	----- ----- ----- -----	NOTIF RECEIPT: 05/30/80 PART A RECEIPT:	
AKD009252487 ALASKA LUMBER & PULP CO INC SAWMILL CREEK RD SITKA, AK 99835-0003	GENERATOR: TSD: TRANSPORTER: BURNER/BLENDER:	BOTH RCRA RCRA OTHER	STATE LEVEL RECYCLER ----- -----	STATE RCRA RCRA BOTH	GT 1000 KG UNRESTRICTED COMMERCIAL -----	NOTIF RECEIPT: 05/30/81 PART A RECEIPT:

EXHIBIT 2-3
2-13

SOHIO ALASKA- PRUDHOE BAY

EPA ID NO. 00643239

----- LOCATION -----
 HERMAN SCHMIDT MGR - LANDS (907) 265-0427
 PRUDHOE BAY
 PRUDHOE BAY, AK 99740-9904

----- MAILING -----
 PRUDHOE BAY
 PRUDHOE BAY, AK 99740-7409

GENERATOR:	REG BY	LEGAL DESCRIPTION	REG BY	AS REPORTED DESCRIPTION	LATITUDE: 70-18-15.0	TSD EXIST: 07-01-74
TSD:	STATE	GT 1000 KG			LONGITUDE: 148-40-36.1	NOTIF REC: 05-30-80
TRANSPORTER:					LAND TYPE: MUNI	PART A REC: 00-00-00
BURNER/BLENDER:					OFF-SITE IND: RESTRICTED	RIVER BASIN:
					CERCLIS: NPL SITE	

SIC CODES: 1311 5023

OWNER:	SOHIO ALASKA PETROLEUM COMPANY	TYPE: FEDERAL
OWNER:	UNION OIL CO OF CA-UNION CHEMICALS DIV	TYPE: FEDERAL
OPERATOR:	ARCO OIL & GAS CO-DIV OF ATL RICHFIELD	TYPE: STATE
OPERATOR:	SOHIO ALASKA PETROLEUM COMPANY	TYPE: STATE

----- EXISTING ENVIRONMENTAL PERMITS -----
 I TYPE PERMIT NUMBER DESCRIPTION (OPTIONAL) I

 N AK0021229
 N AK0028606
 N AK0028614
 P PSDX7905
 P PSDX0009

TSD HANDLING METHODS									
I PROCESS I CODE	COMMERCIAL AVAILABILITY	SOURCE	AMOUNT	TYPE	STATUS	AMOUNT	UOM	UNIT COUNT	REPORT DATE
501	ACCEPTS FROM ANY	PART A	DESIGN CAPACITY		SUBMITTED/NOT EXIST	200,000	G	39	12/30/86

LISTS OF WASTES				
I WASTE I CODE	WASTE SOURCE	ANNUAL TONS	REPORT DATE	REPORTED PROCESSES ASSOCIATED WITH THE WASTE CODE
0001	PART A	32,001	12/30/86	S01
0002	PART A	32,002	12/30/86	T02
0004	PART A	32,004	12/30/86	S01
0008	PART A	32,008	12/30/86	S01
F001	PART A	32,001	12/30/86	S01
F001	NOTIF			
F002	PART A	32,002	12/30/86	S01
F002	NOTIF			
F004	NOTIF			
F005	PART A	32,005	12/30/86	S01
F008	NOTIF			
K001	NOTIF			
K002	NOTIF			
K005	NOTIF			
1223	PART A	32,223	12/30/86	S01

EXHIBIT 2-4
2-14

REPORT

TSD FACILITY LISTING CRT

REPORT DA 2/10/87

USAF CLEAR STATION

EPA ID # AK1570028638

----- LOCATION -----
CURTIS D. DALE COL
13 MISSILE WARNING SQUADRON
CLEAR AFB, AK 99704-1111

(907)832-5491

----- MAILING -----
DAVID DOSBETT MANAGER
13 MISSILE WARNING SQUADRON
CLEAR AFB, AK 99704-7041
(907)863-7185

----- LEGAL ----- --- AS REPORTED ---
REG BY DESCRIPTION REG BY DESCRIPTION
TSD: STATE UNRESTRICTED

CERCLIS: NPL SITE

NON-NOTIFIER: YES

OPERATOR: NAVAL STATION ADNAK ALASKA

TYPE: FEDERAL

----- EXISTING ENVIRONMENTAL PERMITS -----
ITYPE PERMIT NUMBER DESCRIPTION (OPTIONAL) :

K SF NAME

----- LISTS OF WASTES -----

WASTE I CODE	WASTE SOURCE	ANNUAL TONS	REPORT DATE	REPORTED PROCESSES ASSOCIATED WITH THE WASTE CODE
F003 K003	PART A NOTIF	86,003	12/30/86	T04

RE 4

GENERATOR/TRANSP

REPORT

REPORT 06/10/87

USAF CLEAR STATION

EPA ID # AK1570028638

----- LOCATION -----
CURTIS D. DALE COL (907)832-5491
13 MISSILE WARNING SQUADRON
CLEAR AFS, AK 99704-1111

----- MAILING -----
DAVID DOSSETT MANAGER
13 MISSILE WARNING SQUADRON (907)863-7185
CLEAR AFS, AK 99704-7041

----- LEGAL ----- --- AS REPORTED ---
REG BY DESCRIPTION REG BY DESCRIPTION
GENERATOR: BOTH BT 1000 KG
TRANSPORTER: ----- CERCLIS: NPL SITE
NON-NOTIFIER: YES

OPERATOR: NAVAL STATION ADAK ALASKA TYPE: FEDERAL

----- EXISTING ENVIRONMENTAL PERMITS -----
ITYPE PERMIT NUMBER DESCRIPTION (OPTIONAL) I

K SF NAME

----- LISTS OF WASTES -----
WASTE WASTE ANNUAL REPORT
I CODE SOURCE TONS DATE
REPORTED PROCESSES ASSOCIATED WITH THE WASTE CODE

F003 PART A 86,003 12/30/86 T04
K003 NOTIF

EXHIBIT 2-16
2-6

REP(

CAPACITY REP

REPORT DATE: 06/10/87
EPA ID # AK3-100221

USARMY 172 INF BDE(AK) FORT GREELEY

----- LOCATION -----
CATHARINE BENEDIKTSSON MANAGER
SOUTH OF DELTA JCT HWY 4
DELTA JUNCTION, AK 99737-4663

(907)862-0188

----- MAILING -----
CARL GRANBERRY COL USAF B COM
SOUTH OF DELTA JCT HWY 4
DELTA JUNCTION, AK 99737-7374
(917)372-1121

----- LEGAL -----	----- AS REPORTED -----
REG BY DESCRIPTION	REG BY DESCRIPTION
GENERATOR: OTHER	
TSD: RCRA	
TRANSPORTER: OTHER	

CERCLIS: NPL SITE

----- TSD HANDLING METHODS -----									
PROCESS I CODE	COMMERCIAL AVAILABILITY	SOURCE	AMOUNT	TYPE	STATUS	AMOUNT	UOM	UNIT COUNT	REPORT DATE
S01	ACCEPTS FROM RESTRICTED	PART A	DESIGN CAPACITY		SUBMITTED/NOT EXIST	55.333	G	55	12/30/86
S02	ACCEPTS FROM ANY	PART A	DESIGN CAPACITY		SUBMITTED/VERIFIED	500.002	G	55	12/30/86

----- LISTS OF WASTES -----				
WASTE I CODE	WASTE SOURCE	ANNUAL TONS	REPORT DATE	REPORTED PROCESSES ASSOCIATED WITH THE WASTE CODE
F001	PART A	21,001	12/30/86	S01
K001	NOTIF			

2-17
EXHIBIT 2-7

EPA ID	NAME	STREET	CITY	GEN	TSR	TRAN	BURN
AK1210022157	USARMY FORT RICHARDSON	MILITARY RESERVATION	FORT RICHARDSON (US ARMY)	RCRA	1	RCRA	R
AK1570028638	USAF CLEAR STATION	13 MISSILE WARNING S	LEEAR AFS	BOTH	1	STATE	U
AK1570028646	USAF EIELSON AFB	5010 CSG/DEE	EIELSON (AIR FORCE BASE)	STATE	2		
AK3210022155	USARMY 172 INF BDE (AK) FORT GREELEY	SOUTH OF DELTA JCT H	DELTA JUNCTION	OTHER	3	RCRA	OTHER C
AK4170024323	USNAVY ADAK NAVAL STATION	51-54N, 176-45W	ADAK ISLAND	RCRA	1	OTHER	OTHER
AK6210022426	USARMY FORT WAINWRIGHT	ELMENFORD AFB	ELMENDORF AIR FORCE BASE	RCRA	1		RCRA
AK9690330742	USDOT-CG KODIAK SUPPORT CTR	ELMENFORD AFB	ELMENDORF AIR FORCE BASE	STATE	1	BOTH	RCRA C
AKD000643239	SOHIO ALASKA- PRUDHOE BAY	PRUDHOE BAY	PRUDHOE BAY	STATE	1		
AKD009252487	ALASKA LUMBER & PULP CO INC	SAWMILL CREEK RD	SITKA	BOTH	4	RCRA	R
AKD043454925	VAN WATERS & ROBERTS	1301 EAST FIRST AVE	ANCHORAGE	RCRA	1		STATE
AKD044589075	PHILLIPS PETROLEUM CO- KENAI	MILE 21.5 KENAI SPUR	KENAI	OTHER	1		OTHER
AKD048679682	TESORO ALASKA- KENAI	KENAI SPUR RD	KENAI	BOTH	3		BOTH C
AKD055503825	TEXACO USA A DIVISION OF TEXACO INC	1601 TIDEWATER RD	ANCHORAGE	RCRA	1		
AKD0A4611219	CROWLEY ENVIRONMENTAL SERVICES	KENAI SPUR RD, MI 21	NORTH KENAI				RCRA
AKD092876390	UNOCAL CHEMICALS DIVISION	SAGARNIARTOK RIVER D	PRUDHOE BAY	BOTH	1		BOTH
AKD980834675	SOHIO ALASKA- ENDICOTT DEVELOPMENT	13 MISSILE WARNING S	CLEAR AFS				STATE
AKD991281023	ARCO- KUPARUK OILFIELD	NORTH SLOPE	PRUDHOE BAY			BOTH	
AKD991281221	ARCO- PRUDHOE BAY OILFIELD	PRUDHOE BAY UNIT-E D	PRUDHOE BAY			RCRA	

TOTAL NUMBER OF HANDLERS IN THIS REPORT

18

H. PROS AND CONS OF THE PROPOSED SYSTEM

The pros and cons of the proposed system are listed below.

1. Pros

- The respondent is provided with a detailed, clearly defined set of options regarding exempt reporting status. This approach helps prevent respondents from incorrectly claiming exempt status because of misunderstanding the exemptions.
- The detailed selections help solve some of the major problems associated with the regulatory system including:
 - Reconciling information reported by other data sources (Notification, Part A, other HWDMS data)
 - Explaining why certain generators/facilities report in one year and not in others.
 - Helping to identify nonreporters.
- The form selection section walks the respondent through a potentially difficult set of criteria to help them more easily and correctly determine which sections of the biennial report they must fill out. By making them provide answers to these criteria, RCRA program managers can more readily assess compliance with reporting requirements.

2. Cons

- The regulatory status options are lengthy, causing an additional reading burden for the respondent. However, the regulatory status form has been structured through grouping the selections so that the respondent only reads those regulatory options which most likely apply to his site.
- A greater reporting burden for generators and facilities, since small quantity generators and inactive sites with EPA ID numbers would be required to fill out the regulatory status section.
- A greater processing burden for states, but this has been minimized because of the structure of the form.

CHAPTER 3

WASTE QUANTITY AND PROCESS TRACKING

A. INTRODUCTION AND OVERVIEW

Waste tracking refers to maintaining information on the generation (i.e. the particular types of waste generated, the amount, where they were generated and by whom) and management (i.e. the specific treatment, storage, and disposal method used, the quantity handled by each method, and the location) of wastes regulated as hazardous under RCRA. Information on where and in what quantities wastes are generated, treated, stored, and disposed of is needed to adequately define hazardous waste generation and management practices. This information enables regulatory agencies to determine the personnel and resources necessary to deal with current practices. It is also needed to enforce the regulations and analyze their effectiveness. Waste tracking can also be used to help identify areas that most need waste-minimization efforts, determine the capacity for treatment, storage, and disposal of hazardous waste in certain areas, and to identify communities and environments which could be exposed to hazardous substances. Waste tracking information forms the basis of hazardous waste regulatory programs. It also provides data to serve congressional and public oversight needs.

Different methods have been used by State governments to provide the information needed to meet the goals described above. These sources of information on waste tracking have included: registration of hazardous waste generators, applications for permits to store, treat or dispose hazardous waste, hazardous waste manifests, and periodic reports on the generation and management of hazardous wastes.

Registrations and permit applications, however, describe only the expectations of hazardous waste handlers, and are not accurate descriptors of actual operations. Hazardous waste manifests provide for accurate tracking of individual shipments of hazardous waste off-site, but do not track wastes managed on-site. Manifest information also does not always provide a readily followed trail of the final destination or disposal of the shipped waste. Despite the value of individual shipment data, many state governments are now augmenting manifest information with periodic (monthly, quarterly, annual, or Biennial) reports from generators and treatment, storage, and disposal (TSD) facilities.

For EPA, the primary source of information for tracking wastes has been the biennial reporting system. This system currently uses two questionnaires -- one for generators who send their waste off-site for treatment, storage, or disposal, and a second for owners and operators of TSD facilities. Both questionnaires require information on the identity and location of the generator or the TSD facility, including the EPA identification number, the facility name, mailing address, and location, and the name and telephone number of a contact person. The questionnaires require waste identification by RCRA waste codes for each reported waste or waste mixture, and the amount of each waste. Generators must supply the identity of the TSD facility to which the waste was shipped, and TSD facilities must provide the same information on each generator from which waste was received. The TSD

questionnaire also requires a description of the final methods used for treatment, storage, and disposal. A list of applicable handling method codes is provided for this purpose.

While the existing annual/biennial reporting system enables one to track the origin and destination of most hazardous wastes, the descriptions of handling methods are inadequate to fully describe the treatment and disposal of wastes. The list of handling method codes is simplistic and duplicative: there is no requirement for TSD facilities to describe the application of preliminary and intermediate hazardous waste treatment methods; the instructions for reporting hazardous residuals from treatment methods as newly generated hazardous wastes are unclear; and generators are not required to state their understanding of the basic treatment and disposal methods applied to wastes they ship off-site -- with the result being, that there is no reference means for confirming the reports of applied handling methods submitted by TSD facilities which receive the wastes.

B. ADMINISTRATIVE REQUIREMENTS FOR THE DATA

RCRA states that if waste is generated, it should be "treated, stored, or disposed of so as to minimize the present and future threat to human health and the environment". Waste tracking is required to define these management practices for each waste. Standards applicable to generators of hazardous waste (40 CFR Part 262) require that a generator who ships his hazardous waste off-site must prepare and submit a single copy of the Biennial Report to the Regional Administrator by March 1 of each even-numbered year. The generator Biennial Report must include waste identification by the RCRA waste codes (from 40 CFR Part 261, Subpart C or D), transporter information and quantities (with units of measure) for each waste shipped off-site to a TSD facility. Regulations (40 CFR Part 264) for owners and operators of hazardous waste treatment, storage, and disposal facilities also require that the owner or operator must prepare a Biennial Report.

The Hazardous and Solid Waste Amendments of 1984 (HSWA) of RCRA require current data, as soon as feasible, on the availability of capacity at TSDs to manage particular types of wastes using particular types of technologies and process methods. Although this data is being compiled by EPA through national TSD Facility and Generator Surveys, the information obtained represents selected, one-time samples. It should be updated through regular periodic reports from the full population of waste handlers in the following years.

EPA's long list of hazardous waste rulemaking responsibilities as defined by specific Congressional mandates include such important subjects as: land disposal restrictions, revisions to tank permitting standards, accumulation tank standards, best demonstrated available technology (BDAT) standards, revisions to underground injection well standards, and air emission regulations. Prior to rulemaking in these and other related subject areas -- both now and in the future, EPA needs technical information upon which to base regulatory options and associated regulations. To meet these responsibilities EPA must regularly upgrade and update waste tracking information.

Legislation has already mandated environmental agencies in several states to conduct statewide hazardous waste management studies and develop commercial treatment facility plans. Typically, these state regulations have required the following steps to be taken: (1) complete a comprehensive inventory of the types and quantities of wastes currently generated; (2) forecast hazardous waste generation in the future; (3) conduct a capacity assessment of existing and planned treatment, storage, and disposal facilities; and (4) determine capacity shortfalls. The states have used manifest data, generator and facility annual reports, permit applications, and surveys to complete these studies. Many of these state plans have to be updated now, and the annual/biennial reporting system can become a primary data source for this purpose.

C. POLICY OPTIONS

Four alternative methods for tracking hazardous waste have been proposed. These alternatives are: (1) maintain the current annual/biennial reporting system, relying on limited waste handling information for each waste; (2) request more detailed tracking information from both generator and TSD facility for each waste, reported including full information on the sequences of handling methods applied by TSD facilities, description by generators of basic treatment and disposal practices to which wastes shipped off-site were subjected, and identification of hazardous residuals resulting from treatment methods; (3) request data similar to that of alternative two, except that waste handling method quality information would be reported as aggregate totals for wastes handled by specific treatment, storage, or disposal methods, and not on an individual, wastestream-by-wastestream basis; or (4) greatly simplify the existing annual/biennial reporting system by requiring only the reporting of general handling methods (e.g., wastewater treatment, and disposal, etc.) applied to individual waste streams.

The current annual/biennial reporting system, alternative one, has not been able to provide sufficient data for waste tracking purposes, and the data collected have not been reliable.

Alternative two would best meet the need for providing comprehensive and reliable waste tracking information, and is recommended because of its perceived ability to satisfy additional information needs. This alternative could also solve the problems of unreliable and insufficient information inherent in the current Biennial Report system.

The aggregate quantity information for specific handling methods that could be developed by the use of alternative three would be useful for preparing assessments of utilized and available waste handling capacity. Chapter 5 of this report -- Capacity Assessment -- describes how Biennial Reports can be used for TSD capacity analyses.

Alternative four could provide reliable data, but it would not be detailed enough for anything but the simplest analytical uses.

D. DATA AND INFORMATION REQUIREMENTS

This section identifies the data elements required in Biennial Reports for

adequate tracking of wastes. A justification for requiring each data element is also provided. These data elements have been organized under the following five data categories:

- Data Category A - Waste Quantification;
- Data Category B - Generator Identification;
- Data Category C - TSD Facility Identification;
- Data Category D - Waste Transport Description; and
- Data Category E - Waste Management Methods.

In simple terms, these five data categories will answer the following questions: "how much of" and "where" the wastes were generated; "where" and "how" the wastes were managed; and "how" the wastes were transported, if there was a shipment of waste off-site. While these questions are fairly straightforward and can be directly answered, the practices of hazardous waste generation and management vary so widely that accurate tracking of wastes calls for careful selection and design of data elements in the five categories mentioned above. The data elements selected for waste quantity and process tracking, along with waste characterization data (Chapter 4), must be also designed for use in TSD facility capacity assessment (Chapter 5) and in evaluation of waste minimization (Chapter 6) efforts made by hazardous waste generators.

1. Data Category A - Waste Quantification

This data category is fundamental to the tracking of hazardous wastes and is the information most sought by hazardous waste management facilities, regulators, planners and the concerned public. Six data elements must be provided in this category:

- Waste Identification
- Amount of Primary Generation
- Amount of Hazardous Waste Treatment Residuals
- Amount of Wastes Shipped Off-site
- Amount of Wastes Received from Off-site
- Density of the Waste

Each of the data elements are described in the section below.

Waste Identification -- Each hazardous waste generated, and subsequently handled at a TSD facility must be accurately, and thoroughly identified for a complete tracking of wastes. The existing RCRA waste codes identify hazardous wastes by characteristic, source and/or hazardous constituents. Additional descriptions of certain physical and chemical characteristics or hazardous wastes are also required.

Amount of Primary Generation -- Hazardous waste generation during a year due to manufacturing processes and other industrial operations should be reported separate from hazardous treatment process residuals. These wastes represent a basic demand for hazardous waste management capacity, which is expected to vary directly with changes in industrial activities. Primary hazardous waste generation data is the principal basis for planning

public and private waste minimization efforts, and evaluating their effectiveness.

Amount of Hazardous Waste Treatment Residuals -- A substantial fraction of hazardous waste generation is represented by treatment residuals from management of other hazardous wastes. These wastes include, for example, incinerator ash, aqueous hazardous waste treatment sludge, and residuals from the closure or cleanup of hazardous waste management facilities. Certain of the waste minimization options applicable for hazardous wastes from primary generation sources (e.g., redesign of manufactured product, etc.) have little or no direct application for the reduction of treatment process residuals, while other options (e.g., process substitution, etc.) may be of even greater significance for TSD facilities than for primary generators. By separating hazardous waste generation information into the two, discrete populations, waste minimization priorities and possibilities can be better highlighted. In addition, by calling attention to hazardous residuals from treatment processes, chances are increased that the full complement of hazardous waste generation will be reported.

Amount of Wastes Shipped Off-site -- Hazardous wastes shipped off-site represent a demand for commercial TSD facilities. This waste may include both primary generation and hazardous waste treatment residuals.

Amount of Wastes Received from Off-site -- Individual wastes from particular generators, should equal the amount of wastes shipped off-site, except for small discrepancies due to shipments during the end of either the current or previous year. This data element is required for comparison with the amount of wastes shipped off-site.

Density of Wastes -- The amount of wastes in the data elements mentioned above should be reported in comparable units of measure, preferably by weight. Many wastes, however, are liquids or sludges, and are commonly quantified by volume. Waste density data (i.e., weight per unit of volume) is needed to allow for the conversion of reported waste volumes into corresponding weight data. Only when this is done can comprehensive hazardous waste totals be established.

2. Data Category B - Generator Identification

The following data elements must be provided for generator identification:

- EPA Identification Number
- Name of Generator
- Street Address of Generator
- Contact Name, title, and telephone number
- SIC Code

Basic generator identification and location data (i.e., EPA identification number, name of generator, street address of generator) are needed as: (1) reference information comparisons with reports of hazardous waste receipts from TSD facilities; and (2) connector links with other RCRA hazardous waste databases. Contact information is required so that follow-up inquiries can

be made regarding reported data. SIC codes are significant for relating hazardous waste generation to major industrial operations, and, thereby, focusing attention on potential targets for waste minimization programs.

3. Data Category C - TSDR Facility Identification

The following data elements should be provided for TSDR facility identification:

- EPA Identification Number
- Name of Facility
- Street Address of Facility
- Contact Details
- SIC Code

These data elements will satisfy the same objectives as those stated for generators, except that TSD identification and location data is needed as reference information for comparisons with reports of wastes sent by generators, and not with reports of wastes received.

4. Data Category D - Waste Transport Description

The following data elements must be provided for waste transport description:

- Mode of Transport
- Number of Shipments
- Type of Container

These data elements provide a framework for establishing the potential for releases of hazardous substances to the environment during the shipment of waste materials. Together, the three data elements describe the basic manner in which hazardous wastes are shipped, and the frequency of shipment.

5. Data Category E - Waste Management Methods

Waste quantity tracking describes only the "influent" to TSDR facilities. Waste management (treatment and recycling) often results in substantial changes in the amount and characteristics of this waste. For example, chemical oxidation of an aqueous hazardous waste containing cyanide will result in the generation of a non-hazardous aqueous stream which can be discharged as treated effluent. Therefore, some tracking of waste management methods is required besides waste quantity tracking. The following data elements are required for tracking wastes by treatment processes:

- Sequence of Management Methods On-Site
- Understanding of Management Methods Off-site

Sequence of Management Methods On-Site -- The complete sequence of management methods should be reported by TSD facilities for each waste managed on-site. This sequence should identify the specific processes used for treating or recycling each hazardous waste. Complete information describing

each handling method applied to particular wastes, together with waste quantity data, is an essential prerequisite for guiding investigations of the possibility for harm that might result from hazardous waste management. Such information is also needed for planning the staffing of regulatory agencies and developing RCRA implementation strategies. Further uses are assessing the utilization of available treatment and disposal capacity, and as a compendium of practical waste management methods.

Understanding of Management Methods Off-site -- Generators cannot be expected to know the complete sequences of treatment, storage and disposal methods applied to wastes that they ship off-site, but they are responsible for knowing the basic nature of how those wastes are managed and should have no difficulty in reporting that knowledge. Such information can then be compared with the sequences of processes described by receiving facilities.

E. USEFULNESS OF CURRENT DATA

Waste quantity and process tracking in the current biennial reporting system has several major deficiencies. Most of these deficiencies are illustrated by a case study involving hazardous wastewater treatment on-site. Figure 3-1 shows the hazardous waste management methods as they existed in 1983. A facility Biennial Report was submitted as shown in Table 3-1. The facility Biennial Report requires a line entry for each hazardous waste managed by a particular method. As shown in Figure 3-1, the facility identified four management methods:

- Storage in Tanks (S02)
- Ammonia Stripping (Treatment in Tanks) -- T01
- Chemical Precipitation (Treatment in Tanks) -- T01
- Disposal in Surface Impoundments -- S04

The facility identified four wastes -- two wastes treated by chemical precipitation and one each managed by the other two methods -- by recognizing the treatment and disposal methods to be the final disposition of different wastes. As a result, the facility reported the following amounts of wastes:

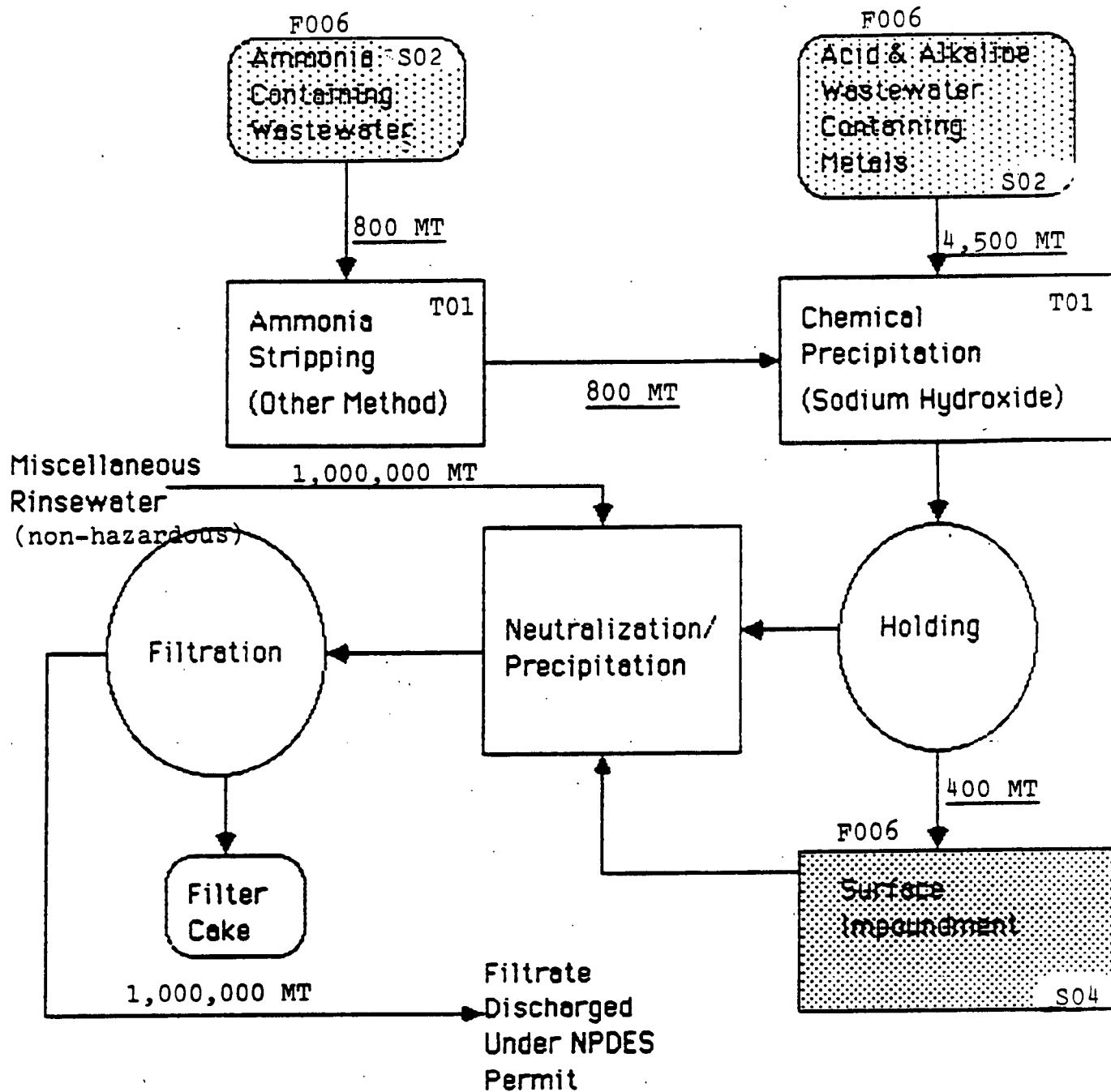
- Treated in Tanks -- 6,100 Metric Tons
- Disposed in Surface Impoundments -- 400 Metric Tons

The reported amount of waste included both primary generation and treatment residuals and a clear description of hazardous waste generation on-site was not obtained. The facility also incorrectly identified all wastes to be the residuals of treatment -- wastewater treatment sludges (F006). The density of the wastes was not provided.

Another facility with the same management methods may have recognized only the disposal in surface impoundment to be the final disposition of all wastes and reported only disposed wastes. In this case the amount of primary generation would not have been reported.

By 1985, the same facility segregated some of the feed wastes, increased

FIGURE 3-1
HAZARDOUS WASTEWATER TREATMENT ON-SITE
METAL - FINISHING INDUSTRY
YEAR 1983



HOW A FACILITY INTERPRETED OPERATIONS in 1983

Table 3-1
SAMPLE WASTE TRACKING DATA

Existing Biennial Report

Hazardous Wastewater Treatment On-Site (Metal finishing Industry) - Year 1983; See Figure

	<u>Waste #1</u>	<u>Waste #2</u>	<u>Waste #3</u>	<u>Waste #4</u>
<u>Waste Quantification</u>				
Waste Identification	F006	F006	F006	F006
Amount of Waste	800 MT	800 MT	4500 MT	400 MT
Density	N.A.	N.A.	N.A.	N.A.
<u>Generator Identification</u>	Yes	Yes	Yes	Yes
<u>Facility Identification</u>	On-site	On-site	On-Site	On-site
<u>Transport Description</u>	On-Site	On-Site	On-Site	On-Site
<u>Process Tracking</u> ¹	S02 T01 S04	T01 S04	S02 T01 S04	S04

Note: ¹ Sequence of processes can be found by referring to permit application.

the number of management methods and replaced disposal in surface impoundment with filtration as shown in Figure 3-2. Biennial Report information for this case is given in Table 3-2. Once again, a clear distinction was not made between primary generation and treatment residuals. A fifth waste was now generated which was stored in containers and sent off-site for land disposal. This waste was mentioned in a generator Biennial Report with: adequate waste identification; no density information; and no transport identification.

Another problem of existing generator Biennial Reports has been the double counting of wastes by transfer stations who only store wastes temporarily and do not treat them, and by generators storing wastes for more than 90 days. This problem would have occurred if the facility Biennial Report for 1985 in this study had mentioned storage of Waste No. 5 on-site.

F. DESCRIPTION OF THE PROPOSED FORMS

The proposed system for reporting waste quantity and process tracking is presented in this section. Each reported waste is to be described as an individual line entry on a Biennial Report questionnaire form especially designed for that purpose (Form WD, Waste Description). This form, to be completed by all RCRA regulated generators and for all TSD facilities, requires a brief narrative description of each waste, corresponding EPA (or State) hazardous waste numbers, a 3-digit waste code that provides additional details of physical and chemical characteristic, a designation of whether the waste is regulated under Federal or State statute, a pH value, heating value (if any), and solids/liquids concentrations.

Amount of Waste -- Waste quantities will be reported by generators on two questionnaire forms, Primary Generation (PG) and Waste Shipped Off-site (SO). The PG form is for, both generators who manage their wastes on-site and those who send them elsewhere. For TSD facilities handling wastes from other generation sources, waste quantities will be reported on the form for Waste Received From Off-site (RO). Space is provided on those forms for indicating the units of measure (UOM) to be associated with reported quantities.

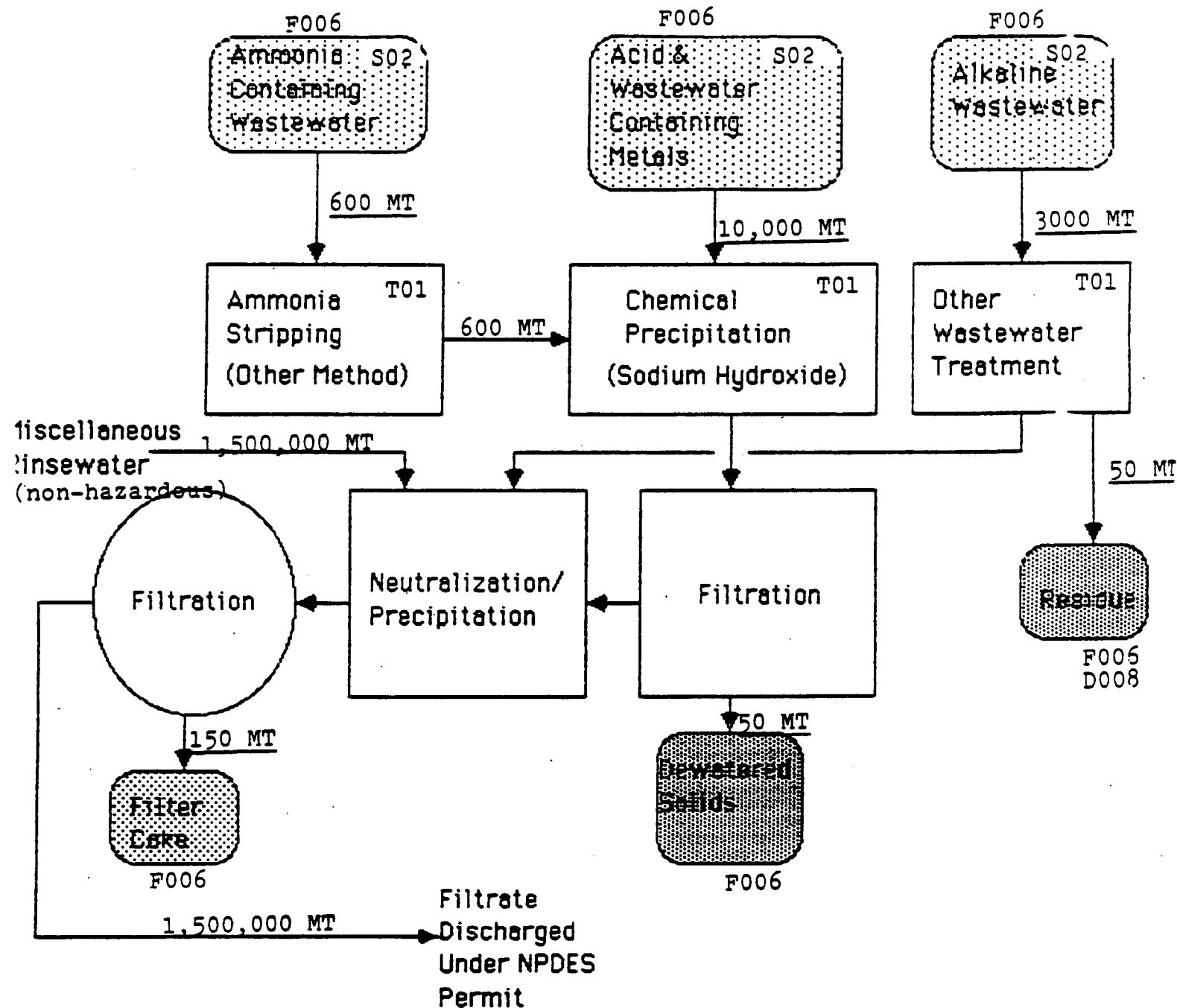
Density -- For each waste reported in volumetric quantities (e.g., gallons, etc.), the density (i.e., weight per unit volume) is to be reported, as well. Space for this is provided on each applicable form.

Identification -- There will be a separate Identification and Certification form (ID) to be completed by all questionnaire respondents, covering, both, generators and TSD facilities. This form will collect identification, location, and contact data comparable to that sought in the existing Biennial Report system. An important addition will be the inclusion of a requirement to report the 4-digit SIC for the reporting entity.

Waste Transport Description -- All modes of transport used during the year for each waste type will be reported. A list of alternative modes of transport (road, rail, etc.) will be provided with instructions on the report. The number of shipments for each waste will also be reported, as will

FIGURE 3-2

**HAZARDOUS WASTEWATER TREATMENT ON-SITE
METAL - FINISHING INDUSTRY
YEAR 1985**



HOW THE FACILITY INTERPRETED OPERATIONS IN 1985

Table 3-2

SAMPLE WASTE TRACKING DATA**Existing Biennial Report**

Hazardous Wastewater Treatment On-Site (Metal finishing Industry) - Year 1985; See Figure

	<u>Waste1</u>	<u>Waste2</u>	<u>Waste3</u>	<u>Waste4</u>	<u>Waste 5</u>
<u>Waste Quantification</u>					
Waste Identification	F006	F006	F006	F006	F006,D008
Amount of Waste	600 MT	600 MT	10000MT	3000MT	250 MT
Density	N.A.	N.A.	N.A.	N.A.	N.A.
<u>Generator Identification</u>	Yes	Yes	Yes	Yes	Yes
<u>Facility Identification</u>	On-Site	On-Site	On-Site	On-Site	Yes
<u>Transport Description</u>	On-Site	On-Site	On-Site	On-Site	N.A.
<u>Process Tracking</u> ¹	S02	T01	S02 T01	T01	S01 D80

NOTE: ¹ Sequence of processes can be found by referring to permit application and the facility biennial report for waste shipped off-site (F006,D008).

all types of containers used during shipments. A list of different types of containers (drum, tank truck, etc.) will be provided with instructions on the report. Such waste transport information is to be reported on the Wastes Shipped Off-site (SO) form. An identification of all transporters used to make shipments is to be reported on a separate Off-site Identification (OI) form.

Sequence of Waste Management Methods On-Site -- Sequences of handling methods for treating, storing, or disposing of hazardous waste are to be reported for each line entry on forms PG and RO (primary Generation and Waste Received from Off-site). A new listing of handling codes, based upon one thoroughly tested in a recent EPA survey of TSD facilities, is supplied in the questionnaire instructions (Appendix B). Additional handling codes that should be appended to this list of process codes in order to report a complete sequence of processes for each waste managed on-site include the following:

- Transfer of waste to another facility
- Transfer of recovered product
- Transfer of hazardous treatment residuals off-site
- Transfer of non-hazardous residues off-site
- Discharge of treated wastewater
- Disposal of non-hazardous residues on-site

These new codes are more descriptive than the existing Biennial Report codes, and eliminate the problems of overlapping descriptions prevalent in the existing codes.

Understanding of Management Methods Off-site -- A generalized list of handling codes is provided in the instructions for use in form SO (Waste shipped Off-site), by generators who send their hazardous wastes off-site for treatment, storage, and/or disposal.

For this purpose, the broad description of treatment, storage and disposal methods used in the existing Biennial Reports is adequate. However, the following broad categories will be used to enable comparison of generators' information with the detailed sequence of management methods reported by facilities receiving wastes from off-site:

- Incineration/Thermal Treatment
- Reuse as fuel
- Fuel blending
- Recovery of solvents and organics for reuse
- Recovery of metals
- Wastewater treatment
- Other treatment/recovery processes
- Storage
- Landfill
- Land treatment
- Disposal in surface impoundment
- Underground injection
- Other disposal processes

G. SAMPLE OUTPUTS AND USES OF THE DATA

Two examples of waste tracking with the proposed Biennial Report are shown in Figure 3-3 and 3-4. In these examples, the hazardous wastewater treatment on-site facility has been considered again. Tables 3-3 and 3-4 shows the results of completing the proposed Biennial Reports.

As shown in Figure 3-3, the facility would have identified primary generation on-site to consist of two hazardous waste streams:

- Ammonia Containing Wastewater (D002)
- Acid and Alkaline Wastewater containing metals
- D002,D003,F007,F008,F009

The amount of primary hazardous waste generation would have been reported to be 5300 metric tons. The generation of treatment residuals would have been estimated to be 100 metric tons. There was no shipment of hazardous wastes off-site in this case. The density would have indicated that primary waste generation was aqueous in form.

The generator and facility identification would have been the same as in existing Biennial Reports. Transport description would not have been reported because all wastes were managed on-site.

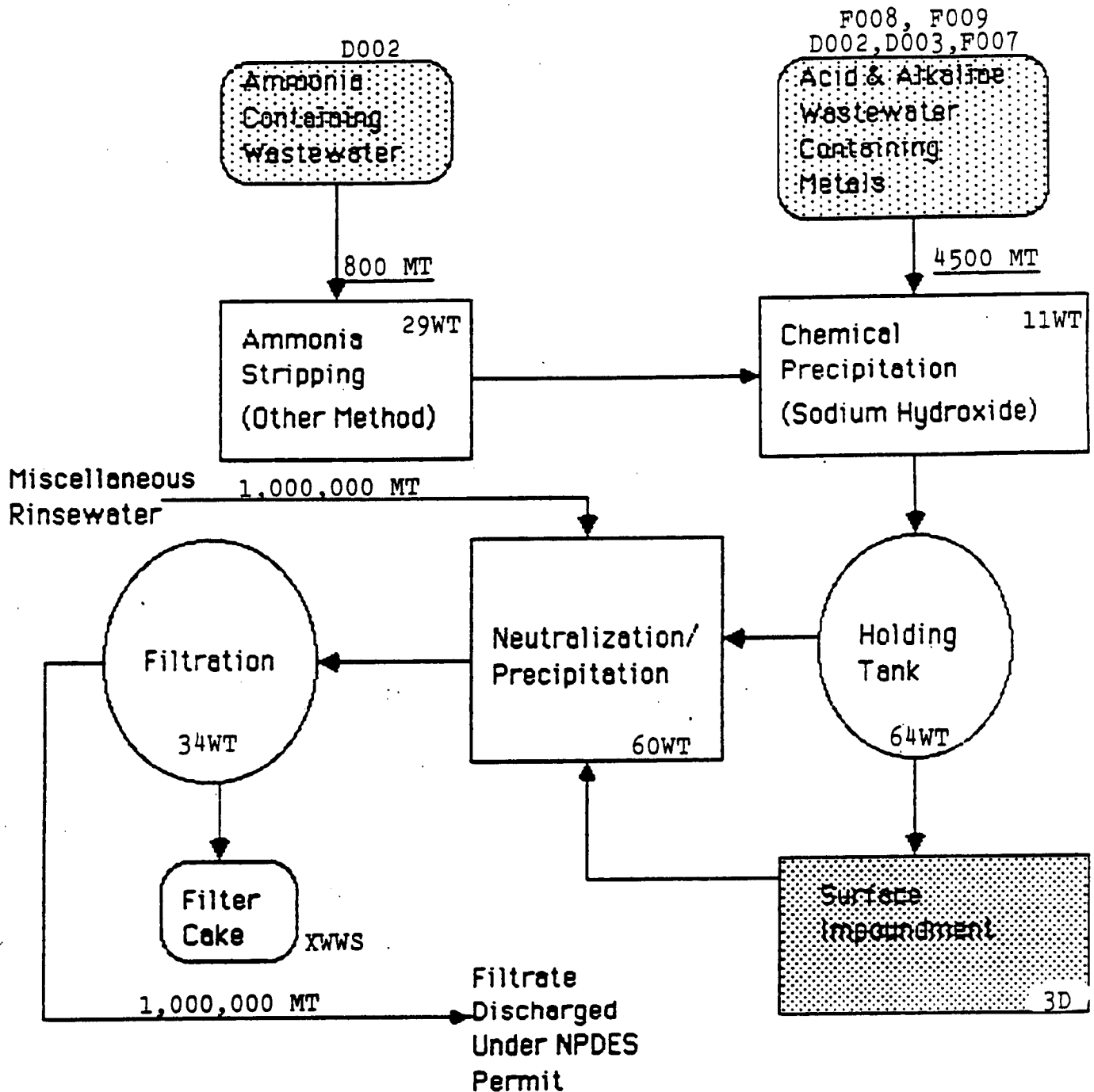
The complete sequence of management methods would have been reported for each waste. For example, the process tracking for ammonia containing wastewater would have been:

- Ammonia Stripping (other method)
- Chemical Precipitation (sodium hydroxide)
- Holding for Equalization
- Neutralization of Supernatant
- Disposal of Bottoms to Surface Impoundment
- Filtration
- Discharge of Treated Wastewater

The 1985 operations would have been reported to involve a primary generation of 13600 metric tons; hazardous waste treatment residuals of 250 metric tons; and shipment of all residual waste for disposal off-site. The changes in physical form of the waste would have been indicated by change in density of residuals. Transport description would have been provided for residuals shipped off-site. A detailed description of changes in management methods would have been also indicated by the new sequence of process codes.

The additional waste quantification, waste transport description, and process tracking will make the proposed Biennial Report capable of producing more detailed and consistent information on hazardous waste generation and management practices.

FIGURE 3-3
HAZARDOUS WASTEWATER TREATMENT ON-SITE
METAL - FINISHING INDUSTRY
YEAR 1983

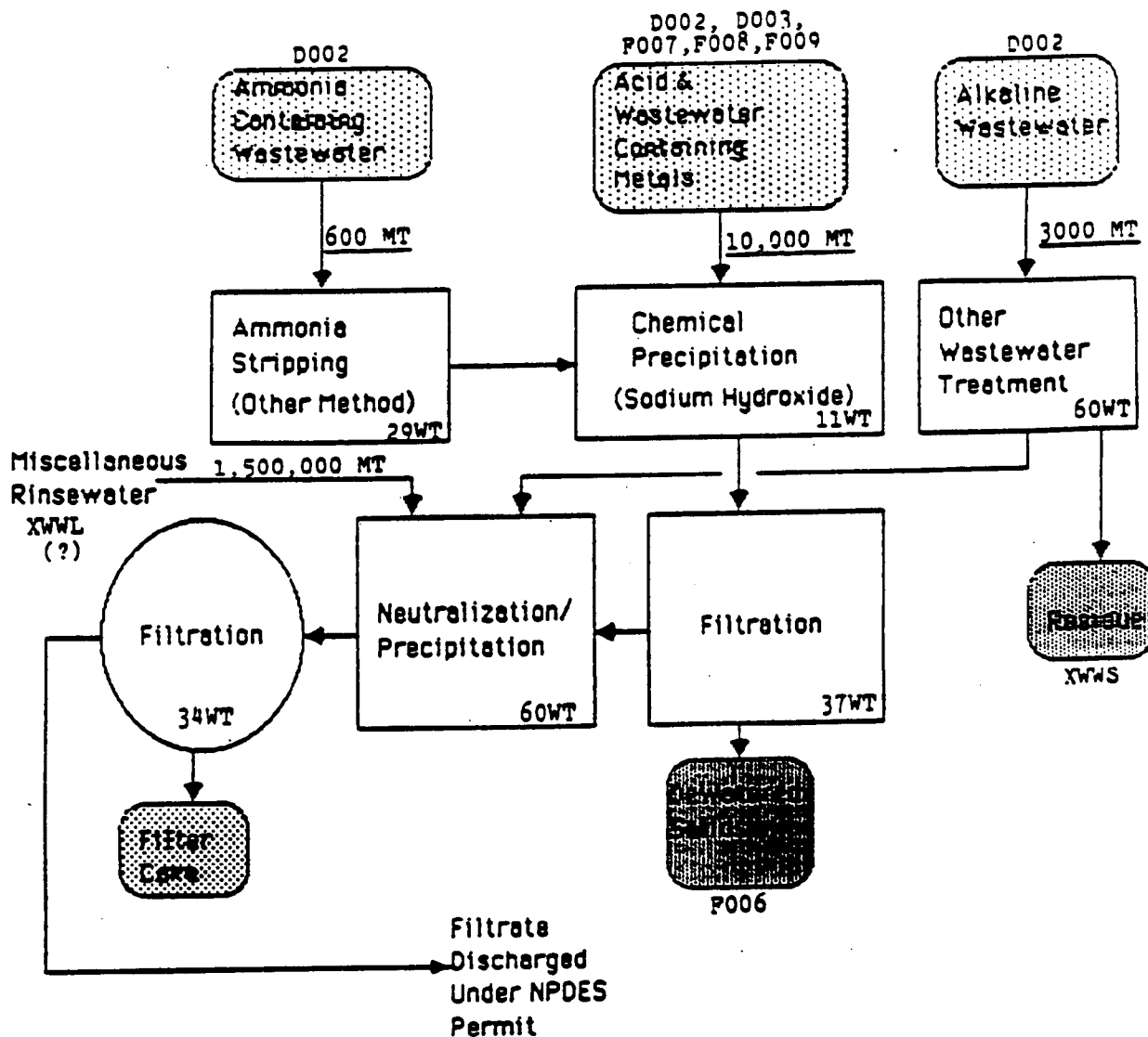


WASTE QUANTITY and PROCESS TRACKING

ALTERNATIVE METHOD of INTERPRETING OPERATIONS

- o Better identification of waste by RCRA Waste Codes
- o Use of process codes
- o Sequence of management methods
- o Complete coverage of ALL waste streams.

FIGURE 3-4
HAZARDOUS WASTEWATER TREATMENT ON-SITE
METAL - FINISHING INDUSTRY
YEAR 1985



WASTE QUANTITY and PROCESS TRACKING
ALTERNATIVE METHOD of INTERPRETING OPERATIONS (1985)

Table 3-3
SAMPLE WASTE TRACKING DATA

Proposed Biennial Report

Example : Hazardous Wastewater Treatment On-Site (Metal finishing Industry) - Year 1983; See Figure 2-3

	<u>Waste #1</u>	<u>Waste #2</u>	<u>Waste #3</u>	<u>Waste #4</u>
<u>Waste Quantification</u>				
Waste Identification	D002	D002,D003 F007,F008 F009	XWWL	F006
Amount of Waste	800 MT	4500 MT	1000000 MT	100 MT
Density	8.4	8.4	8.3	N.A.
<u>Generator Identification</u>	Yes	Yes	Yes	Yes
<u>Facility Identification</u>	On-Site	On-Site	On-Site	On-Site
<u>Transport Description</u>	On-Site	On-Site	On-Site	On-Site
<u>Process Tracking</u>	29WT 11WT 3D/60WT 34WT	11WT 3D/60WT 34WT	60WT 34WT	3D

Note : Waste #1 and #2 represents "Primary Generation"

Waste #3 will not be reported, because the waste is only managed with other non-hazardous wastes. It would have been reported as shown, if managed with primary generation

Waste #4 is treatment residual.

TABLE 3-4

SAMPLE WASTE TRACKING DATA**Proposed Biennial Report**

Hazardous Wastewater Treatment On-Site (Metal finishing Industry) - Year 1985; See Figure 2-4

	<u>Waste #1</u>	<u>Waste #2</u>	<u>Waste #3</u>	<u>Waste #4</u>	<u>Waste #5</u>	<u>Waste #6</u>
<u>Waste Quantification</u>						
Waste Identification	D002	D002,D003 F007,F008 F009	XWWL	D002	F006	XWWS
Amount of Waste	600 MT	10000 MT	1500000 MT	3000 MT	50 MT	200 MT
Density	8.4	8.4	8.3	8.4	12.0	12.5
<u>Generator Identification</u>	Yes	Yes	Yes	Yes	Yes	Yes
<u>Facility Identification</u>	On-Site	On-Site	On-Site	On-Site	Yes	Yes
<u>Transport Description</u>	On-Site	On-Site	On-Site	On-Site	Yes	Yes
<u>Process Tracking</u>	29WT 11WT 37WT 60WT 34WT	11WT 37WT 60WT 34WT	60WT 34WT	66WT 60WT 34WT	1ST 1D	1ST 1D

CHAPTER 4

WASTE CHARACTERIZATION

A. INTRODUCTION AND OVERVIEW

Waste characterization refers to the physical, chemical and other intrinsic properties of wastes regulated as hazardous under the RCRA. The "other intrinsic properties" are those which determine the hazards posed by the wastes to human health and the environment when they are generated, transported, stored, treated, or finally disposed. Knowledge of the specific nature of hazardous wastes is essential for: (1) projecting potential harm to populations at risk; (2) implementing governmental programs to regulate hazardous wastes; (3) planning for manufacturing changes to minimize waste generation; and (4) selecting alternative methods for managing wastes which are generated.

There is a great need to improve the current hazardous waste characterization system. Under the existing approach, waste characterization depends largely on identifying the hazardous characteristics and/or constituents in the waste. A waste is deemed hazardous if it exhibits one of several hazardous characteristics (i.e., ignitability, corrosivity, reactivity, and/or toxicity). Some hazardous wastes, which are usually generated from a specific production process, are specifically listed due to the presence of certain hazardous constituents. EPA uses a 4-character numbering system - RCRA waste codes - for identifying individual hazardous wastes (e.g., D001, F008, etc.). The RCRA waste codes do provide waste characterization, but they do not provide much needed information concerning the physical state or chemical character of the waste. Furthermore, they do not adequately identify the type of hazard involved. Unfortunately, waste characterization data available from the existing Biennial Reports are limited to these RCRA waste codes and a brief narrative description of the wastes.

The two issues which need to be resolved concerning better waste characterization data from Biennial Reports are: (1) what are the needs and uses of waste characterization data in the biennial reporting system, and (2) what data requirements need to be achieved to meet the needs or uses?

Waste characterization data are required in periodic reporting systems for three main reasons: (1) wastes may be generated and managed on a "one-time" basis; (2) patterns of hazardous waste types change with time, because of variations in demand for manufactured products, manufacturing processes, and similar circumstances; and (3) waste characteristics vary within the same industry due to differences in the generators' waste management practices.

By obtaining improved waste characterization data from the Biennial Reports, state governments and EPA can also make a better evaluation of: current hazardous waste generation and management practices; and alternatives to these practices.

B. ADMINISTRATIVE REQUIREMENTS FOR THE DATA

Under RCRA, any waste that are generated, have to be "treated, stored, or disposed of so as to minimize the present and future threat to human health and the environment." Waste characterization data are required to evaluate these management practices for each waste generated. Regulations applicable to handlers of hazardous waste (40 CFR Parts 262 and 264) require that hazardous waste generators and TSD facility owners and operators prepare and submit Biennial Reports to the EPA Regional Administrators by March 1 of each even-numbered year. The Biennial Reports are to describe the wastes generated and handled, and provide information on their treatment and disposal.

The Hazardous and Solid Waste Amendments of 1984 (HSWA) of RCRA require current data as soon as feasible on the availability of capacity at TSDRs to manage particular types of wastes using particular types of technologies and process methods. Although this data will be compiled by EPA through national TSD Facility and Generator Surveys, the information obtained from surveys needs to be updated through Biennial Reports in succeeding years.

EPA's rulemaking responsibilities for hazardous waste management under RCRA and other statutory authority require the agency to develop and maintain detailed and consistent waste characterization data.

Legislation has already mandated environmental agencies in several states to conduct statewide hazardous waste management studies and develop commercial treatment facility plans. Typically these state regulations have required the following steps to be taken: complete a comprehensive inventory of the types and quantities of wastes currently generated; forecast hazardous waste generation in the future; conduct a capacity assessment of existing and planned treatment, storage, and disposal facilities; and determine capacity shortfalls. The states have used manifest data, generator and facility annual reports, permit applications, and surveys to complete these studies. Many of these state plans require updating, and the biennial reporting system can function as a primary data source for this purpose.

C. POLICY OPTIONS

Because of the differing requirements, a decision must be made as to the needs and uses of characterization data in the Biennial Reports, so that the proper information can be included. Four alternatives have been considered. These waste characterization system alternatives are: (1) maintain the present 4-digit RCRA waste code system and provide a narrative description of each waste; (2) implement a system which is presently used by the State of California requiring TSD facilities to define physical properties, and list all hazardous constituents present in each waste with their specific concentrations; (3) use the comprehensive coding system being developed by EPA that employs coding sequences to more systematically describe each waste's hazardous characteristics, physical form, and constituent content; or (4) develop a system based on the agency's generator and TSDR facility survey questionnaires which also require 4-digit waste codes, but employ concise waste description codes to describe the physical-chemical form, and require additional physical-chemical characteristic information.

Alternative one, the current waste characterization system, relies exclusively on the 4-digit waste code and narrative description of wastes. It is inadequate to meet the needs and uses of waste characterization data as indicated previously. The second alternative, California's waste characterization system, has an advantage over the other alternatives by meeting a number of information needs outlined above. However, this system will involve substantially greater reporting and information processing burdens. The comprehensive, new classification of wastes, the third alternative, is not ready for implementation.

The system selected for Biennial Reports should be compatible with the characterization systems selected for other complementary data sources. Alternative four, based on EPA's experience with survey questionnaires, has this feature and is the option that has been selected for the new biennial reporting system.

D. DATA AND INFORMATION REQUIREMENTS

This section identifies the data elements required in Biennial Reports for adequate waste characterization. A justification for requiring each data element is also provided. These data elements have been organized under the following three data categories:

- Data Category A - Waste Identification
- Data Category B - Physical-Chemical Form
- Data Category C - Physical-Chemical Characteristics

Waste identification refers to identifying hazardous characteristics and/or constituents of wastes. Physical-Chemical Form provides a definition of the predominant constituents that give a particular physical state and/or hazard characteristic to the waste. Physical-Chemical Characteristics provide information on special properties of the waste.

1. Data Category A - Waste Identification

The RCRA waste codes provide the best available identification of hazardous constituents and characteristics. The TSD facility and generator surveys conducted by EPA use this data element for identifying wastes. For consistency with waste identification in other data sources, RCRA waste codes should be continued in the proposed system for Biennial Reports. As in the existing Biennial Reports, all applicable waste codes should be reported.

The deficiencies of this data element are expected to be compensated for by the other data categories. For example, to make up for the fact that the constituents are not known for ignitable (D001) wastes, a relevant physical-chemical characteristic should also be reported to better define ignitability.

2. Data Category B - Physical-Chemical Form

This data category is required primarily to describe the treatability of

wastes in the absence of detailed analytical data. A comprehensive list of waste description codes (A/B Codes) has been developed by EPA to supplement the description provided by RCRA waste codes. These codes describe the physical state of the waste and identify their major or hazardous constituents and are used in other EPA surveys of generators and treatment facilities. For example, "caustic solution with metals and cyanides" or "metal scale, fillings, or scrap", etc., are included in this waste code system. Different description codes have been developed for listed wastes and characteristic/mixed wastes. For the purpose of compatibility with other survey information, the Biennial Reports should use the same codes. The information to be reported is readily available to generators and TSD facilities.

Complete, detailed information on physical properties will not be provided by these waste description codes. Neither do these codes provide a complete chemical profile of wastes. The A/B codes, however, greatly expand the information available from the 4-character EPA Hazardous Waste Numbers, and imply a significant amount of additional data describing chemical nature and physical state.

3. Data Category C - Physical-Chemical Characteristics

A waste characterization system based only on a comprehensive list of physical-chemical characteristics can be developed for hazardous wastes without relying on either waste identification by RCRA waste codes or waste description codes. In fact, hazardous waste management facilities require substantial analytical data prior to receiving wastes. Table 4-1 shows a list of the characteristic information required by two commercial incinerators. In addition to this information, these facilities require a chemical profile of the wastes. Although such information is available at many TSD facilities, there are inconsistencies in the analytical data recorded, or required, by different facilities. For the purpose of the biennial report, therefore, consistent information is not readily available on the full panoply of physical-chemical characteristics. Certain characteristics are universally known and used, however. Five of these, in particular, find wide usage and provide basic descriptive information. These five are:

- pH
- BTU
- Density
- Percent Solids
- Percent Water

pH -- This data element is important because a substantial fraction of characteristic wastes show corrosivity. Waste description codes (i.e., A/B Codes) for these wastes can only identify whether a given waste is corrosive due to the presence of acidic or caustic materials. The property of corrosivity is better described by a pH number, which also provides very important analytical data for carrying out treatment of aqueous wastes by physical-chemical-biological methods. As shown in Table 4-1, hazardous waste incinerators also require this characteristic. For incineration, however, pH is required mainly to confirm the compatibility of wastes with the material of

TABLE 4-1

**Physical-Chemical Characteristics Required
By Commercial Incineration**

<u>Characteristics</u>	<u>Facility 1</u>	<u>Facility 2</u>
% Solids	X	
Total Dissolved Solids	X	
Specific Gravity/Density	X	X
pH	X	X
Ash (% WT.)	X	X
Heat Content (BTU/lb.)	X	X
Flash Point	X	X
Sulphur (% WT.)	X	X
Halogens (% WT.)		X
Total Organic Halogens	X	
Total Organic Carbon	X	
Total Nitrogen	X	

construction of process equipment. pH is also required as a "negative" indicator for other waste management technologies, including energy recovery, stabilization, solvent recovery, and metal recovery from liquid wastes.

BTU¹ -- This data element defines the heating value of wastes during combustion and is a prime descriptor due to the large occurrence of ignitable wastes. Waste description codes for these wastes can only indicate the presence of ignitable constituents (organic compounds) in "low", "medium", or "high" concentration. Although ignitability is correctly described by flashpoint (temperature at which waste vapor ignites under prescribed test conditions), BTU was selected in preference because of the use of heating value data at facilities carrying out energy recovery or incineration. Besides being used for energy balance of operations at these facilities, BTU is also used as an indicator of the general incinerability of certain wastes. With the impending ban on land disposal of certain hazardous wastes, incineration technologies are being seriously considered as an alternative method of management.

Density -- This data element has already been selected for waste quantity and process tracking (Chapter 3). Therefore a separate justification of this data element is not required. However, it should be pointed out that density (for both liquid and solid wastes) is a good basis for confirming and quantifying the physical state of waste given by waste description codes.

Percent Solids and Percent Water -- In the total absence of a chemical profile, these two data elements will be very useful for quantifying the physical form given by waste description codes for several wastes. For example, percent solids for a sludge described as "lime sludge with metals", or percent water for an "aqueous waste with low solvents". These data items can be very easily determined and are used for hazardous waste management at different facilities. These facilities include: energy recovery, incineration, waste stabilization, solvent recovery, metal recovery, and chemical-physical-biological treatment of aqueous wastes.

E. USEFULNESS OF CURRENT DATA

Besides waste identification by RCRA waste codes, a narrative description of waste and the DOT Hazard Codes are the only other two data elements in the existing Biennial Reports for providing waste characterization. The narrative descriptions obtained have not been useful for analyses because the information could not be computerized. The existing biennial report gives specific instructions only for a narrative description of unlisted wastes. There are no instructions given for describing mixed wastes. As a result, the characterization data available in narrative description has been inconsistent, if not totally inadequate.

¹British Thermal Unit (BTU). The amount of heat required to raise the temperature of one pound of water one degree Fahrenheit. The BTU value of a substance indicates the magnitude of its potential to release heat when combusted.

The 2-digit DOT hazard codes used in the existing biennial report provide a limited amount of additional information pertaining to the physical form and/or hazard characteristic of wastes. This information, although useful for addressing waste transportation issues, is not comprehensive enough for RCRA waste management considerations.

The RCRA waste codes are suitable for identifying the hazardous constituents and/or characteristics of the wastes. This data element must therefore be retained in the proposed revision of the biennial report. This data element has also been included in EPA's generator and TSDR facility surveys.

F. DESCRIPTION OF THE PROPOSED FORMS

The proposed waste characterization data items to be included in the biennial reporting system are described below :

Waste Identification -- Each waste reported is to be identified as a separate line entry on a special Waste Description (WD) form. Reporting of waste generation quantities, handling methods, and similar information on other forms (e.g., RO, SO, PG, etc.) pertaining to specific wastes are to be linked to the WD line entries by "Waste Reference" page and line numbers. The RCRA waste codes and narrative description used in the existing Biennial Reports will be also used for identifying each hazardous waste in the proposed biennial report. Instead of using the narrative description for additional characterization of wastes, as in the existing reports, the instructions on the proposed Biennial Reports will require use of narrative description if more than one waste stream uses the same combination of RCRA waste codes for identification. If non-hazardous wastes have to be identified, the following additional codes will be used ;

- NWL - Non-hazardous wastes (Liquid)
- NWS - Non-hazardous wastes (Solid/Sludges)

Waste that is considered hazardous by federal or state regulations will be identified by appropriate 4-digit codes. If a specific code does not exist for a state regulated hazardous waste, a narrative description must be provided. All applicable waste codes will be used for identification, without a limit on the number of codes. A complete list of applicable waste codes will be given with instructions on the report.

Waste Description Codes -- The waste description codes (A/B Codes) developed specifically for generator surveys and survey of land treatment facilities will be also used to describe the physical-chemical form of each waste on the Waste Description (WD) forms. If more than one waste description code applied to a waste, the waste will be assigned to the code which best describes its physical-chemical form.

pH -- Reporting of this data element will be required on the Waste Description (WD) forms only for liquid wastes and waste sludges. pH of both hazardous and non-hazardous wastes of the right physical state will be provided. This information is to be provided only by TSD facilities.

BTU -- This data element on the Waste Description (WD) form will be required to be reported for wastes that are either identified by the RCRA waste code of D001 (ignitable waste) or assigned to waste description codes indicating the presence of organic constituents. Thus "wastewater treatment sludge with toxic organics" will be required to report a heating value. This information is to be reported only by TSD facilities.

Density -- The density, in terms of weight per unit volume, will be reported for each waste that is quantified with volumetric units. Density will be on the Primary Generation (PG), Wastes Shipped Off-site (SO), and Waste Received From Off-site (RO) forms. The WD form asks for no quantification data, so that density query is not appropriate. Any suitable unit of measure may be used to give this information. A set of conversion factors from different units of measure to a standard unit of measure (e.g., metric tons per cubic meter) will be given with instructions on the report.

Percent Solids -- This data element will be provided for all liquid wastes and sludges. This information is to be provided only by the TSD facilities.

Percent Water -- This data element will be provided for all wastes. This information is to be provided only by the TSD facilities.

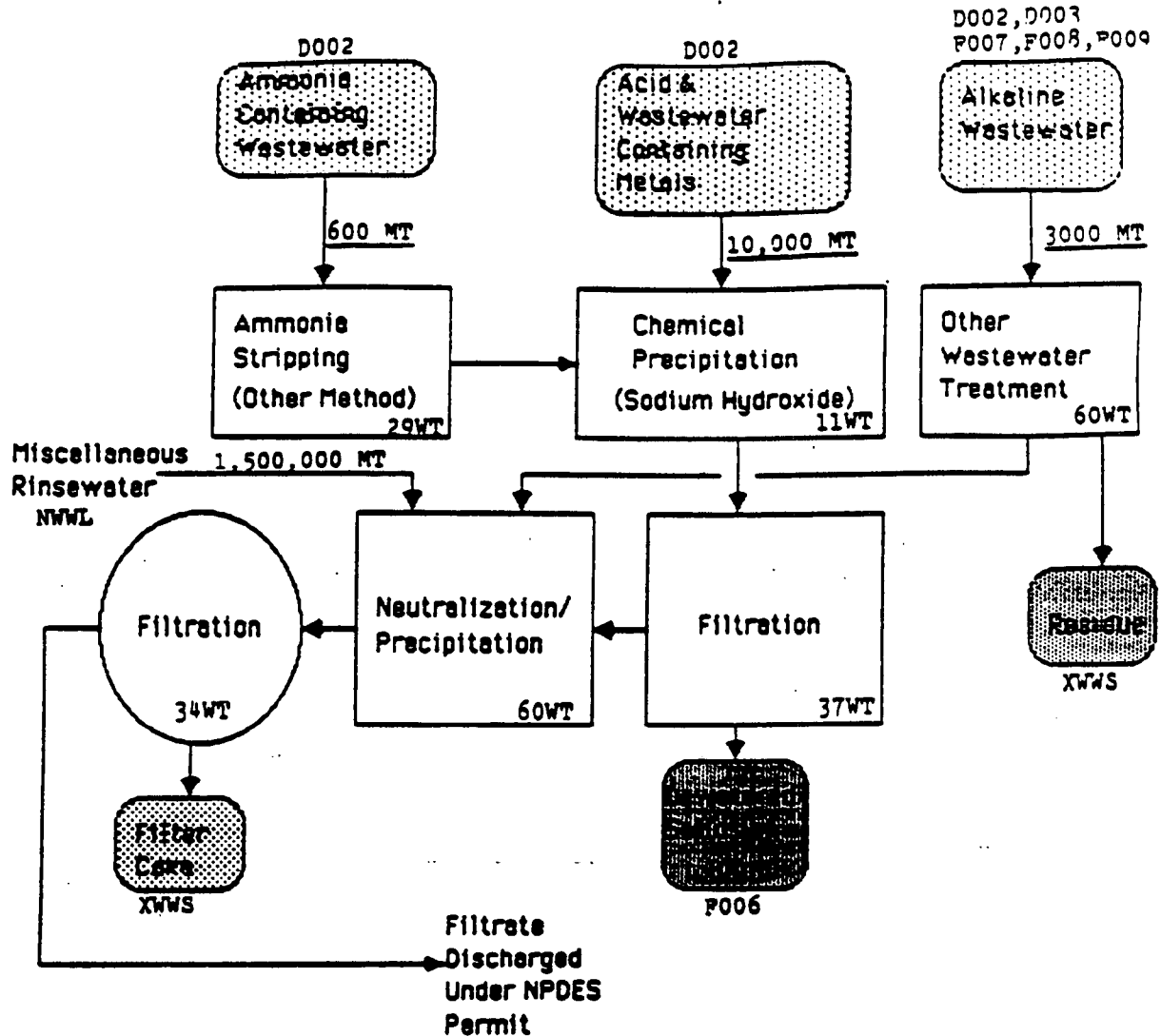
G. SAMPLE OUTPUTS AND USES OF THE DATA

An example of waste characterization with the proposed biennial report is shown in Figure 4-1 which is reproduced here for easy reference. In this example, a wastewater treatment on-site facility is shown. Table 4-2 shows the results of completing the proposed biennial report.

The improvement in characterization data is apparent from this example. The physical-chemical form of the wastes indicates that all the primary generation wastes (Waste # 1, 2 and 3) are inorganic liquids. However, the fact that one waste stream (Waste #1) contains ammonia will not be revealed by the proposed data elements. The presence of cyanides in Waste # 3 is revealed by RCRA waste codes (F007, F008 and F009) and not by waste description code (B07). The pH of the three influent wastes indicates that only two wastes meet the criteria of corrosivity (pH 2.0 or pH 12.5). The proposed criteria for providing data elements do not require BTU to be determined for these wastes. All primary generation wastes will be characterized to be aqueous (100% water) with negligible solids (1%).

Although a dramatic improvement in waste characterization is not expected from the proposed Biennial Reports, the additional waste characterization data along with improved process tracking will help to assign most wastes to appropriate treatability categories for the purpose of facility capacity assessment.

FIGURE 4-1
HAZARDOUS WASTEWATER TREATMENT ON-SITE
METAL - FINISHING INDUSTRY
YEAR 1985



WASTE QUANTITY and PROCESS TRACKING
ALTERNATIVE METHOD of INTERPRETING OPERATIONS (1985)

TABLE 4-2

SAMPLE WASTE CHARACTERIZATION DATA

Proposed Biennial Report

Hazardous Wastewater Treatment On-Site (Metal finishing
Industry) - Year 1985; See Figure

	<u>Waste #1</u>	<u>Waste #2</u>	<u>Waste #4</u>	<u>Waste #3</u>	<u>Waste #5</u>	<u>Waste #6</u>
<u>Waste Identification</u>						
RCRA WASTE CODES	D002	D002	NWWL	D002,D003 F007,F008 F009	F006	XWWS
NARRATIVE DESCRIPTION	---	---	Misc. Rinsewater	---	---	---
<u>Physical-Chemical Form</u>						
WASTE DESCRIPTION CODE	B03	B03	B18	B07	B22	B22
<u>Physical-Chemical Characteristics</u>						
pH	1.8	5.6	6.3	12.7	---	---
BTU	---	---	---	---	---	---
Density	8.4	8.4	8.3	8.4	12.0	12.5
% Solids	< 1%	< 1%	< 1%	< 1%	25%	28%
% Water	> 99%	> 99%	> 99%	> 99%	75%	72%

CHAPTER 5

CAPACITY ASSESSMENT

A. INTRODUCTION AND OVERVIEW

Capacity assessment refers to compiling and analyzing information on the capabilities and usage of different management methods at hazardous waste treatment, storage, and disposal (TSD) facilities to evaluate the present and future availability of capacity to manage particular wastes regulated as hazardous under RCRA. Since the supply of TSD facilities are expected to change over time, capacity assessment must take into consideration, both, the management methods existing at facilities and planned changes. Processes not regulated under RCRA but involving the management of a hazardous waste (for example, discharge of treated wastewater under NPDES permits from TSD facilities) should also be included in the assessment. Finally, the regulatory, economic, and other operational limitations of using particular management methods at particular facilities should be considered.

A good understanding of the current and future capacity of TSD facilities to handle hazardous wastes is required for: (1) effectively implementing existing regulations; (2) revising rules for managing hazardous wastes; (3) planning for, siting and permitting new hazardous waste management facilities; and (4) developing workable waste minimization programs. To meet some of these goals, several state government agencies have compiled information from different sources (manifest forms, permit applications, annual reports and surveys) to perform facility capacity assessments by broad categories of wastes and management methods. However, there is no single existing source of information containing all the data required to make comprehensive capacity assessments.

For example, the planned capabilities of TSD facilities are described in permit applications. However, the actual usage of management methods at TSD facilities may vary from the planned usage.

By tracking waste quantities and waste management methods, the Annual/Biennial Report can provide certain information on the current usage of TSD facilities. This information will be enhanced by implementing the Annual/Biennial Report revisions made in Chapter 3 - Waste Quantity and Process Tracking. However, in addition to the process tracking by particular wastes recommended in Chapter 3, aggregate capacity, by particular waste management methods, is required. This questionnaire section should be designed to update and upgrade permit information, provide capacity information not covered in the waste tracking section of the Annual/Biennial Report questionnaire and seek information on future plans for TSD facilities.

There is no provision in the existing Annual/Biennial Report to enable a capacity assessment. The Annual/Biennial Report revisions proposed in this chapter, if implemented, will substantially increase the use and applicability of the annual/biennial reporting system. However, the additional capacity

information provided by these revisions will not result in the creation of detailed mass and energy balances for each process in use at TSDR facilities. To fully evaluate waste management methods, therefore, separate TSDR facility surveys or inspections will be required.

B. ADMINISTRATIVE REQUIREMENTS FOR THE DATA

Development of regulations under the Resource Conservation and Recovery Act (RCRA) as amended by the Hazardous and Solid Waste Amendments of 1984 (HSWA) requires current data as soon as feasible on the availability of capacity at TSD facilities to manage particular types of wastes using particular types of technologies and process methods. Although this data will be compiled by EPA through national TSD Facility and Generator Surveys to meet the schedule of restrictions and bans called for in HSWA, the information obtained from surveys must be updated through Annual/Biennial Reports in future years.

Among EPA's rulemaking responsibilities as defined by specific Congressional mandates are: land disposal restrictions, revisions to tank permitting standards, accumulation tank standards, best demonstrated available technology (BDAT) standards, revisions to underground injection well standards and air emission regulations. Prior to rulemaking, EPA needs technical information upon which to base regulatory options. EPA must also perform technical assessments - Regulatory Impact Analysis (RIA) and Regulatory Flexibility Analysis (RFA) - to determine the need for future rulemaking. EPA must also be prepared to develop future hazardous waste regulations. To meet these responsibilities EPA must develop and maintain a comprehensive database on hazardous waste generation and management practices, waste characteristics, and the capacity of TSDR facilities to manage wastes.

EPA and the states must also perform technical analyses specified by the new Superfund Amendments and Reauthorization Act (SARA) of 1986. SARA requires each state to assure the Federal government that adequate capacity will exist for disposal or treatment of all hazardous wastes expected to be generated in the state within a 20-year period following the date of assurance. This applies to RCRA wastes as well as wastes generated by response or remedial actions at Superfund sites. Each state, in preparing its capacity assurance document, and EPA, for evaluating the assurance statement, must be prepared to estimate how much hazardous waste treatment, storage, disposal, and recycling capacity exists within the state's boundaries.

TSD facilities' capacity assessments are already mandated by legislation in several states. These laws typically request state environmental agencies to develop statewide hazardous waste facilities plans. The plans involve an analysis of the number and types of facilities needed based both on a survey of wastes produced and the capacity of existing facilities. Both the current and future hazardous waste generation and management are considered in these plans to determine the needs of TSD facilities. In response to state statutes, several have already developed facility plans. Many of these plans require periodic updating, and the annual/biennial reporting system can function as the primary data source for this purpose.

C. POLICY OPTIONS

There is no direct provision in the existing annual/biennial reporting system to obtain capacity-related information. Two new alternatives were considered to address the issue of how the annual/biennial report system could be useful in developing information on available capacity for handling hazardous waste. The first alternative was to request TSD facilities to simply update information provided in their permits or permit applications. The second alternative was to obtain information on both "permitted" and "available" capacities for handling hazardous wastes at the facilities.

The main advantage of the first alternative is that the required information could be easily compared with permit applications. While this will simplify the response of TSD facilities to capacity-related questions in the Annual/Biennial Report, the data obtained may result in a less reliable capacity assessment. First, the availability of underutilized capacity for commercialization would not be known. Next, some of the permitted capacity might be used for non-hazardous wastes. Finally, the throughput capacity of treatment/disposal methods reported in permit applications does not, necessarily, mean that these methods are operated on a continuous basis. The additional information on the availability of capacity that could be obtained by implementing the second alternative, on the other hand, would enable a more realistic capacity assessment.

The Advisory Council recommended that the Annual/Biennial Report be used to obtain information on both "permitted and available" handling capacities. The availability of capacity should address commercialization and handling of non-hazardous waste. The current usage of management methods and future plans for changing handling capacity should be also reported.

D. DATA AND INFORMATION REQUIREMENTS

This section identifies the data elements required in Annual/Biennial Reports for obtaining capacity-related information. A justification for requiring each data element is also provided. These data elements have been organized under the following five data categories:

- Data Category A - Available Capacity
- Data Category B - Status of Management Methods
- Data Category C - Current Use of Capacity
- Data Category D - Residual Generation and Management
- Data Category E - Plans to Change Available Capacity

1. Data Category A - Available Capacity

Available capacity refers to the maximum quantity of waste that can be managed by each method available at a facility under the existing regulatory, economic and physical limitations. Available capacity, rather than the design capacity of the management method as originally installed, is required for sound capacity assessments. In order to link capacity assessment with waste tracking information (Chapter 3), the management methods and descriptive reporting codes for this data element should be the same as for the waste

quantity and processing tracking provisions in Chapter 3.

The following data elements must be provided in this category:

- Throughput Capacity
- Annual Capacity
- Ranking of Factors Influencing Annual Capacity
- Percent of Annual Capacity for Commercial Use

Throughput Capacity -- This data element represents the maximum amount of waste that can be managed by a particular method in a "given" period of time (e.g., gallons per hour). For most waste handling methods, this is the form in which permitted capacity is known to hazardous waste handlers although this does not apply to permitted landfill capacities.

Throughput capacity is an essential data element, but, alone, is not sufficient for capacity assessments. For economic and other reasons, a facility is not likely to operate at its short-term throughput capacity for extended periods of time. The number of shifts operated per day, the number of days per year that operations are conducted, and maintenance downtime all combine to determine long-term capacity availability.

Annual Capacity -- Annual capacity refers to the quantity of waste that can be managed during a year; it can be expected to be less than throughput capacity due to the factors mentioned above. This data element is required for comparisons with actual use of capacity (see below) to estimate the excess capacity of each management method at a facility.

Ranking of Factors Influencing Annual Capacity -- More than one factor may be responsible for the fact that the annual capacity of a management method cannot be directly calculated from throughput capacity. Although it is not necessary for the purpose of capacity assessment to find out how much annual capacity is affected by each factor, it will be very useful to know how these factors compare with each other. For example, the full design capacity of a particular management method may be limited by the operating permit. If this fact can be recognized during capacity assessment, additional capacity may be made available simply by modifying the permit.

Percent of Annual Capacity for Commercial Use -- While evaluating the treatment capacity of TSD facilities, it is necessary to determine this data element for each management method. This is because excess treatment capacity, particularly for TSD facilities operated on-site by manufacturing firms, may not be available to other parties.

2. Data Category B - Status of Management Methods

Waste management methods available at the same facility may differ in commercial, regulatory or operational status. For example, a facility may receive wastes from all generators off-site for physical-chemical-biological treatment but only from certain generators for other processes. Another facility may have closed particular operations, temporarily. Without an understanding of these limitations, capacity information may be misinterpreted

to make incorrect estimates of available capacity. The following data elements must be provided in this category:

- Commercial Status
- Regulatory Status
- Operational Status

Commercial Status -- Many facilities receive wastes from generators owned by the same company. Other facilities are strictly non-commercial. This status must be reported for each management method.

Regulatory Status -- Hazardous wastes are sometimes managed by methods that are not regulated under RCRA. For example, facilities that are treating aqueous wastes and discharging treated effluent under a NPDES permit are given "permit by rule", and management methods at this facility are not regulated under RCRA authority. Hazardous waste fuel burned for energy recovery in industrial furnaces and boilers are regulated separately under RCRA. The regulatory status of each management method at such facilities should be identified, because capacity assessment must consider both regulated and exempt hazardous waste management methods.

Operational Status -- Since capacity assessment evaluates the availability of capacity at present and in the future, both closed (but also to be reactivated) or active management methods at facilities must be identified.

3. Data Category C - Current Use of Capacity

The difference between annual capacity and current use of capacity represents the excess capacity available at facilities. However, both hazardous and non-hazardous wastes are managed at many facilities and affects the actual excess capacity available. The available capacity for commercial use minus capacity actually used, on the other hand, represents the underutilized capacity available for commercialization. The following data elements should be included in this category:

- Quantity Managed Last Year
- Percent Hazardous Waste
- Percent Commercial Use

Quantity Managed Last Year -- This data element is required to make an estimate of excess capacity available for each management method at the facility. It should be pointed out that this quantity may not be the same as the amount of waste either generated or received from off-site at the facility during the same year.

Percent Commercial Use -- This data element is required to make an estimate of the excess capacity available at each management method for commercial waste management. This data element represents the percent of the quantity managed last year that was received from off-site in the past (not necessarily last year).

Percent Hazardous Waste -- This data element represents the percent of the

quantity of waste managed in the reporting year that was hazardous. It is reasonable to project, on the basis of data for the reporting year, a similar breakdown of available excess capacity between hazardous and non-hazardous wastes for the immediate future.

4. Data Category D - Residual Generation and Management

Hazardous waste management methods that generate residuals produce a demand for treatment, storage, and disposal capacity. In order to understand the magnitude and type of this demand, residuals will have to be separately tracked as a part of capacity assessment. In the absence of this data category, no accurate estimates can be made of the percent of waste generated as residuals from different hazardous waste management methods. The following data elements must be provided in this category:

- Quantity of Residuals Generated Last Year
- Percent Hazardous Waste
- Sequence of Management Methods

Quantity of Residuals Generated Last Year -- The total quantity of residuals (including both hazardous and non-hazardous wastes) generated during a year must be known and compared with the quantity of waste actually managed by the same method for a complete residual analysis. Management methods involving continuous processes for physical-chemical-biological processes, for example, usually discharge the total quantity of "influent" wastes as residuals. However, for a particular year, there may be a build-up of treatment sludges in one of the processes resulting in a quantity of "effluent" residuals smaller than the "influent" wastes. The next year, the quantity of "effluent" residuals may be higher than "influent" wastes. Incinerators, on the other hand, usually generate only a part of "influent" waste as residuals.

Percent Hazardous Waste -- This data element represents the percent of the quantity of residual waste generated last year that was hazardous. It is required in order to track the ultimate generation of hazardous waste residuals from treatment, storage, and disposal facilities.

Sequence of Management Methods -- The processes by which each hazardous waste residual generated by a process are managed at a treatment, storage, and disposal facility are defined by this data element. This information is required in order to complete the tracking of hazardous waste residuals which are generated at treatment, storage, and disposal facilities. Management methods for residual management will be the same as the processes uses for tracking primary generation.

5. Data Category E - Plans to Change Capacity

Regulatory, economic and operational considerations may motivate facilities to change their capacities and/or capabilities. If reported in the format used to report current availability of capacity - namely, by management methods - this data category will be invaluable in updating and upgrading capacity assessment to forecast future trends in capacities available for

hazardous waste management. The following data elements must be provided in this category:

- Change in Available Capacity
- Change in Percent of Available Capacity for Commercial Use
- Year for Changing Capacity
- Reason for Changing Capacity

Change in Available Capacity -- This data element is required to make an estimate of the available capacity in future. If the demand for each management method can be forecast, an estimate of the available excess capacity can also be made.

Change in Percent of Available Capacity for Commercial Use -- Any future business plan for changing the commercial availability of management methods should be disclosed in this data element.

Year for Changing Capacity -- This data element will be used to forecast the expected future availability of treatment, storage, and disposal capacities.

Reason for Changing Capacity -- This data element is required to establish the existence of patterns and trends in the availability of treatment, storage, and disposal capacity.

E. USEFULNESS OF CURRENT DATA

There is no provision for a complete capacity assessment in the existing Annual/Biennial Reports or permit applications. The capacity information available in permit applications provides only design capacity of broad categories of processes regulated under RCRA. The commercial status of the processes is not clearly identified by permit information. The current use of capacity is tracked only by final management methods in existing Annual/Biennial Reports. Even at facilities with only one management method, use of capacity cannot always be compared with design capacity due to the use of different units of measure. Residual generation and management are not specifically tracked by current data. Future plans for changing design capacity are known only through revised permit applications. The provision for capacity assessment in the biennial reports will provide, therefore, a substantial improvement of current data.

F. DESCRIPTION OF THE PROPOSED FORMS

The proposed data items to be included in the biennial reporting system for capacity assessment are described below:

Available Capacity -- Both throughput and annual capacity will be reported on the Process Summary (PS) form for each management method at the facility. Design capacity will be the basis for reporting throughput, with applicable regulatory, economic, and operational limits used to estimate annual treatment, storage, and disposal capacities.

The percent of annual capacity for commercial use will be estimated by considering the current business plans of the facility.

Although data elements in this category will be largely based on assumptions made by facilities, the information obtained will describe the existing situation better than any other existing data sources.

Status of Management Method -- The commercial, regulatory and operational status will be reported on the Process Summary (PS) form for each management method. Simple characteristic codes will be used. The commercial status will be selected from the following categories :

- Commercial
- Limited Number of Other Firms
- Limited Number of Firms Owned by the Same Company
- Non-commercial

The regulatory status will determine whether the management method is regulated under RCRA or exempt. The operational status will determine whether the management method is active, closed or temporarily closed.

Use of Capacity -- The amount of hazardous waste managed last year by each method will be reported in the same unit of measure used for annual capacity. The facility will also report the percent of this amount for commercial use. The breakdown of current use between hazardous and non-hazardous wastes will be reported, as well.

Residual Generation and Management -- Each management method resulting in the generation of residuals will be identified on the PS form and residuals will be determined to be hazardous or non-hazardous effluents. The quantity and sequence of management methods for each residual will be also reported. Management methods for residual management will be the same as the processes used for tracking wastes.

Plans to Change Capacity -- Each change of annual capacity in the future is reported by providing the expected new annual capacity. The year for expected changes during the next five years is to be reported. The reason for each change is to be reported as a code corresponding to one of the following categories:

- Change in Production
- Change in Production Methods
- Change in Waste Management Methods
- Change in Regulatory Status of Waste Management Method
- Change in Commercial Status of Waste Management Method
- Other Reasons

Any change in percent annual capacity for commercial use will also be reported by providing the new percentage.

G SAMPLE OUTPUTS AND USES OF DATA

An example of capacity assessment with the proposed biennial report are shown in Figures 5-1 and 5-2. In this example, the available capacity of an on-site hazardous wastewater treatment facility is shown for the year 1983 (Figure 5-1). The planned modifications of this facility are shown in Figure 5-2 for the year 1985. The results of completing the proposed biennial report for 1983 for capacity assessment by management methods are shown in Table 5-1.

Both throughput capacity and annual capacity are given for each management method at this facility. The ranking of factors for influencing annual capacity shows that "physical limitations" prevent the facility from having a higher capacity. These limitations are coded in Table 5-1 as follows :

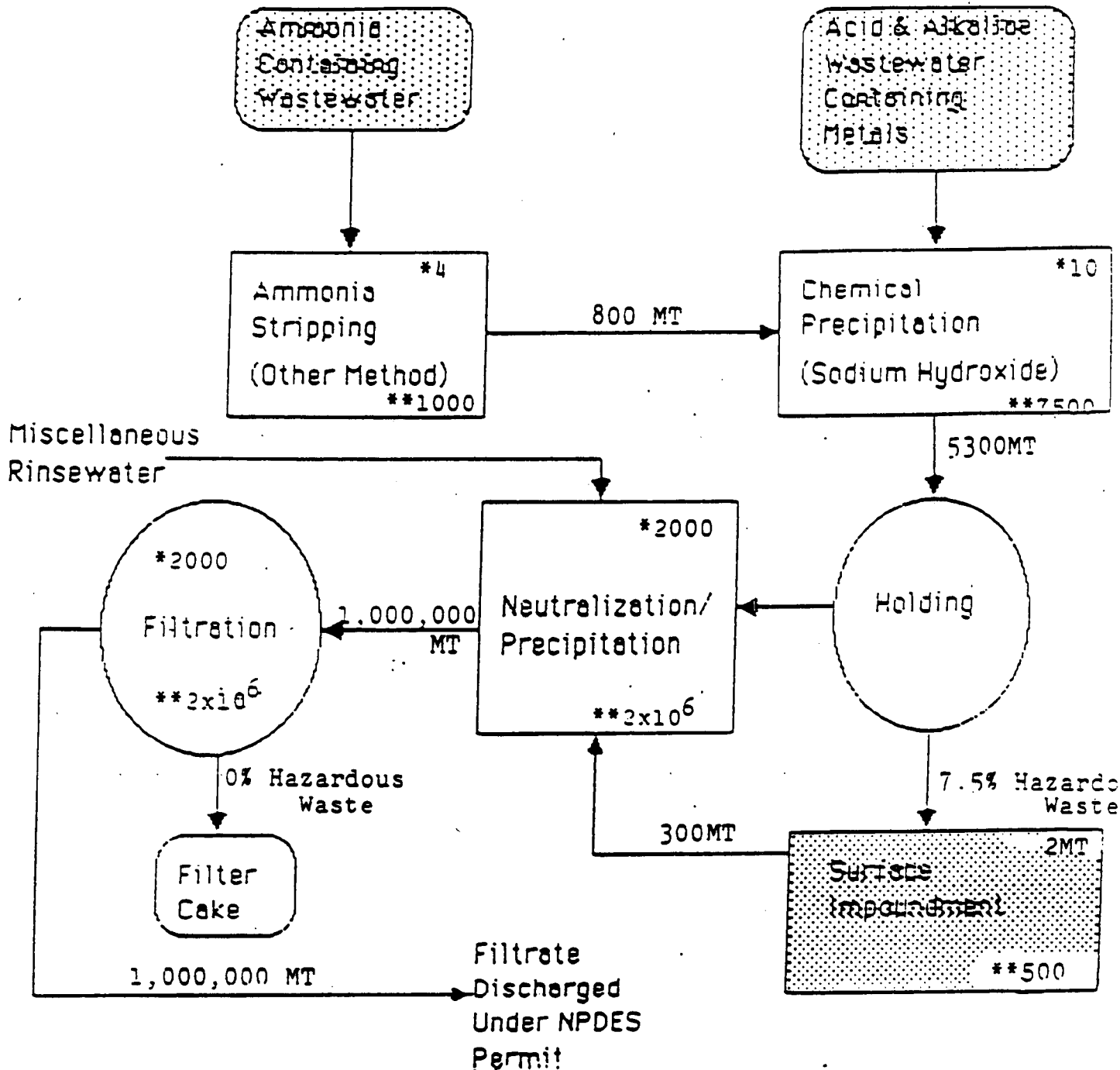
- Operational schedule (3a)
- Planned downtime (3b)
- Other physical limitation, such as physical limitation on another management method (3c)

The facility is entirely non-commercial. Three out of the existing management methods are regulated under RCRA. These are either the treatment or disposal of hazardous wastes. All management methods are active. The current use of the capacity for each management method is given. Four management methods receive hazardous wastes - 100 percent of "influent" waste as hazardous in all four cases. Only three out of these four methods generate hazardous waste residuals; the fourth method is a disposal process. The sequence of subsequent management methods for these three hazardous waste residuals are also given.

Plans for changing capacity by 1985 includes : increase in capacity of a hazardous waste treatment process; closure of disposal method; and replacement of disposal by filtration. The changes in capacity expected by 1985 for these three methods are also given. The reasons for changes are given as : change in production or change in management method.

This example illustrates how the additional data elements proposed for biennial reports will enable for the first time periodic updates of capacity information to track the availability of excess capacity by individual treatment, storage, and disposal methods.

FIGURE 5-1
HAZARDOUS WASTEWATER TREATMENT ON-SITE
METAL - FINISHING INDUSTRY
YEAR 1983



ADDITIONAL INTERPRETATIONS of OPERATIONS

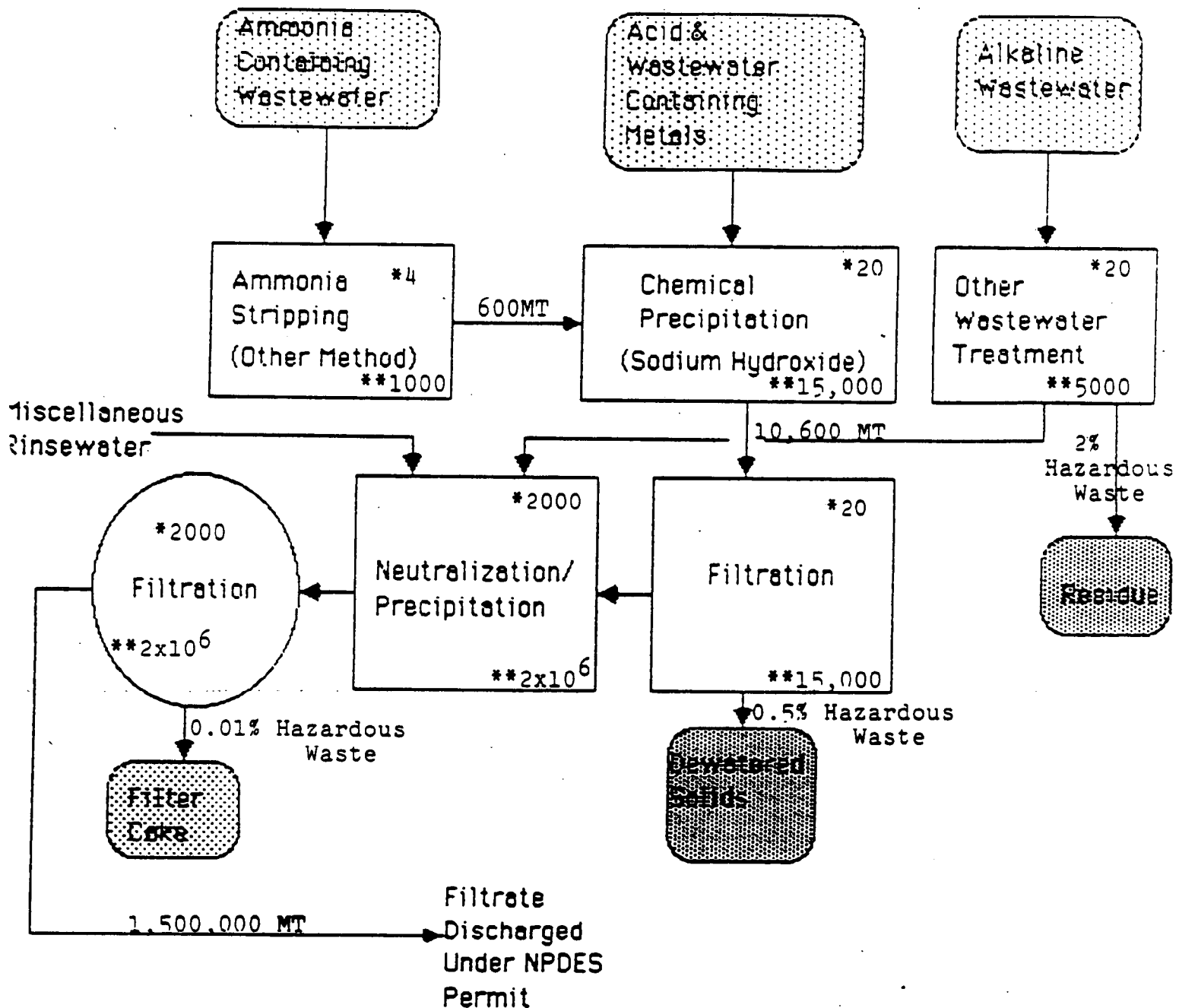
For CAPACITY ASSESSMENT

FEATURES

- o Available Capacity for each Management Method
- o Residual Generation
- o % Hazardous Waste in Residuals

* Throughput Capacity (MT) in 8 Hrs.
** Annual Capacity (MT)

FIGURE 5-2
HAZARDOUS WASTEWATER TREATMENT ON-SITE
METAL - FINISHING INDUSTRY
YEAR 1985



ADDITIONAL INTERPRETATIONS of OPERATIONS

For CAPACITY ASSESSMENT

FEATURES

- o Available Capacity for each Management Method
- o Residual Generation plus % hazard waste in residual

* Throughput Capacity (MT) in 8 Hrs.
** Annual Capacity (MT)

Table 5-1

SAMPLE CAPACITY ASSESSMENT DATA

Proposed Biennial Report

Example : Hazardous Wastewater Treatment On-Site (Metal finishing Industry) - Year 1983; See Figure 5-1

MANAGEMENT METHODS :	29MT	11MT	64MT	3D	68MT	34MT	37MT
<u>Available Capacity</u>							
Throughput Capacity (Metric Tons per Shift)	4	10	N.A.	2	2000	2000	---
Annual Capacity (Metric Tons per Year)	1000	7500	N.A.	500	2000000	2000000	---
Ranking of Factors (Only highest Rank)	3b	3a	N.A.	3c	3c	3c	---
Percent of Capacity for Commercial Use	0	0	0	0	0	0	---
<u>Status of Management Methods</u>							
Commercial Status	----- Non Commercial -----						
Regulatory Status	A	A	B	A	B	B	---
Operational Status	A	A	A	A	A	A	---
<u>Current Use of Capacity</u>							
Quantity Managed in 1983 (Metric Tons)	000	5300	5300	400	1000000	1000000	---
% Hazardous Waste	100	100	100	100	0	0	---
<u>Residual Generation and Management</u>							
Quantity of Residual in 1983 (MT)	000	5300	5300	300	1000000	1000000	---
% Hazardous Waste	100	100	7.5	0	0	0	---
Sequence of Management Methods	11MT 64MT 3D/68MT 34MT	64MT 3D/68MT 34MT	3D	---	---	---	---
<u>Plans to Change Capacity</u>							
Change in Available Capacity (New Capacity in MT)	---	15000	---	0	---	---	15000
Year		1985		1985			1985
Reason for Change		1		3			

CHAPTER 6

WASTE MINIMIZATION

A. INTRODUCTION AND OVERVIEW

EPA is in the process of defining a strategy for waste minimization. In designing such a strategy, it is particularly important to distinguish between short-term and long-term objectives. It is clear that in the short-term, waste minimization efforts must concentrate on data development and information transfer.

Information that discusses waste reductions technologies, as well as statistics on the basic economic benefits of waste reduction is readily available. What is not available is quantitative information, e.g., per unit of production in specific industries, on waste generation and reduction that has occurred. Without this information, it is impossible to determine whether waste minimization activities are really occurring or if the reduction is due to reduced productivity, and in what sectors of the economy the reductions are being made.

It is also accepted that the most positive change in waste management takes place when generators eliminate or reduce the production of hazardous waste. To assist regulatory agencies in their waste minimization efforts, quantitative information on waste minimization activities must be reported by the regulated community.

This chapter discusses how the requirements of EPA for more waste minimization data mesh with the recommendations of the NGA Advisory Council. A draft questionnaire form is presented, along with a rationale explaining the questions that are asked and how the data will be used.

B. ADMINISTRATIVE REQUIREMENTS FOR THE DATA

Section 3002 (Standards Applicable to Generators of Hazardous Waste) of the Resource Conservation Recovery Act (also commonly referred to as RCRA, from the 1976 Title of the statute, "Resource Conservation Recovery Act"), as amended by the Hazardous and Solid Waste Amendments (HSWA) of 1984, states that "the Administrator shall promulgate regulations establishing such standards, applicable to generators of hazardous waste identified or listed under this subtitle, as may be necessary to protect human health and the environment. Such standards shall establish requirements respecting...

(6) submission of report to the Administrator (or the State agency in any case in which such agency carries out a permit program pursuant to this subtitle) at least once every two years setting out--

(A) the quantities and nature of hazardous waste identified or listed under this subtitle that he has generated during the year;

(B) the disposition of all hazardous waste reported under the subparagraph (A);

- (C) the efforts undertaken during the year to reduce the volume and toxicity of waste generated; and
- (D) the changes in volume and toxicity of waste actually achieved during the year in question in comparison with previous years, to the extent such information is available for years prior to enactment of the Hazardous and Solid Waste Amendments of 1984."

Requirements (C) and (D) of Item (6) were mandated by HSWA and became effective in September of 1985. The 1985 Biennial Report was subsequently modified to incorporate the two new waste minimization requirements. A "narrative description" of both the efforts undertaken during the year to reduce the volume and toxicity and the changes in volume and toxicity of waste to previous years was required as part of the 1985 Biennial Report submission.

EPA has found it impossible, however, to analyze the "narrative descriptions" that were submitted. Since there was no uniform reporting form (except for a blank page) to report waste minimization practices, the generators provided as little or as much information as they felt necessary to fulfill the requirement. In general, however, generators failed to adequately identify the waste that was reduced and the narrative descriptions provided little detail on waste minimization techniques. Consequently, these forms provided little useful information on waste minimization practices. Only a few narrative descriptions actually provided documentation of changes in volume and toxicity.

In view of this poor mechanism for reporting waste minimization information and data, EPA is proposing to revise the Annual/Biennial Report to: (1) streamline the waste minimization section to increase the likelihood of the generator reporting the data and information fully and correctly; and (2) ensure that generators report their waste minimization efforts in a consistent format that lends itself to analysis. In turn, this will allow EPA to assess the progress and trends in waste minimization and fulfill the statutory requirements of the HSWA.

This information will be used in the development of a 1990 Waste Minimization Report to Congress (RTC). In October of 1986, EPA submitted a RTC on the desirability and feasibility of establishing "command and control" regulations for the minimization of hazardous waste. This report was in response to a statutory mandate in HSWA. The report concluded that existing data and information on waste generation patterns were insufficient to recommend a major new regulatory program in the area of waste minimization. It was recommended that the Agency aggressively attempt to gather better information and data on waste generation patterns and trends in order to better understand the nation's hazardous waste generation profile and assess the need for regulatory action. EPA committed to report back to Congress on the need for command and control regulations by December 1990, the earliest date that they felt a decision could be made.

In light of this commitment, it is essential that the Agency gather comprehensive and uniform data in a consistent manner on waste generation and minimization. The proposed Biennial Report form offers this opportunity by

providing EPA with a consistent mechanism to collect and monitor hazardous waste data and information.

In addition, it is anticipated that the reporting results from the revised format will allow EPA to structure a more effective and comprehensive information dissemination and technology transfer program on waste minimization.

C. POLICY OPTIONS

This section briefly summarizes options which were considered as possible approaches to the waste minimization section and discussed in the paper presented at the Advisory Council meeting in May.

The first option is to repeat the 1985 Generator Biennial Report Questionnaire and ask for a narrative description of all waste-minimization activities. A slight variation of this would be to also ask TSD facilities to answer a narrative question on their activities. The 1985 Facilities Questionnaire did not ask for any information on waste minimization.

One advantage to the narrative option is that it minimizes the burden on respondents by allowing them to write whatever they wish. In some instances, respondents have given very detailed accounts of their minimization activities -- more information than would most likely be received in a question format. The major disadvantage of a narrative is that it leaves to the discretion of the respondents what information they wish to provide. This makes it almost impossible for EPA to determine how minimization activities are occurring nationwide.

Another alternative is one that is proposed by Exxon Corporation and the Chemical Manufacturers Association. This proposal calls for dividing the information requested into two parts; one for management practices for minimizing waste and the other for information on waste-minimization results for any two-year period that would allow comparisons. The reporting is to be requested by year in tons and is to be divided into waste generated and wastes disposed of. The second part also requests information on the total production of saleable goods from the facility, so that waste generation can be calculated on a normalized, per unit of production, basis.

Two major advantages to this alternative are that the questions are short and easy to understand, and that totals will be easy to aggregate and enter into a national data system. The information received from this type of reporting will be far more than EPA has received in the past.

The disadvantages to this option are that a lot of the specific details of a facility's waste-minimization efforts will not be disclosed by simple "Yes/No" responses, nor will it be possible to determine whether changes in toxicity have occurred.

The third option, which reflects the comments of the Advisory Council and meets the required data and information needs of EPA, is presented in the draft proposed form. Many of the questions and the format are modified

versions of New Jersey's annual waste-minimization report. This option represents a compromise between minimizing reporting burdens and meeting the data requirements of RCRA managers. The pros and cons of this option are presented in greater detail in Section H.

D. DATA AND INFORMATION REQUIREMENTS

As discussed in Section B, Section 3002 (6)(c) and (d) of SWDA requires EPA to promulgate regulations that require at a minimum biennial reporting of efforts undertaken during the year to reduce the volume and toxicity of wastes generated, and changes in volume and toxicity of waste actually achieved during the year in comparison with previous years.

Six broad areas were found to be crucial to meet this intent of Congress as well as fulfill EPA's need for waste-minimization data for regulatory analysis:

- The current status of the waste-minimization program;
- Minimization practices;
- Waste generation and management practices;
- Production levels;
- Past and future waste-minimization activities; and
- Supplemental information that would allow analyses of health and environmental impacts of treatment and disposal.

Under each of these topics, additional detailed questions were required to answer the six broad topic areas. More specifically, these requirements address the need for information that establishes:

- A baseline with regard to toxicity and volume of waste streams by industrial category, geographic area and size, and unit of product output;
- A baseline with regard to source reduction, recycling, treatment, and disposal capacities for those waste streams;
- Short term trends in these figures;
- Changes in manufacturing processes that result in reduced generation of waste; and
- Changes in recycling, treatment, and disposal practices.

E. USEFULNESS OF CURRENT DATA

The best data available to EPA on the amount and content of hazardous wastes were developed by surveys conducted in 1981 and 1983. These data are

no longer current and are known to be of uneven quality because of reporting errors and the small sample sizes from which the information was extrapolated. Neither survey requested specific information on waste minimization. As stated earlier, the narrative waste minimization information reported on the 1985 Biennial Report is also of little use to EPA in determining minimization practices.

Other potential sources for EPA to obtain information on waste minimization data are the New Generator Survey, the TSD Survey, the Uniform Manifest System, TSCA Section 8 Reporting Requirements and the SARA Title III Toxic Chemical Inventory Form. Case studies and modeling activities are also being developed by EPA's Office of Research and Development that will enhance EPA's understanding of waste minimization. Although these sources will provide some information to EPA that can then be used to meet the statutory and regulatory requirements, the Biennial Report is believed to be the most appropriate mechanism to receive complete information from all generators and TSD's on a periodic basis. Information derived from TSCA Section 8 and the SARA Title III Toxic Inventory Form will not be available in time to be included in EPA's 1990 Report to Congress.

F. DESCRIPTION OF THE PROPOSED FORMS

In response to Section 3002 (6)(c), of the SWDA, a set of questions have been developed to assess a generator's "efforts" toward waste minimization. While some of these questions may be considered "soft information" they will add to EPA's ability to understand waste minimization activities that are occurring. In response to Section 3002 (6)(d) of SWDA, additional data elements have been developed to assess the changes in volume and toxicity actually achieved during the reporting year.

Described below are the proposed waste minimization components of the Biennial Report and a justification for including the information on the 1987 Biennial Report form. As the proposed form is currently structured, there are 10 exclusive waste minimization questions and another 9 descriptors that are needed for waste minimization analysis but are included on other proposed forms. The waste minimization questions are included in the special Waste Minimization (WM) form. The descriptors are contained in the Waste Description (WD), and Process Generation (PG) forms. For purposes of discussion, this section lists the justifications for all of the questions and descriptors that apply to waste minimization.

1. Waste Minimization Questions

Question 1: Does this facility have a written statement which outlines goals, objectives, and practices of waste minimization? -- As part of the waste minimization manifest certification and as a condition for an on-site treatment, storage, and disposal permit, generators must certify that they have a waste minimization program in place. This question will identify those generators that have made, at least in writing, a commitment to waste minimization and have identified goals, objectives, and operational practices for waste minimization.

Information on the proportion and patterns of such commitments across the nation are valuable for targeting public agency waste minimization programs.

Question 2: In the past two years, has this facility conducted a waste minimization assessment that identifies ways to reduce the volume of waste generated? -- An important first step towards achieving waste minimization is to conduct a "waste minimization assessment" (WMA). An essential element of a waste minimization program is the planning and execution of a WMA. The primary objective of a WMA is to reduce the quantity and/or toxicity of waste leaving a production or manufacturing process. In many cases, the assessment process, is the cornerstone of a generator's overall WM program. It provides the key inputs for the generation of WM options, as well as the decision of which WM measures should be implemented. Aggregate information, describing who has conducted WNA efforts, and where, is useful to RCRA agencies for planning waste minimization campaigns.

Question 3: Were any of the recommendations made in the waste minimization assessment implemented? -- The implementation of an option or options identified in a WMA is another indicator of a generator's commitment to waste minimization and their acknowledgement of the benefits of waste minimization.

Question 4: Does this facility have a training and rewards program to train employees on waste minimization and to encourage the identification of new ways to minimize hazardous waste generation? -- One component of a waste minimization program that has been identified by many industries as a key element is an employee training and reward program for waste minimization. It is important for management to make the commitment to minimization. The most effective way management can do this is by training employees and by rewarding those that do a good job. In addition, it creates an overall awareness at the facility of the importance of waste minimization. The establishment of a training/rewards programs within a company is considered a strong effort in waste minimization.

Question 5: Has this facility utilized the services of a Waste Exchange or a Waste Broker to minimize the amount of hazardous waste to be treated, stored, or disposed of? -- This information will demonstrate the number of facilities that are utilizing the services of a waste exchange or waste broker, and if the services are being provided only to a select group of industries, in one region of the country. The data can then be used to encourage other markets for these services in other regions of the country as what is "waste" to one firm may be of economic value to another. Waste minimization can be accomplished by putting waste materials to use and information describing the extent to which "exchanges" are undertaken is valuable for public agencies planning waste minimization programs, and evaluating their success.

Question 6: Has this facility applied for and/or received technical assistance, monetary grants, or benefits from States to implement techniques to reduce the volume and/or toxicity of the hazardous waste generated? -- It is important to know whether facilities are seeking outside sources for assistance on waste minimization in order to develop a profile of "efforts" made to minimize hazardous waste. Company inertia, lack of information and

resistance to change have been identified as the three major stumbling blocks to waste minimization. This question will also determine whether or not the need for outside sources/funds is also a major stumbling block to implementing waste minimization.

Question 7: Has this facility ever received any information or technical assistance on waste minimization that has resulted in waste minimization? If yes, indicate how that information was obtained. -- This question is important for gaining an understanding of how current information is being disseminated and will allow EPA to target the transferring of waste minimization information in the future.

Question 8: Why were waste minimization programs implemented at this facility? -- This question is important because it enables EPA to understand the reasons why waste minimization activities are occurring. EPA can then encourage other facilities to implement such programs showing nationwide statistics on why others are implementing programs. It will also enable EPA to target their research and development efforts on those activities that are known to be well received.

Question 9: What effect does this facility's waste minimization programs have on the quantity of water effluent generated? -- In discussing waste minimization activities for RCRA waste it is important to understand whether those activities have also meant an increase in pollutants that are not regulated under RCRA. It is therefore crucial to have some indication of whether there has been any increase in the quantities of waste water that will also need to be properly disposed of, so that waste minimization activities can be properly targeted.

Question 10: What effect does this facility's waste minimization programs have on air emissions? -- In discussing waste minimization activities for RCRA waste it is important to understand whether those activities have also meant an increase in pollutants to another media that may be less stringently regulated. If RCRA waste is being reduced at the expense of increases in air emissions then waste minimization activities will need to be refocused.

2. Other Waste Minimization Descriptors

Descriptors from other forms that apply to waste minimization are listed and justified below:

EPA Hazardous Waste Number -- It is a regulatory requirement that a generator identify hazardous waste generated by the EPA Hazardous Waste Number. For waste minimization it is important to know the particular type of waste generated.

A/B Waste Description Code -- EPA has developed a complementary coding system for hazardous waste providing additional physical state and chemical nature data. This new information will be important in attempting to assess the nation's hazardous waste profile. This profile, in turn, will be important when considering priorities for regulatory action in waste minimization.

Narrative Description of Waste Generating Process -- It is important from a waste minimization perspective to know where the waste is coming from. Not only is this information required under Section 3002(6)(D) of the SWDA, it is important for EPA to have this information when they assess the need for waste minimization regulations.

The information required after identifying the waste by the EPA hazardous waste codes, is "how" or "why" the waste was generated. Without this information, it is difficult to determine whether a waste code refers to a manufacturing process residual, contaminated material, etc. This information is already provided for some listed wastes, however problems have occurred when the "characteristic" wastes are reported. This "field descriptor" will allow for a description of all the waste generating processes for all wastes using a narrative.

4-digit SIC code -- The Standard Industrial Classification (SIC) Code is a classification structure which categorizes industries on the basis of their principal product or activity. The purpose of the SIC is to facilitate the collection, tabulation, and analysis of data for promoting uniformity and comparability in the presentation of statistical data.

For waste minimization purposes, the (450) four-digit SIC Code for generators will be used to provide baseline information on particular industries. Such baseline data is valuable for focusing attention on waste minimization potentials for certain generators. The advantage of a 4-digit SIC over a 2-digit SIC is that with the 4-digit, one is able to determine more precisely the industry that is involved. For example, SIC 34 represents the fabricated metal products industry, whereas SIC 3471 refers more specifically to the electroplating, polishing and coloring industries.

Another option to the 4-digit SIC code is the 7-digit SIC code. The extra information that would be described in the last 3-digits would allow comparisons of the processes the industry is using. Although this information is crucial for waste minimization analysis, it is expected that the previous descriptor, requesting a narrative description of the waste generating process, will satisfy this requirement. It is also believed to be much easier for most generators to complete. Although economic information on particular production processes by 7-digit SIC code is reported annually to the Bureau of Census, for the purposes of the Biennial Report, most generators will have a difficult time determining their correct 7-digit SIC product code from the 11,000 categories available.

Source Code -- In order to understand the nation's hazardous waste generation profile, it is important to know why the waste was generated. In assessing the need for waste minimization regulations and targeting them, it is essential to know, for example, whether the waste came from a manufacturer's degreasing operations or is a residual from waste treatment. Waste minimization potential is dependent upon the origin of the waste.

Current Year Quantity Generated and Previous Year Generated -- It is a requirement that a generator report the changes in volume and toxicity of waste actually achieved during the year in question in comparison to previous

years. In fulfillment of this requirement, it is recommended that generated wastes be reported for 1986 and 1987. It is important for some unit of measure (e.g., gallons, tons, etc.) to be reported along with the generation quantity in order for the information to be analyzed properly.

Productivity Code -- In order to accurately assess patterns in waste generation, it is essential that one take into account production variations over time. For this reason it is important to normalize waste minimization data in terms of the ratio of units of waste to units of production. For example, an industry may experience a production growth of 150% with a subsequent 150% increase in waste generation. In terms of units of waste per unit of production no change is evident. However, if some waste minimization technique has been implemented, this would be illustrated in their waste/production ratio.

For these reasons, it is important for EPA to have an indication of economic activity and its relationship to hazardous waste generation. In the revised Biennial Report, an economic activity ratio for each of the wastes reported is proposed.

To preserve confidentiality, the production data will be reported as a ratio of the 1987 production generating that particular waste to 1986 production. This is the same as assuming that the 1986 production is a base year with the value of 1.0. An example of the production ratio follows for a D002 waste field description:

```
-- 1986 production of widget x = 10.5 million
-- 1987 production of widget x = 12.5 million

-- 1987 production ratio for D002 waste = 12,500,000 / 10,500,000
                                         = 1.19 normalized 1987
                                           production for D002 waste
                                           from the production of widget
                                           x
```

In the revised biennial report it is proposed that for each waste reported an economic activity ratio also be reported.

Reasons for Change in Quantity -- In the absence of production fluctuations, it is important for EPA to know why waste generation rates increased or decreased. Therefore, the revised reporting form provides a coded list of reasons, including waste minimization, to describe these fluctuations. This type of information will allow EPA to more accurately assess the national waste generation profile and determine what decreases in waste generation can be attributed to waste minimization, production variation, or some other reasons. The codes being proposed are the following:

- Equipment modification
- Process modification
- Raw material substitution
- Product substitution

- Good housekeeping and improved handling
- On-site recycling or reclamation
- On-site burning in boilers
- Off-site recycling or reclamation
- Off-site burning in boilers
- Accumulation of wastes
- Wastewater treatment on-site
- Air Pollution control on-site
- Modifies hazardous waste management methods
- One-time quantify
- Other

Reasons for Change in Toxicity -- The regulatory requirement for waste minimization requires that a generator describe the changes in "toxicity" of the waste actually achieved during the year in comparison to previous years. Although changes in toxicity are difficult to measure, we are proposing that generators report changes in percent toxicity from 1986 to 1987 for each waste that is reported.

G. SAMPLE OUTPUTS AND USES OF THE DATA

Some of the major uses of waste minimization data from EPA and the State's standpoint are: the ability to disseminate the information learned to facilities that will incorporate the successes into their own programs; and to use the data to effectively manage a regulatory waste minimization program. In addition, EPA must also collect this data so that they can report to Congress in 1990 the status of our nation's efforts to reduce the volume and toxicity of hazardous waste.

Without baseline minimization data it is difficult to assess whether there is a need for Congress or EPA to enact new mandatory waste minimization measures or if the regulated community is making the best effort possible in the most reasonable time-frame.

It will also be impossible without a baseline of quality data on waste minimization activities to set priorities for technical assistance programs either at the state or federal level to promote source reduction and recycling programs. This data will also enable EPA to target research and development efforts that will be the most successful in reducing threats to human health and the environment.

H. PROS AND CONS OF PROPOSED SYSTEM

The pros and cons of the proposed system are listed below.

1. Pros

- o For the first time, a comprehensive national database on waste minimization activities will exist. The information will satisfy the needs of program managers conducting regulatory analyses and

developing regulations, and will provide EPA with the information necessary to report to the Congress.

- The 10 exclusively waste minimization questions are easy to understand and complete, and national totals will be easy to aggregate and enter into a national data system.
- Detailed, clearly defined questions are less likely to be misinterpreted than the existing narrative question.
- The information compiled will be useful to EPA and the state agencies for planning public waste minimization activities, and gauging their effectiveness.
- Waste generators will be able to cite, and quantify, the positive nature of their waste minimization handling actions.

2. Cons

- There will be a greater processing burden for states that are not already collecting this level of information, but this will be minimized by providing software designed for ease in data entry.
- There will be a greater reporting burden for the respondents, since the form requests information from two calendar years.
- The questions asking for: (1) a percent change in toxicity, and (2) productivity ratio by units of waste/units of production, are difficult to answer and may result in incorrect responses.
- The relatively extensive list of questions and descriptors will add to the bulk of the questionnaires, and may lead to incomplete or credible reporting.
- The "soft" nature of the questions may encourage respondents to "stretch" facts in order to claim credit for positive actions.

CHAPTER 7

ANNUAL/BIENNIAL REPORTING SYSTEM 1987 DATA ENTRY/VALIDATION/RETRIEVAL SYSTEM

A. _ PROJECT OVERVIEW AND SYSTEM CONCEPT

The Office of Solid Waste (OSW), EPA's Regional Offices, the states, and interested outside parties are cooperating in revising the RCRA Annual/Biennial Reporting System. Problems with the current reporting system fall into two general categories:

- Reported data are inconsistent across states and are often insufficient to support necessary analyses; and,
- The quality of data provided to EPA is inconsistent across states.

The National Governors' Association, through its Reporting System Advisory Council, is assisting OSW in addressing the first problem area by facilitating the identification and development of commonly defined data elements to be obtained through a reporting system that serves implementor and oversight needs. To date, the Advisory Council has identified the general information objectives to be fulfilled by the reporting system, and provided guidance on specific data elements that should be included in the revised reporting system. The draft revised forms discussed in the previous six chapters (and presented in Appendix A) are designed to fulfill the stated objectives of the biennial reporting system and reflect the guidance provided by the NGA Advisory Council.

To address the reporting system's second problem area, OSW has undertaken the development of specifications for an automated data processing system to accompany the reporting forms once they are finalized. These specifications are being developed to assist implementors (states and EPA Regional Offices) in their management of reported data and to promote consistent entry, editing, validation, and retrieval/transmission of reported data across the 56 states and U.S. territories and the 10 EPA Regional Offices. The project entails development of formal functional specifications for the management of reported data, and also includes delivery of an actual programmed system based upon these specifications. Once the functional specifications are finalized, implementors will have three options:

- Adopt OSW's programmed system as is, for use in their states (augmented, as desired, to address State-specific reporting requirements);
- Develop their own automated systems based upon the functional specifications provided through this project; or,
- Process reported data manually in accordance with the specifications developed through this project.

The purpose of this chapter is to provide an overview of OSW's 1987 Biennial Report system development effort, to outline the major components that are currently proposed for inclusion in the system, and to solicit comments on a number of issues that must be resolved in developing the final specifications for the data processing system.

Data management under the RCRA Annual/Biennial Reporting System conforms generally to the two-domain concept: data are obtained and processed at the implementor level (states and EPA Regional Offices), and certain data (core data) are transmitted to the oversight level (OSW). Data obtained through the system support functions in both domains. The two domain concept also forms the basis for development of the new Resource Conservation and Recovery Information System (RCRIS), which is intended to replace the existing Hazardous Waste Data Management System (HWDMS). Data obtained through the reporting system are intended to update and augment data residing in RCRIS.

Development of system specifications under the two domain concept is proposed to occur in four phases:

- Phase 1: Implementor Data Entry and Key-Entry Editing -- Specifications will be developed for screen entry of reported data into automated files, based upon the final reporting forms recommended by the NGA Advisory Council. Specifications will also be developed for simple editing of entered data to ensure automated processing of data provided by handlers on report forms. Procedures will also be developed for loading automated data provided directly by handlers (electronic reporting).
- Phase 2: Implementor Data Validation -- Data validation by implementors is the key to quality control in the reporting system. Specifications will be developed to check each handler's reported data for internal consistency and consistency across handlers within each state (intra-state consistency). Specifications will also be developed to compare reported data with external data sources, including Notification and Permit Application files, inspection records, etc. The system will be designed to assist implementors in identifying problems and in establishing priorities for follow-up.
- Phase 3: Implementor Data Retrieval and Transmission -- Specifications will be developed for standard retrievals and reports, ad hoc queries, transfers to RCRIS, and transfers to the oversight domain.
- Phase 4: Oversight Data Automation, Auditing, and Retrieval -- Specifications will be developed for automating data that are transmitted to oversight in manual form, for auditing routines that ensure transmitted data are of specified quality and that perform inter-state consistency checks, and standard/ad hoc retrieval of oversight data.

OSW is proposing to develop the system specifications and the programmed

system based upon those specifications in phases in order to deliver the earliest components in time for use by states and Regions during their processing of 1987 reporting data. Life cycle management guidelines are being followed in the development of each system component, including extensive third-party testing. A detailed project management plan has been developed to ensure that system components are completed in sufficient time to allow for training implementors in the use of each component before it is actually employed (a copy of the entire project management plan is provided in Appendix Attachment D). Proposed release dates for the each component of the fully programmed and tested system are as follows:

- Implementor Entry/Editing: 1/21/88 → 3/04
- Implementor Data Validation: 4/04/88 → 5/16
- Implementor Data Retrieval: 4/15/88 → 5/05
- Oversight Auditing/Retrieval: 6/29/88

Fully developed functional specifications for each implementor component will be released considerably earlier to States that choose to program their own systems.

B. SYSTEM OVERVIEW AND DATA FLOWS

To provide a proper understanding of the Biennial Report data system, it is important to understand both the interface with the "outside world" and the structure of the system itself. We provide this understanding through the use of diagrams that depict the components of the system, relevant external entities, and data flowing among them. Included here are three such diagrams (Figures 7-1, 7-2, 7-3). These diagrams are intended to provide an overview or logical description of the system. Detailed diagrams and definitions are found in Appendix C.

The diagram appearing in Figure 7-1 depicts the two domain concept and the external entities which interface with each of the domains. These external entities represent the sources and destinations of reporting data. The processes labeled 100 and 200 represent the processing done by the implementor domain and the oversight domain, respectively. Each of these processes is presented in detail in the following two figures.

Figure 7-2 illustrates how the three components of the implementor domain described previously (data entry, validation and reporting) are related to each other and to the implementor domain. The diagram shows that the handler is the primary source of system data and traces the flow of the data through the validation process and to the storage and retrieval module. The arrows represent the flow of data between processes. The validation process depends on both data provided by the data entry component and external sources of data which are used for comparison.

FIGURE 7-1

ANNUAL/BIENNIAL REPORTING PROCESSING OVERVIEW

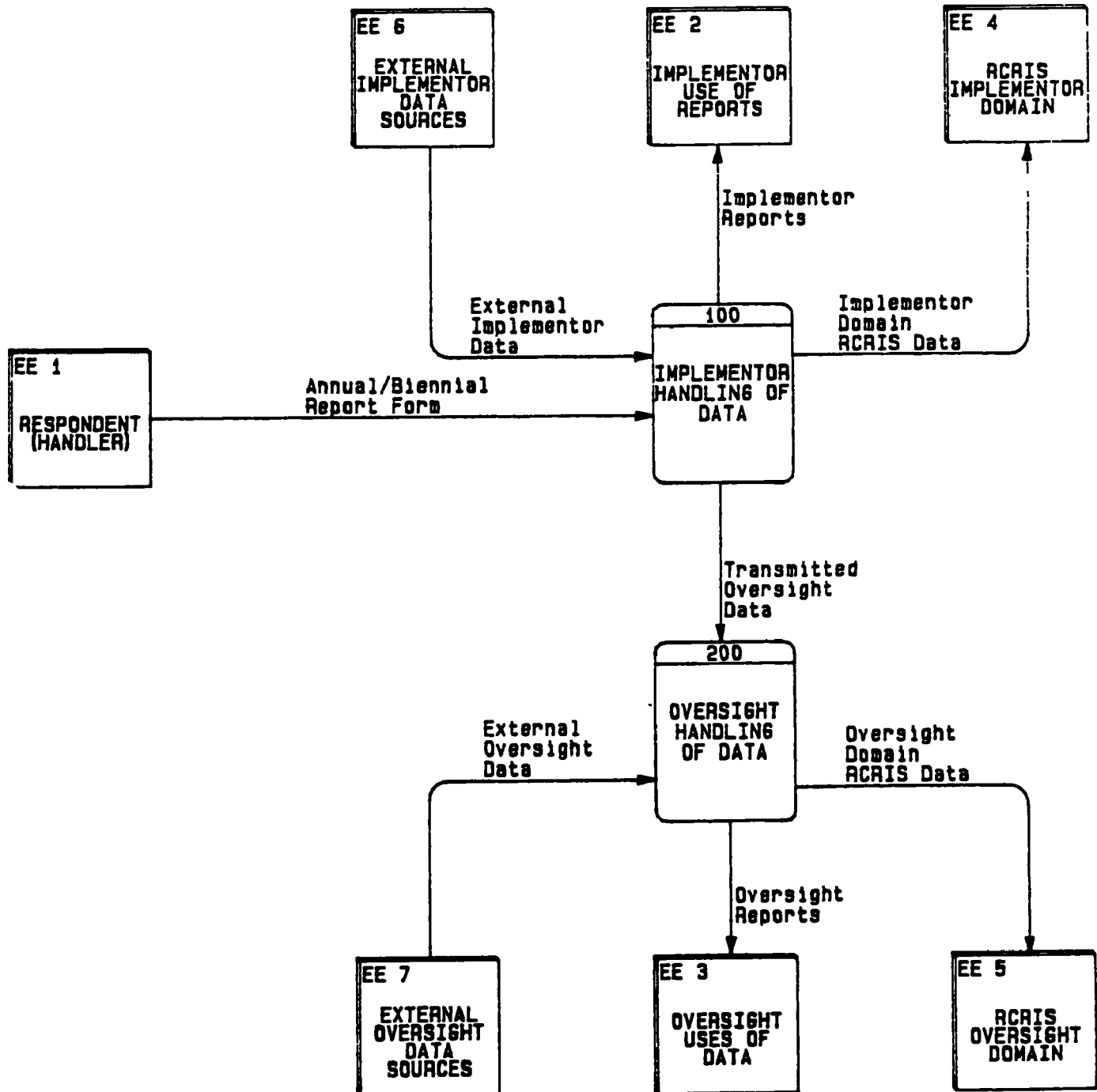
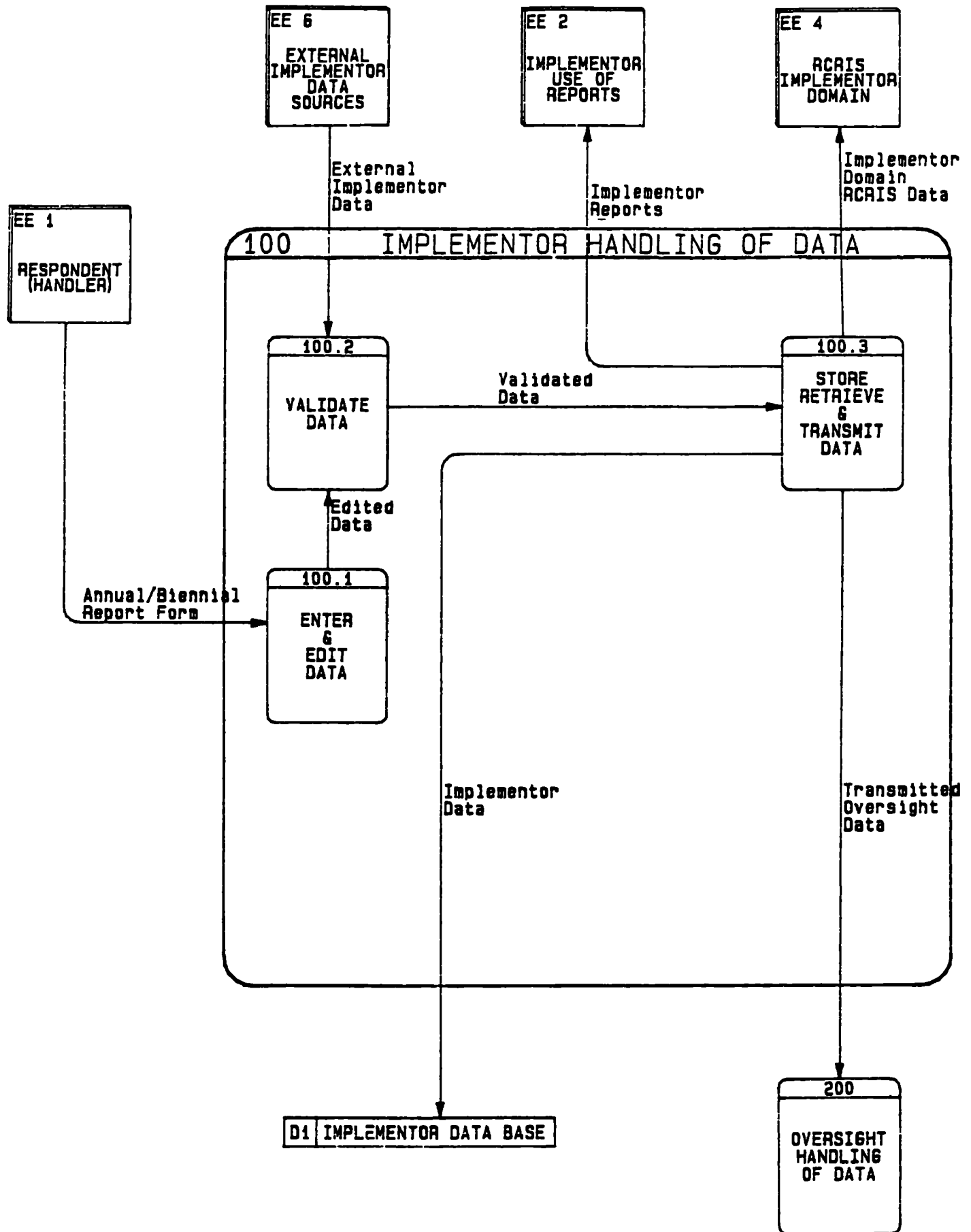
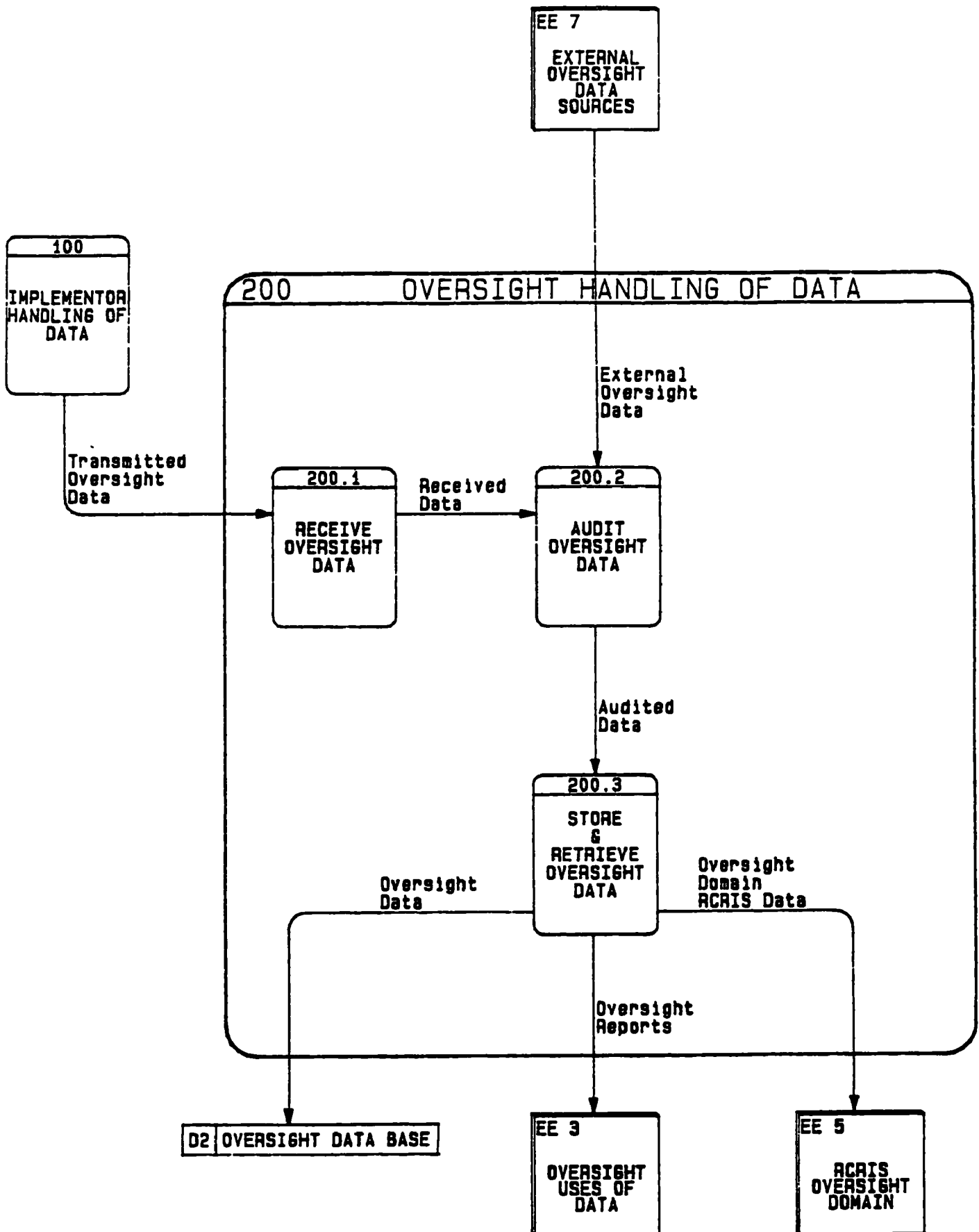


FIGURE 7-2



7-6
FIGURE 7-3



Validated data is then shown flowing to the storage and retrieval process. This process contains all subprocesses which perform standard retrievals and reports, ad hoc reports, and interactive queries. In addition to reporting, this diagram also shows that the storage and retrieval process maintains the implementor data base and provides a mechanism for the transfer of Annual/Biennial Report data to the implementor domain of RCRIS. The nature of the transfer has not been determined -- this diagram only serves to present the requirement of an interface with RCRIS.

Oversight domain processing is shown in Figure 7-3. This diagram, which closely parallels Figure 7-2, depicts data being accepted from the implementor domain through an unspecified mechanism. Within the oversight domain, one can recognize the three processing components: acceptance, auditing, and reporting. No component for data entry is specified at the oversight domain. However, a similar process for acceptance (entry) of the data from the implementor domain must be provided to enable the oversight domain to accept data from implementors in manual form.

There is no distinction at this point whether the data accepted has been manually collected or automated. The intent of the data flow is to present the requirement for some type of transmission of data from the implementor domain. The figure illustrates the flow of data from the acceptance process through the oversight domain auditing process which enforced quality assurance requirements. Like the validation process in the implementor domain, this process depends on external sources of information for comparison.

In the oversight domain, the storage and reporting process is very much similar to its counterpart in the implementor domain. Reporting is provided for, as is maintenance of the oversight data base and interface with the RCRIS oversight domain. The oversight data base will also be available for query by implementors seeking information about handlers or activities beyond their boundaries.

These diagrams depict the two domains and the three types of components within each domain. More detailed diagrams are provided in Appendix C. The Appendix also contains the current system specifications in the form of a data dictionary, where each external entity, process, data store, and data flow is described in detail.

C. ISSUES

The following discussion addresses two major issue areas involved in developing the automated system requirements for the revised RCRA Annual/Biennial Reporting System: (1) data flows from implementors to oversight; and (2) the nature of the operating environment to be supported by the system. Various options for resolving the specific issues in each of these areas are presented in the following sections, along with a specific recommendation for each. The recommendations presented represent choices deemed most appropriate by the project team based on assumptions made and facts currently available, and are intended as a starting point for discussion at the next meeting of the Advisory Council.

1. Data Flow From Implementers to Oversight

The two-domain nature of the reporting system requires that decisions be made concerning the specific roles to be played, or functions to be performed, by implementors and overseers. Similar decisions are also required concerning the extent and nature of data that will reside in each domain and data that are to be passed between domains.

Three major types of data exist within the two-domain system: "implementor" data (data, which may or may not be commonly defined, that are obtained by implementors and retained exclusively in the implementor domain); "core" data (commonly-defined data that are obtained and processed by implementors and transmitted to oversight); and "oversight" data (data that are obtained and processed directly by oversight without implementor involvement). Roles and responsibilities of implementors and overseers vary with each type of data. Development of system specifications is therefore dependent upon resolution of several specific issues:

- Designation of "Core" Data Elements -- Which of the data elements included in the final report forms should be designated as "core" for required transmission from implementors to oversight?
- Level of Transmitted Data -- Are implementors to transmit core data at the handler level (validated case records) or aggregated by state?
- Mode of Transmission -- Are core data to be transmitted in automated or non-automated (manual) form?
- Quality Requirements for Transmitted Data -- What quality requirements should be placed on core data that are to be transmitted from implementors to oversight?

Designation of Core Data Elements. Core data elements are often a subset of commonly-defined elements that implementors are required to obtain, process in accordance with specified criteria, and transmit to the oversight domain. The draft reporting forms accompanying this report represent the set of commonly-defined elements to be obtained by implementors through the reporting system. Which of the elements included in the forms are to be designated as core?

- Option 1 -- All elements included in the model reporting forms developed by the Advisory Council are designated as core.
- Option 2 -- Only a subset of elements included in the model reporting forms are designated as core. Remaining elements are either retained at the implementor level or transmitted to oversight without validation by implementors.

Recommendation: Option 1.

Oversight participants on the Advisory Council have approached the development process of the forms from the perspective that all elements included would be obtained and processed by implementors and transmitted to oversight. Elements included in the forms are intended to support implementor and oversight data needs, including developing program management, regulatory development, and program evaluation information. It is anticipated that implementors may obtain state-specific data in addition to those elements included in these reporting forms. These would represent the types of data that would not be transmitted to oversight. In addition to other types of data, implementors may require additional handlers to complete the report forms beyond those designated in the federal Who Must File section (e.g., many states are expected to require RCRA Small Quantity Generators to complete the Primary Generation, Waste Description, and Shipped Off-site forms, even though federal requirements for such forms do not apply to such generators). In these cases, data reported by additional handlers would not be included within the core designation, even though they are the same data elements. Implementors that desire to obtain such data would not be required to process them according to the standard specifications and would not be required to transmit them to the oversight domain.

Since the draft reporting forms essentially specify oversight data requirements, any data not obtained, processed, and transmitted to oversight by implementors would have to be obtained and processed directly by oversight. There would be high probability of duplication in data collection under such conditions, unless the elements in question are truly "stand alone" items. An alternative is for implementors to obtain certain elements in conjunction with the other elements obtained through the reporting system, and pass them through to oversight without validating them (similar to the way the Waste Minimization statements were managed in the 1985 reporting cycle).

This alternative increases the processing burden at the oversight level, and presumes that implementors have no need or use for such elements. The purpose of the NGA Advisory Council process, however, has been to identify those elements that are of common interest to implementors and overseers. It is hoped that implementors will agree that all elements included in the final report forms are of sufficient value to be designated as core.

Level of Transmitted Data --

- Option 1 -- Core data are to be transmitted to oversight at the handler level (validated case records).
- Option 2 -- Core data are to be aggregated by state (after validation) prior to transmission to oversight.

Recommendation -- Option 1

Prior to the 1985 reporting cycle, implementors transmitted data to oversight exclusively in aggregated (summary) form. These summary data proved difficult to work with at the oversight level. Summary data are difficult to assess from a quality control perspective and even more difficult to rectify

once errors have been identified. Problems with summary data were so difficult to pin-down and resolve in 1983 that no national summary report was produced. In response to this problem, OSW began in the 1985 reporting cycle to require implementors to transmit certain handler-level data in addition to the summary data. The handler-level data allowed for many internal consistency checks to be performed that were not possible at the oversight level in 1983. Accordingly, OSW has greater confidence in the 1985 reporting data, and expects to be able to release a 1985 national summary report in August.

In addition to the quality control problems associated with aggregated data transmissions, summary data are much less useful in supporting the varied types of analyses performed at the oversight level. Handler-level data are considerably more flexible, allowing users to sort and select data differently for different purposes. Finally, transmission of handler-level data to oversight will provide for establishment of a national waste flow data base that may be called upon by implementors in assessing interstate flows that are of concern. Confirmations that out-of-state shipments were actually received would be possible under such a system.

Accordingly, OSW proposes to eliminate summary reporting requirements in favor of obtaining validated core data at the handler level.

Mode of Data Transmission --

- Option 1 -- Implementors are required to automate all core data and transmit them to oversight in automated form.
- Option 2 -- Implementors are required to transmit core data to oversight in manual (hard copy) form.

Recommendation -- Implementors are requested, but not required, to automate core data and transmit them in automated form. Core data that are not automated may be transmitted in manual form, to be automated in the oversight domain.

Oversight uses of reporting data, particularly handler-level data, require that data be automated. Many implementors also find automation of reporting data to be essential. None the less, not all implementors currently automate reporting data. Rather than impose mandatory automation requirements on implementors that may not have the capacity to do so, OSW proposes to accept core data in manual form where such data are not automated. Where reporting data are automated, OSW obviously prefers have core data transmitted in automated form. As referenced in previous sections of this chapter, the oversight component of the data processing system will include a data automation function to accommodate transmission of manual data from implementors that can not or choose not to automate their reporting data. OSW recognizes that supporting an automation component will be more expensive than requiring implementors to automate. However, implementors are not as yet required to transmit automated data under RCRIS, and will not be required to do so under the reporting system.

Quality Requirements for Transmitted Data --

- Option 1 -- Implementors transmit to oversight only those data that meet QA/QC specifications. Data that do not meet QA/QC specifications remain in the implementor domain until sufficiently validated.
- Option 2 -- Implementors transmit to oversight all required data. Data that do not meet QA/QC specifications are either flagged by implementors or identified and flagged through oversight auditing processes.

Recommendation -- Option 2.

Under Option 1, the oversight data base contains an incomplete set of fully validated data. Under Option 2, the oversight data base contains a complete set of all required report data, but not all of the oversight data are validated. If it is assumed that implementors have sufficient resources to validate all required data to specified QA/QC levels, Options 1 and 2 are identical. It is more likely, however, that implementors will face resource limitations that constrain their ability to fully validate all data that are required to be transmitted to oversight. In fact, the design of the automated data processing system is based on the assumption that implementors will want to use the system to establish priorities for their expenditure of time and resources in validating reported data (e.g., rank problem cases by size to ensure that the most important errors are addressed first; address problems at sites with history of compliance problems, etc.).

The advantage of Option 2 over Option 1 is that a complete data set containing some amount of unvalidated data provides greater latitude to overseers in conducting population analyses. If desired, analyses may be limited to data that do meet QA/QC specification (flagging mechanisms or QA/QC checks built into the analytical routines themselves). In this case, the analyses conducted under Option 1 and Option 2 are identical. Under Option 2, however, unvalidated data may be incorporated into analyses under varying degrees of qualification. For example, data within +/- X of QA/QC specifications may be incorporated into one analysis, while data with +/- 3X may be incorporated into another analysis. Results of each analysis can be appropriately qualified. Additionally, under Option 2, analysts may replace unvalidated data with assumptions informed by the unvalidated data, as opposed to making the blind assumptions necessitated under Option 1.

Accordingly, OSW proposes that implementors transmit to oversight all required data (Option 2). Data that do not meet QA/QC specifications can be flagged either by implementors or in the oversight domain through the use of the auditing process. It is important to clarify, however, that primary responsibility for validation of core reporting data remains at the implementor level. Implementors are "owners" of core data and as such are responsible for their upkeep. Oversight may assist implementors in identifying data quality problems (particularly in the case of interstate inconsistencies). But responsibility for responding to or following-up on identified problems remains at the implementor level. Recognizing that implementor resources are

limited, however, oversight may also assist implementors in actual follow-up. Such arrangements need to be negotiated on a case-by-case basis, as oversight resources are also limited.

2. Operating Environment Specifications

As indicated in section A, the primary product of this project is a set of processing specifications which are to be applied to the data collection, entry, validation, and reporting process. Because EPA has judged that it would speed acceptance of those specifications, EPA will also deliver a computerized system which implements them. This system may be used for actual processing of the data. However, it will also serve as a prototype of the specifications for those states choosing to develop their own system in-house.

A second issue, of special interest to those states likely to adopt EPA's processing system, is that of hardware/software specification. It is important to thoroughly consider the operating environments EPA has the resources to support. Determination of operating environment specifications has impacts on other decisions yet to be made, such as language or data base package selection, data transmission capabilities, provision for data conversion facilities, and alternatives for data collection. The two issues which need to be addressed are:

- Hardware Environment Specification -- What hardware environment(s) will be directly supported by EPA for implementors using EPA-supplied software?
- Software Specification -- Given that hardware requirements have been decided upon, what language(s) will be used to implement the system on that hardware?

Hardware Specification --

- Option 1 -- Implement the system on microcomputers. This option would specify that EPA would support running the EPA-supplied software on designated PC's.
- Option 2 -- Implement the system on the NCC mainframe. The system would be implemented on the IBM mainframe at NCC. Access to this system would be provided through telecommunications and the time-sharing feature of the system.
- Option 3 -- Implement the system on the Regional LMF's. States would access the EPA-provided system by way of EPA Logical Mainframe (LMF) network.

While generally it is preferable to perform software selection prior to determining hardware specifications, because of the diverse potential user base which will need to be supported and the limited universe of candidate hardware, the system definition process must depend on the hardware already or easily made available.

The most accessible piece of hardware is the PC. Based on recent data, an IBM PC/AT, COMPAQ Deskpro 286 or 386 or equivalent will be required to store and manage information of the estimated volume with reasonable response time. This type of computer seems to be widely available and, where not immediately accessible, it is generally the easiest type of hardware to acquire. However due to storage and processing limitations of PCs, it is clear that the larger states' data cannot be managed on PCs alone.

The second alternative is to provide sufficient access and resources on Regional logical mainframe (LMF) computers for data entry and management. While specific cost data has not been developed, it is generally very expensive to use a mainframe for extensive data entry activities. Data entry uses little processing power and it requires an insignificant number of input/output (I/O) transactions. The primary cost is the connect time and the overhead cost of running and monitoring an interactive session. The cost is high relative to the amount of computing performed and the data entry session uses system resources even if little activity takes place. In addition, for most local data entry sites telecommunication links must be established and proper equipment obtained.

The third alternative is the use of the EPA mainframe at NCC. The inefficiency of the previous alternative is present here. Each data entry user new to NCC would need to gain access through a port in EPA's network topology. This may require obtaining communications processors or may mean suffering from limited terminal capabilities where this equipment is unavailable.

It is clear that, for the larger states at least, that PCs will not provide all the resources necessary to store and manage the volume of data projected. Similarly, it does not seem like a reasonable alternative to propose that data entry activity be implemented on mainframe computers. Some hybrid solution seems to be required. Implementors themselves may be in a position to provide mainframe computing capabilities for this effort. Support of mainframe computers at the implementor level will depend on such factors as compatibility with EPA standards for mainframe computing and the availability and accessibility of that equipment to implementation personnel. Where local mainframe equipment is incompatible or unavailable, computing resources must be provided through EPA's logical mainframe network. To take advantage of the characteristics of each type of hardware environment, the system must be designed to provide for data entry on the PC and data management and reporting on a mainframe computer. This implies the need for file transfer capability between PC and mainframe.

Recommendation -- The recommended approach is for EPA to develop a system which has the time-intensive components (namely, data entry) running on microcomputers and the storage and processing-intensive components running on the NCC IBM mainframe. The actual components which will need to run on the mainframe may vary by state. This alternative requires that the system be easily ported between mainframe and micro and be designed in a highly modular fashion.

Software Environment Specification -- Such an implementation will require the implementation of two systems -- one to execute on the microcomputer and one for the mainframe -- or the development of a single system which will execute on both micro and mainframe hardware. FOCUS, a fourth-generation package with data base management and reporting as its central feature, is approved by the EPA for use in both hardware environments. FOCUS has had recent exposure and use in data entry and management applications in support of OSW projects, including RCRIS. It therefore seems that to implement the hybrid PC/mainframe approach dictates the use of FOCUS as the data management environment.

Recommendation -- It is recommended that the system be implemented on a PC using FOCUS. For larger states, a procedure will be developed to allow the data entry to be performed on the PC and a mainframe will be used for data storage, validation, reporting, and manipulation. This is similar in concept with how HWDMS data entry is implemented presently. All states' data will be stored on the NCC mainframe in the form of a national data base when complete. It may be possible for smaller states to perform all three activities: entry, validation, and reporting on the PC.

National reports and inter-state comparisons will be obtained from this data base. Data for states which choose not to or not able to automate the data entry or validation processes will provide required information to EPA. EPA will be responsible for entry of this data into the national data base.



National Governors' Association

Bill Clinton
Governor of Arkansas
Chairman

Raymond C. Scheppach
Executive Director

APPENDIX A

1987 Biennial Report Draft Forms

PLACE IDENTIFICATION LABEL HERE
OR
ENTER YOUR EPA ID NO.

Form

I C

Identification
and
Certification

**ENVIRONMENTAL PROTECTION AGENCY
Hazardous Waste Report for 1987**

DRAFT

IDENTIFICATION AND CERTIFICATION

READ COMPLETE INSTRUCTIONS ON PAGES ____ TO ____

- Note:**
- 1) Please answer all questions below, providing corrected information as necessary.
 - 2) All terms in *Italics* are defined on Page __ of the instructions.

1 Is the information on the Site Label correct?

☐ YES

☐ NO --> Please enter corrections -->

Site EPA ID

Site Name

Site Street Address

Site Street Address

City

State

ZIP Code

2. In what County is this Site located?

County Name

3 What is the Name, Title, and Phone Number of the person to be contacted with questions regarding the information in this report?

Last Name

First Name

M.I.

Title

() -
(Area Code) Phone Number

[OVER]

PLACE IDENTIFICATION LABEL HERE
OR
ENTER YOUR EPA ID NO.

Form
FS
Form
Selection

ENVIRONMENTAL PROTECTION AGENCY
Hazardous Waste Report for 1987

DRAFT

FORM SELECTION

READ COMPLETE INSTRUCTIONS ON PAGES ____ TO ____

- Note:
- 1) Use this page to determine which forms must be completed for this site.
 - 2) Answer questions 1, 2, and 3, and all sub-questions as the directions indicate.
 - 3) All terms in *Italics* are defined on Page __ of the instructions.

1. During the reporting year, did this site generate hazardous waste in sufficient quantities to be subject to *Full RCRA Regulation*, and were at least some of these quantities generated from *Primary Sources*? [Note: *Conditionally Exempt Small Quantity Generators*, *RCRA Small Quantity Generators*, generators regulated **ONLY** by their State, and facilities which generate hazardous wastes **ONLY** as the result of hazardous waste *processing* should answer **NO** to this question.]

☐ YES --> Complete: Form WD: Waste Description
Form PG: Primary Waste Generation
Form WM: Waste Minimization

Go to 2.

☐ NO --> Go to 1A.

- 1A. During the reporting year, did this site generate quantities or types of hazardous wastes subject to reporting only by this State?

☐ YES --> Complete: Form WD: Waste Description
Form PG: Primary Waste Generation

Go to 1B.

☐ NO --> Go to 1B.

- 1B. Has this site filed and not *formally withdrawn* an EPA Notification of Hazardous Waste Activity form (EPA Form 8700-12) indicating Generator or Small Quantity Generator?

☐ YES --> Complete Form RS: Regulatory Status
Go to 2.

☐ NO --> Go to 2.

RS

REGULATORY STATUS

Note:

- 1) This form asks about the regulatory status of this site.
- 2) Answer all questions 1 through 4 and follow any instructions associated with your answers.
- 3) All terms in *italics* are defined on Page ____ of the instructions.

- YES --> Check the item that best describes your generator status during the reporting year.**

- ☐ This site met all of the requirements for a RCRA Conditionally Exempt Small Quantity Generator in every month of the reporting year, and was NOT subject to regulation under lower State quantity limits.

- ☐ This site met all of the RCRA requirements for a *Conditionally Exempt Small Quantity Generator* in every month of the reporting year, but was subject to regulation under lower State quantity limits.

- Specify State quantity limit or category that applied to this site during the reporting year (see page of instructions): _____

- This site was a RCRA Small Quantity Generator in one or more months of the reporting year.**

- NO**

2. During the reporting year, did this site generate or process wastes that are specifically *excluded* or *exempted* from regulation under RCRA?

- YES --> [Check all items that applied during the reporting year]**

- ☐ Wastes were generated or *processed* at this site that were *delisted* prior to the beginning of the reporting year.

- ☐ Wastes were generated or processed at this site that are specifically excluded from RCRA regulation (see Page xx of the Instructions for list of RCRA regulatory exclusions).

- ☐ Wastes were generated or *processed* at this site that are *Recyclable Materials* (see Page yy of the instructions for list of *Recyclable Materials*).

- NO**

WM

WASTE MINIMIZATION

Note:

- 1) This form describes your site's efforts to minimize generation of hazardous wastes.**
- 2) Answer every question as indicated.**
- 3) All terms in *italics* are defined on Page of the instructions.**

1. Does this site have a written statement which outlines goals, objectives and practices of waste minimization?
☐ YES
☐ NO
2. In the past two years, has this site conducted a *waste minimization assessment* that identifies ways to reduce volume of waste generated?
☐ YES
☐ NO
3. Were any of the recommendations made in the *waste minimization assessment* implemented?
☐ YES
☐ NO
4. Does this site have employee training or incentives programs to encourage the identification of new ways to minimize the generation of hazardous waste?
☐ YES
☐ NO
5. Has this site utilized the services of a Waste Exchange or a Waste Broker to minimize the amount of hazardous waste to be treated, stored, or disposed?
☐ YES
☐ NO

PLACE SITE IDENTIFICATION LABEL HERE
OR
ENTER YOUR EPA ID NO.

ENVIRONMENTAL PROTECTION AGENCY
Hazardous Waste Report for 1987
DRAFT

Form
W D
Waste
Description

Page _____

WASTE DESCRIPTION

READ COMPLETE INSTRUCTIONS ON PAGES ____ TO ____

- NOTE: 1) This form should list ALL hazardous waste streams generated, processed, shipped off site, or received from off site during the reporting year.
2) If this site does not process any hazardous wastes then columns E to H need not be completed.
3) Form accepts 12 pitch type.

Line #	A. Description of Waste Instruction Pg. _	B. EPA Hazardous Waste No. Instruction Pg. _	C. 3 Digit A/B Waste Code Pg. _	D. Reg. Status Pg. _	PROCESSING FACILITIES ONLY			
					E. Ph Pg. _	F. BTU per pound Page _	G. % Solids Pg. _	H. % Water Pg. _
1		_____	_____	_____	_____	_____	_____	_____
	<input checked="" type="checkbox"/> If cont.	_____	_____	_____	_____	_____	_____	_____
2		_____	_____	_____	_____	_____	_____	_____
	<input checked="" type="checkbox"/> If cont.	_____	_____	_____	_____	_____	_____	_____
3		_____	_____	_____	_____	_____	_____	_____
	<input checked="" type="checkbox"/> If cont.	_____	_____	_____	_____	_____	_____	_____
4		_____	_____	_____	_____	_____	_____	_____
	<input checked="" type="checkbox"/> If cont.	_____	_____	_____	_____	_____	_____	_____
5		_____	_____	_____	_____	_____	_____	_____
	<input checked="" type="checkbox"/> If cont.	_____	_____	_____	_____	_____	_____	_____

COMMENTS (Refer to specific line numbers)

PLACE SITE IDENTIFICATION LABEL HERE
OR
ENTER YOUR EPA ID NO.

ENVIRONMENTAL PROTECTION AGENCY Hazardous Waste Report for 1987

DRAFT

PRIMARY GENERATION

Form

P G

Primary
Generation

Page _____

READ COMPLETE INSTRUCTIONS ON PAGES ____ TO ____

- NOTE: 1) In Section I describe a process (or processes) that generates hazardous wastes from primary sources.
2) In Section II list the hazardous wastes that result from the process described in Section I.
3) Use the Waste Reference column to indicate the page and line number of Form WD on which you have described the waste.
4) Form accepts 12 pitch type.

I. A. Process Description:
Instruction Page ____

B. Process SIC Code(s)
Instruction Page ____

1 2 3 4 5

☐ Not App.

C. Production Ratio
Instruction Page ____

1 2 3

☐ Not App.

II Line No.	A. Form WD Waste Reference Page ____	B. Reporting Year Quantity (1987) Instruction Page ____	C. Previous Year Quantity (1986) Instruction Page ____	D. UOM Pg. ____	E. Density Instruction Page ____ <input type="checkbox"/> lb/gal <input type="checkbox"/> kg	F. Management Code Sequence Instruction Page ____ 1 2 3 4 5 6	G. Source Code Pg. ____	H. Toxicity Change Pg. ____	I. Reduction Code Pg. ____
1	Line ____ Page ____ <input type="checkbox"/>	_____	_____	<input type="checkbox"/>	____ = ____ <input type="checkbox"/> lb/gal <input type="checkbox"/> kg	_____	_____	_____	_____
2	Line ____ Page ____ <input type="checkbox"/>	_____	_____	<input type="checkbox"/>	____ = ____ <input type="checkbox"/> lb/gal <input type="checkbox"/> kg	_____	_____	_____	_____
3	Line ____ Page ____ <input type="checkbox"/>	_____	_____	<input type="checkbox"/>	____ = ____ <input type="checkbox"/> lb/gal <input type="checkbox"/> kg	_____	_____	_____	_____

COMMENTS (Refer to specific section and item)

PLACE SITE IDENTIFICATION LABEL HERE
OR
ENTER YOUR EPA ID NO.

ENVIRONMENTAL PROTECTION AGENCY
Hazardous Waste Report for 1987
DRAFT

WASTE SHIPPED OFF SITE

Form
S O

Shipped
Off Site

Page _____

READ COMPLETE INSTRUCTIONS ON PAGES ____ TO ____

- NOTE:** 1) This form should list ALL hazardous waste streams shipped off site during the reporting year.
2) Use the Waste Reference column to indicate the page and line number of Form WD on which you have described the waste.
3) Form accepts 12 pitch type.

Line No.	A. Form WD Waste Reference Page ____	B. Facility EPA ID No. Instruction Page ____	C. Quantity Shipped Instruction Page ____	D. UOM Pg. ____	E. Density Page ____ <input type="checkbox"/> lb/gal <input type="checkbox"/> kg	F. Time Period Pg. ____	G. Accum. Method Pg. ____	H. No. of Shipments Pg. ____	I. Transport Mode Pg. ____	J. Transport Container Pg. ____	K. Off-Site Management Page ____
1	Line <input type="checkbox"/> Page <input type="checkbox"/>	_____	_____ = _____	<input type="checkbox"/>	_____ = _____ <input type="checkbox"/> lb/gal <input type="checkbox"/> kg	<input type="checkbox"/>	<input type="checkbox"/>	_____	_____	_____	_____
2	Line <input type="checkbox"/> Page <input type="checkbox"/>	_____	_____ = _____	<input type="checkbox"/>	_____ = _____ <input type="checkbox"/> lb/gal <input type="checkbox"/> kg	<input type="checkbox"/>	<input type="checkbox"/>	_____	_____	_____	_____
3	Line <input type="checkbox"/> Page <input type="checkbox"/>	_____	_____ = _____	<input type="checkbox"/>	_____ = _____ <input type="checkbox"/> lb/gal <input type="checkbox"/> kg	<input type="checkbox"/>	<input type="checkbox"/>	_____	_____	_____	_____
4	Line <input type="checkbox"/> Page <input type="checkbox"/>	_____	_____ = _____	<input type="checkbox"/>	_____ = _____ <input type="checkbox"/> lb/gal <input type="checkbox"/> kg	<input type="checkbox"/>	<input type="checkbox"/>	_____	_____	_____	_____
5	Line <input type="checkbox"/> Page <input type="checkbox"/>	_____	_____ = _____	<input type="checkbox"/>	_____ = _____ <input type="checkbox"/> lb/gal <input type="checkbox"/> kg	<input type="checkbox"/>	<input type="checkbox"/>	_____	_____	_____	_____

COMMENTS (Refer to specific line numbers)

PLACE SITE IDENTIFICATION LABEL HERE
OR
ENTER YOUR EPA ID NO.

ENVIRONMENTAL PROTECTION AGENCY
Hazardous Waste Report for 1987
DRAFT

WASTE RECEIVED FROM OFF SITE

Form
RO

Received from
Off Site

Page _____

READ COMPLETE INSTRUCTIONS ON PAGES ____ TO ____

- NOTE: 1) This form should list ALL hazardous waste streams received from off site during the reporting year.
2) Use the Waste Reference column to indicate the page and line number of Form WD on which you have described the waste.
3) Form accepts 12 pitch type.

Line No.	A. Form WD Waste Reference Page ____	B. Generator EPA ID No. Instruction Page ____	C. Quantity Received Instruction Page ____	D. UOM Pg. ____	E. Density Page ____ <input type="checkbox"/> lb/gal <input type="checkbox"/> kg	F. Management Sequence Instruction Page ____	G. No. of Shipments Pg. ____
1	Line ____ Page ____	_____	_____ = ____	____	____ = ____ <input type="checkbox"/> lb/gal <input type="checkbox"/> kg	1____2____3____ 4____5____6____	____
2	Line ____ Page ____	_____	_____ = ____	____	____ = ____ <input type="checkbox"/> lb/gal <input type="checkbox"/> kg	1____2____3____ 4____5____6____	____
3	Line ____ Page ____	_____	_____ = ____	____	____ = ____ <input type="checkbox"/> lb/gal <input type="checkbox"/> kg	1____2____3____ 4____5____6____	____
4	Line ____ Page ____	_____	_____ = ____	____	____ = ____ <input type="checkbox"/> lb/gal <input type="checkbox"/> kg	1____2____3____ 4____5____6____	____
5	Line ____ Page ____	_____	_____ = ____	____	____ = ____ <input type="checkbox"/> lb/gal <input type="checkbox"/> kg	1____2____3____ 4____5____6____	____

COMMENTS (Refer to specific line numbers)

Page _____

[OVER]



National Governors' Association

Bill Clinton
Governor of Arkansas
Chairman

Raymond C. Scheppach
Executive Director

APPENDIX B

Instructions to the 1987 Biennial Report Draft Forms

DRAFT

**ENVIRONMENTAL PROTECTION AGENCY
Hazardous Waste Report for 1987**

General Introduction

The Hazardous Waste Report for 1987 consists of ten separate forms, as follows:

- 1) FORM IC -- IDENTIFICATION AND CERTIFICATION
- 2) FORM FS -- FORM SELECTION
- 3) FORM RS -- REGULATORY STATUS
- 4) FORM WM -- WASTE MINIMIZATION
- 5) FORM WD -- WASTE DESCRIPTION
- 6) FORM PG -- PRIMARY WASTE GENERATION
- 7) FORM OI -- OFF-SITE IDENTIFICATION
- 8) FORM SO -- WASTE SHIPPED OFF SITE
- 9) FORM RO -- WASTE RECEIVED FROM OFF SITE
- 10) FORM PS -- WASTE MANAGEMENT PROCESS SUMMARY

Only two of these forms, Form IC and Form FS, must be completed by every recipient of the Hazardous Waste Report. Site identification information is obtained on Form IC. Form FS includes questions about the hazardous waste activities of a site and indicates which additional forms must be completed. The titles of the remaining forms are suggestive of their contents, and detailed descriptions and instructions for each are included in the pages which follow. Each form also includes a brief instruction box on the form page(s), and there are instruction page references associated with individual items. Any remaining questions can be addressed to the Hazardous Waste Report Hotline at (800) ____ - ____.

Consistent with recently passed legislation concerning hazardous wastes, there are some new areas of emphasis in the Report. These include:

- 1) Waste Minimization. There is a questionnaire (Form WM) which asks some generators of hazardous wastes about their overall efforts to minimize the quantity and toxicity of the wastes they generate. In addition, Form PG requests information relating to efforts at waste minimization for individual waste streams.
- 2) Waste Management Processes. For the first time, the Hazardous Waste Report requests detailed information about processes used to treat, store, or dispose of hazardous wastes. Information about capacity, influents, effluents, commercial availability, and planned changes in capacity or operating status is requested.

- 3) **Waste Description.** Some additional information about the character of hazardous wastes is solicited. In recognition of their superior knowledge of the chemical and physical characteristics of wastes, more detailed questions are asked of processing facilities than of simple generators.
- 4) **Special Forms for Special Purposes.** Items which had been thrown together on single forms are sometimes relegated to separate pages. For instance, all hazardous wastes are described on Form WD, and reference is made to the page and line number of Form WD when indicating where that waste came from and how it was handled. There is also a separate page to provide the names and addresses of transporters and external sites (Form OI). This approach reduces redundancy and should minimize the total amount of paper to be processed.

The sections which follow provide detailed instructions for each of the forms in the Report package. To summarize quickly:

- 1) **Start by completing Form IC -- Identification and Certification and Form FS -- Form Selection.**
- 2) **Follow the instructions associated with your answers to the questions on Form FS to determine which other forms in the package must be completed and included in your site's submission.**
- 3) **Detailed instructions are included in this booklet, and there are brief instruction boxes and item by item instruction references on the individual forms.**
- 4) **If an item or question remains unclear after reviewing the available instructions, call the Hazardous Waste Report Hotline at (800) ____-____.**

INSTRUCTIONS FOR COMPLETING

FORM IC

IDENTIFICATION AND CERTIFICATION

I. INTRODUCTION

Form IC, Identification and Certification, is intended primarily to confirm information on location, mailing address, EPA ID number, and contact person for your site. In addition, it requests information on the Standard Industrial Classification (SIC) codes at your site associated with hazardous waste activities, and asks about numbers and capacity of tanks for non-permitted, short-term accumulation of hazardous wastes. This form is to be completed by every recipient of the Report Package.

II. FORM COMPLETION INSTRUCTIONS

Site Identification Label/EPA ID

Attach one copy of the preprinted site identification label, if provided, in the upper left corner of the form. If no site identification labels are provided, enter your EPA ID in the upper left corner of the form.

Question 1

Read the preprinted site identification label, if provided, and verify that the site location address and EPA ID number are correct.

- If correct, check the "YES" box and go to Question 2.
- If incorrect, check the "NO" box, enter the correct information in the space provided, and go on to Question 2.

Question 2

Enter the name of the county in which the site is located, and go to Question 3.

Question 3

Enter the full name, title and phone number of the person to be contacted if there are questions regarding information provided in the Hazardous Waste Report submitted by your site.

Question 4

Check the mailing address on the envelope in which this package was mailed.

- If the mailing address is identical to the site identification label, check the box on line 4 and go on to Question 5.
- If the mailing label on the envelope is not available, enter the mailing address in the space provided.

FORM IC INSTRUCTIONS (Continued)

- If the mailing address and the site identification label address are not identical, but the information provided on the mailing label is correct, check the "YES" box and go on to Question 5.
- If the information on the mailing label is incorrect, check the "NO" box, enter the correct information in the space provided, and go on to Question 5.

Question 5

Enter the Primary and Secondary Standard Industrial Classification Codes for your site which describe the hazardous waste activities undertaken.

Question 6

Read the definition for "accumulate" provided on page ____.

- If your site accumulates hazardous waste in tanks, check the "YES" box. In the space provided, enter the number of tanks on site available for accumulation and their total capacity in gallons.
- If your site does not accumulate hazardous waste in tanks, check the "NO" box.

Certification

- Check carefully that all forms required for your submission are present, complete, and correct.
- Type or print your name, title, and the date.
- Sign the form and mail the completed package to the address below:

INSTRUCTIONS FOR COMPLETING

FORM FS FORM SELECTION

Form FS, Form Selection, is a series of questions intended to determine which forms within the Hazardous Waste Report Package must be completed for your site. The questions have been carefully worded to correspond to regulatory requirements. Next to the answers for each question are instructions on which forms must be completed and which question to answer next. This form must be completed by every recipient of the Hazardous Waste Report Package. Note the following key features of this form:

- Key terms which require definition are printed in *italics*. The full definitions of these terms are found starting on page ____.
- At the end of the second page of the form is a Form Checklist on which you should indicate all of the forms which are to be completed and included in your site's submission.

INSTRUCTIONS FOR COMPLETING

FORM RS REGULATORY STATUS

Form RS, Regulatory Status, consists of a series of questions about your site's hazardous waste activities. This form need be completed only by those sites directed to do so by **Form FS**. In most cases, those will be sites which are not required by EPA to provide detailed quantity reporting as a generator or as a facility, although States may still require submission of a full report. The questions are carefully worded to correspond to regulatory provisions. They should be read with care, and instructions associated with the answers should be followed. Key terms which require definition are printed in *italics*. The full definitions of these terms are found starting on page ____.

INSTRUCTIONS FOR COMPLETING

FORM WM

REGULATORY STATUS

Form WM, Waste Minimization, consists of a series of ten questions about your site's efforts to minimize the generation of hazardous waste. This form need be completed only by those sites which generate regulated quantities of hazardous waste from primary sources, as indicated by an affirmative answer to Question 1 of Form FS, Form Selection.

INSTRUCTIONS FOR COMPLETING

FORM WD WASTE DESCRIPTION

I. INTRODUCTION

Form WD, Waste Description, is the cornerstone of the entire Hazardous Waste Report. It provides the detailed description of the hazardous waste streams which are then referenced on the other forms in the package. For example, if a waste is shipped off site, information on the quantity, destination, and expected management methods will be found on Form SO. However, the description of that waste stream will be on Form WD, and there will only be a Form WD page and line reference on Form SO to indicate which waste is being shipped off site.

Form WD requests a narrative description of the waste stream, one or more EPA Hazardous waste numbers, a 3-digit A/B waste code (indicating the physical/chemical form of the waste), and an indicator of the regulatory status of the waste. In addition, waste processing facilities only are asked to provide the pH, BTU per pound, percent solids, and percent water of the waste.

In case more space is required to complete the narrative description or the full list of EPA Hazardous Waste number, the description may be continued on the line below, after placing an "X" in the "check if continued" box.

Pages must be numbered in sequence and care taken to cite Form WD waste references accurately. Failure to do so will make it impossible to determine which wastes are being described on the other forms in the Report.

II. FORM COMPLETION INSTRUCTIONS

1. Site Identification Label/EPA ID

Attach one copy of the preprinted site identification label, if provided, in the upper left corner of the form. If no site identification labels are provided, enter your EPA ID in the upper left corner of the form. Only two copies of the form are provided in the package. If you need to reproduce the form, attach the site identification label OR enter your site's EPA ID number before making copies.

2. Page Number

Enter the page number in the appropriate box on the top right corner of the form. For example, if five copies of Form WD are required to list all of the wastes referenced anywhere in the Hazardous Waste Report, then the forms are to be numbered 1 through 5.

3. Waste Stream Related Information

Complete Sections A through H for each waste or waste stream if you are a Processing Facility. Complete only Sections A through D if your site receives, ships or generates and does not process any hazardous waste.

FORM WD INSTRUCTIONS (Continued)

Use a separate line entry for each waste or waste mixture. If more than one line is required to identify and describe a waste stream, continue on the next line and place an "X" in the space immediately before the "check if continued" box.

A. Description of Waste

- Enter the USEPA listed name, abbreviated if necessary, of hazardous wastes listed under 40 CFR Part 261, Subpart D. If the waste stream is a mixture of listed wastes, enter the description which best describes the waste mixture
- For unlisted hazardous wastes identified by characteristic (e.g., ignitable, corrosive, reactive, or EP toxic) under 40 CFR Part 261, Supart C, enter the following:
 - The description from the list of characteristics which best describes the waste; and
 - The chemical or generic chemical name of the waste.

Example:

B. EPA Hazardous Waste Number

- Enter the 4-character USEPA Hazardous Waste Number for listed wastes from 40 CFR Part 261, Subpart D which identifies the waste.
- Enter the 4-character USEPA Hazardous Waste Number of unlisted wastes from 40 CFR Part 261, Subpart C that identifies the waste.
- Enter all of the relevant USEPA Hazardous Waste Numbers, if the waste is a mixture of more than one listed or unlisted waste. If the waste mixture has more than 4 USEPA Hazardous Waste Numbers, continue on the next line and place an "X" in the space immediately before the "check if continued" box.

Example:

C. 3-Digit A/B Waste Code -- Enter the 3-digit A/B Waste Code that best describes the waste or waste mixture entry. The A/B Waste Codes are listed on Page ____.

ORM WD INSTRUCTIONS (Continued)

- D. Regulatory Status -- Enter the Regulatory Status Code for each waste entry. Regulatory Status Codes are listed below.

<u>Code</u>	<u>Regulatory Status</u>
R	Waste is RCRA Regulated
S	Waste is <u>ONLY</u> State Regulated
E	Waste is exempt (neither RCRA or State Regulated)

- E. pH -- Enter the pH of the waste entry.
- F. BTU per Pound -- Enter the BTU per pound for the waste entry.
- G. % Solids -- Enter the percentage of solids for the waste entry.
- H. % Water -- Enter the percentage of water for the waste entry.
4. Comments

This space may be used to explain, clarify, or continue any entry. If used, cross-reference the comment by entering in the appropriate Section and line number.

INSTRUCTIONS FOR COMPLETING

FORM PG

PRIMARY GENERATION

I. INTRODUCTION

Form PG -- Primary Waste Generation. Consistent with a new emphasis on waste minimization, Form PG is structured to associate a waste stream with the process which generated it. Information is requested on the quantity both this year and last, and on what factors might account for any differences between the two.

The term primary waste generation is used here to distinguish between wastes resulting from production, service, or other processes or one time events, and wastes which result from the treatment, storage, or disposal of previously existing hazardous wastes. This latter group, wastes resulting from the treatment, storage, or disposal of previously existing hazardous wastes, are not to be described on this form--they are described on Form PS.

Form PG is divided into two sections.

Section I provides a description of the primary generation process which produced one or more waste streams. This could include anything from an electroplating process to a dry cleaning operation to an air pollution control device to a spill cleanup. Ideally, a single process is described in Section I, with its resulting waste streams listed in Section II. It is recognized, however, that existing record keeping may not make it possible to indicate what quantity of a waste resulted from a single process. In such cases Section I would describe the two or more processes which collectively produced the waste streams described in Section II of the form. Item A should include a detailed narrative description of the process or processes responsible for the waste stream(s). Item B lists the Standard Industrial Classification (SIC) code(s) associated with that process; while Item C indicates the production ratio associated with that process or processes.

Section II provides detailed descriptive information about individual waste streams which result from the process or processes described in Section I. This includes the quantity generated during the reporting year, the quantity generated during the previous year, UOM and density, the detailed source and management sequence of the waste, an indicator of changes in toxicity, and a code indicating what efforts were undertaken to minimize generation.

If more than three wastes are generated by the process or processes described in Section I, complete a second copy of the Form PG on which Section I information is repeated and the additional streams are described.

FORM PG INSTRUCTIONS (Continued)

II. FORM COMPLETION INSTRUCTIONS

Site Identification Label/EPA ID

Attach one copy of the preprinted site identification label, if provided, in the upper left corner of the form. If no site identification labels are provided, enter your EPA ID in the upper left corner of the form. Only two copies of the form are provided in the package. If you need to reproduce the form, attach the site identification label OR enter your site's EPA ID number before making copies.

Page Number

Enter the page number in the appropriate box on the top right corner of the form. For example, if five copies of Form PG are required to list all of the primary waste generation processes, then the forms are to be numbered 1 through 5.

Section I

A. Process Description

- Enter the process that generates the primary hazardous waste in Section IA. Include one-time events and spill cleanups. If your site has more than one process that generates primary hazardous waste, you must complete a separate form for each process.
- If you are unable to break down waste stream quantities by processes that generated the waste stream, you may enter a group of processes in Section IA. Indicate in the "Comments" section that these processes are different and your reasons for grouping them together.

Example:

B. Process SIC Code(s)

- Enter in Section IB the Process SIC Code(s) for the process described in Section IA.
- If there are no SIC code(s) that describe the process, check the "Not App." box.

FORM PG INSTRUCTIONS (Continued)

C. Production Ratio

(This description and instruction has been taken from the 1986 New Jersey Hazardous Waste Generator Waste Minimization Report.)

The Production Ratio =

$$\frac{\text{Measure of Production in 1987}}{\text{Measure of Production in 1986}} = \frac{420 \text{ units produced}}{210 \text{ units produced}} = 2.0$$

(gallons, tons, pounds) (units of production, sales dollars)

Points to consider when computing waste generation on a unit basis:

- a. Report wastes separately that were not generated in the course of normal operations (e.g., spill wastes).
 - b. The production unit should be applicable to your operation. If units of production are not applicable, then use sales dollars.
 - c. Once you select a unit of production, it must remain the same in ALL future reporting years.
 - d. You are responsible for properly computing your firm's waste generation in terms of production units. Amounts of manifested wastes may be used if the units of production are properly applied to the period for which those wastes are generated.
-

- Using the above formula, calculate and enter the Production Ratio for the process described in Section IA.
- For processes where the Production Ratio cannot be calculated, as in the case of one-time events like spill cleanups, check the "Not App." box.

Section II: Waste Stream Related Information

Complete Sections A through I for each waste or waste mixture. Enter each waste stream on a new line.

- A. Waste Reference -- Enter the line and page number from Form WD on which the waste or waste mixture is described.
- B. Reporting Year Quantity (1987) -- Enter the total quantity of the waste stream generated by the process described in Section IA during calendar year 1987.
- C. Previous Year Quantity (1986) -- Enter the total quantity of the waste stream generated by the process described in Section IA during calendar year 1986.

FORM PG INSTRUCTIONS (Continued)

- D. **Unit of Measure (UOM)** -- Enter the UOM code for the quantity of waste entry. Quantities must be reported in the units of measure listed below.

<u>Code</u>	<u>Unit of Measure</u>
P	Pounds
T	Short tons (2,000 pounds)
K	Kilograms
M	Metric tonnes (1,000 kilograms)
G	Gallons
L	Liters

- E. **Density** -- If gallons or liters are used as the UOM, enter the density. Provide the density in pounds per gallon (lbs/gal) or specific gravity (sg). Check the appropriate box.
- F. **Management Sequence** -- Enter the sequence of 3-digit management codes that best describes the management process for the waste or waste mixture entry. The management process codes are listed on page _____.
- G. **Source Code** -- Enter the 3-digit source code that best describes the source of the waste or waste mixture. The appropriate source code would be a specific stage in the process described in Section IA that resulted in the generation of the waste stream. A list of possible source codes follow.

WASTE SOURCE CODES

Cleaning/Degreasing Processes

- S01 Stripping with corrosives
- S02 Vapor degreasing
- S03 Steam cleaning
- S04 Dip rinsing
- S05 Flush rinsing
- S06 Fill and gravity draining
- S07 Backflush rinsing
- S08 Physical scraping/removal
- S09 Pickling
- S10 Other cleaning/degreasing process (specify in the answer space provided)

Production Processes

- C11 Light ends condensation
- S12 Heavy ends removal
- S13 Reaction/synthesis media processing
- S14 Crystallization
- S15 Slag removal
- S16 Bottoms removal
- S17 Molding/forming

- S18 Byproduct processing
- S19 Improper formulation
- S20 Other production processes (specify in the answer space provided)

One-Time or Sporadic Processes

- S21 Discarding of off-spec material
- S22 Discarding of out-of-date products or chemicals
- S23 Discarding of spent or used product (not including spent or used solvents)
- S24 Cleanup of spill residues
- S25 Cleanout of treatment impoundment
- S26 Closure of lagoon
- S27 Closure of process equipment
- S28 Discarding of contaminated cleanup equipment
- S29 Other remedial action/cleanup (specify in the answer space provided)
- S30 Other one-time or sporadic processes (specify in the answer space provided)

Pollution control or waste treatment processes

- S31 Flue gas desulfurization
- S32 Caustic scrubbing
- S33 Electrostatic precipitation
- S34 Condensate from VOC removal
- S35 Filtering/screening
- S36 Dewatering
- S37 Regenerating
- S38 pH adjustment
- S39 Quench cooling
- S40 Centrifugation
- S41 Incineration
- S42 Wastewater treatment
- S43 Drinking water treatment
- S44 Distillation
- S45 Flotation or skimming
- S46 Decantation or settling
- S47 Other pollution control or waste treatment process (specify in the answer space provided)

FORM PG INSTRUCTIONS (Continued)

- H. **Toxicity Change** -- Enter the Toxicity Change code that describes the change in toxicity of the waste stream from calendar year 1986 to 1987. Toxicity Change codes are listed below.

<u>Code</u>	<u>Toxicity Change</u>
I	Increase in toxicity
D	Decrease in toxicity
N	No change in toxicity

- I. **Reduction Code** -- Enter the Reduction Code from the list below that described the waste minimization methods applied to the waste or waste mixture. Reduction Codes 8 through 12 require an explanation in the "Comments" section. .

01	Recycling (reuse) on site
02	Recycling (reuse) off site
03	Equipment/technology modifications
04	Process procedure modifications
05	Reformulation/redesign of product
06	Substituting raw materials
07	Improved operations due to housekeeping/training/inventory control
08	Increase in waste/unit product and decrease in toxicity
09	No change
10	Increase in waste/unit product, no change or increase in toxicity
11	One-time spill or corrective action cleanup
12	Miscellaneous

Comments

This space may be used to explain, clarify, or continue any entry. If used, cross-reference the comment by entering in the appropriate Section and line number.

INSTRUCTIONS FOR COMPLETING

FORM OI

OFF-SITE IDENTIFICATION

I. INTRODUCTION

Form OI, Off-Site Identification, is to be used to provide name, address, site type, and relationship information on all external sites which transported, shipped or received hazardous waste to or from your site. Site type refers to whether the external site is a generator from which your site received waste, a facility to which you sent waste, or a waste transporter. Site relationship indicates whether the external site is a corporate relative or an independent firm. Note the following key features of this form:

- Any facility listed on **Form SO** should be represented by an entry on **Form OI**. If your site is required to complete Form SO, then Form OI must be completed as well.
- Any generator listed on **Form RO** should be represented by an entry on **Form OI**. If your site is required to complete Form RO, then Form OI must be completed as well.
- For transporters **ONLY**, provision of address information is optional. EPA ID number, site type, site relationship, and name information must still be provided.

II. FORM COMPLETION INSTRUCTIONS

1. Site Identification Label/EPA ID

Attach one copy of the preprinted site identification label, if provided, in the upper left corner of the form. If no site identification labels are provided, enter your EPA ID in the upper left corner of the form. Only two copies of the form are provided in the package. If you need to reproduce the form, attach the site identification label OR enter your site's EPA ID number before making copies.

2. Page Number

Enter the page number in the appropriate box on the top right corner of the form. For example, if five copies of **Form OI** are required to list all of the external sites, then the forms are to be numbered 1 through 5.

3. Off-Site Installation Information

Complete Section A through D for each off-site installation to whom you shipped and from whom you received hazardous wastes during the reporting period. Complete Sections A through C and the name line of Section D for all transporters used to ship waste off site.

- A. Off-Site Installation or Transporter EPA ID Number -- Enter the 12-digit EPA ID number of the installation to whom you shipped hazardous waste OR from whom you received hazardous waste OR the transporter who shipped hazardous waste to or from your site. If the site is not RCRA regulated and does not have an EPA ID number, write in the word "NONE" in the space.

FORM OI INSTRUCTIONS (Continued)

- B. **Site Type** -- Enter the Site Type Code for the site entered in Section A. Site type codes are listed below.

<u>Code</u>	<u>Site Type</u>
G	Generator
F	Facility
T	Transporter

- C. **Site Relationship** -- Enter the Site Relationship Code that describes the relationship between you and the site entered in Section A. Site Relationship Codes are listed below.

<u>Code</u>	<u>Site Relationship</u>
S	Same or related owner
D	Unrelated

- D. **Name and Address Information** -- Enter the name and address of the site entered in Section A. The address need not be completed for transporters.

4. **Comments**

This space may be used to explain, clarify, or continue any entry. If used, cross-reference the comment by entering in the appropriate Section and line number.

INSTRUCTIONS FOR COMPLETING

FORM SO WASTE SHIPPED OFF SITE

I. INTRODUCTION

Form SO, Waste Shipped Off Site, is to be used to provide information on all hazardous wastes shipped off site. On each line item, information is requested on the quantity of a single type of waste shipped to a particular facility, the time period of generation, the method of accumulation, the number of shipments of that type of waste sent, the container and method of transport, and the methods expected to be employed for the management of the waste. Note the following key features of this form:

- The waste type is indicated by reference to a detailed waste description which is to be provided on Form WD, Waste Description. If your site is required to complete Form SO, then Form WD must be completed as well.
- The name and address of the facility to which the waste was sent is to be provided on Form OI, Off-Site Identification. If your site is required to complete Form SO, then Form OI must be completed as well.
- It is possible to describe wastes shipped to multiple facilities on a single page of the form. For example, if your site shipped single waste types to each of five different facilities, all of these waste shipments could be described on one copy of Form SO.

II. FORM COMPLETION INSTRUCTIONS

1. Site Identification Label/EPA ID

Attach one copy of the preprinted site identification label, if provided, in the upper left corner of the form. If no site identification labels are provided, enter your EPA ID in the upper left corner of the form. Only two copies of the form are provided in the package. If you need to reproduce the form, attach the site identification label OR enter your site's EPA ID number before making copies.

2. Page Number

Enter the page number in the appropriate box on the top right corner of the form. For example, if five copies of Form SO are required to list all of the wastes shipped off site, then the forms are to be numbered 1 through 5.

3. Waste Stream Related Information

Complete Sections A through K for each waste or waste mixture entered. Use a separate line entry for each waste or waste mixture.

- A. Waste Reference -- Enter the line and page number from Form WD on which the waste or waste mixture is described.
- B. Facility EPA ID Number-- Enter the 12-digit EPA Identification Number of the facility to whom the waste or waste mixture was shipped.

FORM SO INSTRUCTIONS (Continued)

- C. **Quantity Shipped** -- Enter the quantity of the waste or waste mixture shipped during the reporting year.
- D. **Unit of Measure (UOM)** -- Enter the UOM Code for the quantity of waste entry. Quantities can be reported in the units of measure listed below.

<u>Code</u>	<u>Unit of Measure</u>
P	Pounds
T	Short tons (2,000 pounds)
K	Kilograms
M	Metric tonnes (1,000 kilograms)
G	Gallons
L	Liters

- E. **Density** -- If gallons or liters are used as the UOM, enter the density. Provide the density in pounds per gallon (lbs/gal) or specific gravity (sg). Check the appropriate box.
- F. **Time Period** -- Enter the Time Period Code for each waste entry. Time Period Codes are listed below.

<u>Code</u>	<u>Time Period</u>
L	Generated in previous years and shipped this year
P	Generated and shipped this year

- G. **Accumulation Method** -- Enter the method by which the waste or waste mixture was accumulated prior to shipment. [Accumulation, which differs from permitted storage, is defined in detail on page ____.] Accumulation Method Codes are listed below.

<u>Code</u>	<u>Accumulation Method</u>
C	Containers
T	Tanks
N	Not Accumulated

- H. **Number of Shipments** -- Enter the number of shipments (waste manifests) of that waste type that were sent to the facility.
- I. **Transport Mode** -- Enter the Transport Mode Code used to ship the waste or waste mixture. Transport Mode Codes are listed below.

<u>Code</u>	<u>Transport Mode</u>
01	Dump Truck
02	Tank Truck
03	Train
04	Pipe Line
05	Ship
06	Air transport
07	Other, Specify in "Comments"

FORM SO INSTRUCTIONS (Continued)

- J. Transport Container -- Enter the Transport Container Code in which the waste or waste mixture was stored during shipment to the facility. Transport Container Codes are listed below.

<u>Code</u>	<u>Transport Container</u>
DM	Metal drums, barrels, or kegs
DW	Wood drums, barrels, or kegs
DF	Fiberboard or plastic drums, barrels, or kegs
TP	Portable tanks
TT	Cargo tanks (tank trucks)
TC	Tank cars
DT	Dump trucks
CY	Cylinders
CM	Metal boxes, cartons, or cases
CW	Wood boxes, cartons, or cases
CF	Fiber or plastic boxes, cartons, or cases
BA	Burlap, cloth, paper, or plastic bags
OT	Other, Specify in "Comments"

- K. Off-Site Management Codes -- Enter the Management Process Code that you believe will be used by the facility receiving the waste or waste mixture entered. Management process codes are listed below.

<u>Code</u>	<u>Off-Site Management Process</u>
C01	Burning in boiler
C02	Recovery/reclamation
C03	Incineration
C04	Landfill
C05	Surface impoundment
C06	Underground injection
C07	Discharge to POTW
C08	Discharge to surface water under NPDES
C09	Discharge to privately-owned wastewater treatment works
C10	Land application
C11	Other, Specify in "Comments"

4. Comments

This space may be used to explain, clarify, or continue any entry. If used, cross-reference the comment by entering in the appropriate Section and line number.

INSTRUCTIONS FOR COMPLETING

FORM RO

WASTE RECEIVED FROM OFF SITE

I. INTRODUCTION

Form RO, Waste Received From Off Site, is to be used to provide information on all hazardous wastes received from off site. On each line item, information is requested on the quantity of a single type of waste received from a particular generator, the number of shipments of that type of waste received, and the methods employed for the management of the waste. Note the following key features of this form:

- **The waste type is indicated by reference to a detailed waste description which is to be provided on Form WD, Waste Description. If your site is required to complete Form RO, then Form WD must be completed as well.**
- **The name and address of the generator from which the waste was received is to be provided on Form OI, Off-Site Identification. If your site is required to complete Form RO, then Form OI must be completed as well.**
- **It is possible to describe wastes received from multiple generators on a single page of the form. For example, if your site received only one waste from each of five generators, all of these receipts could be described on a single copy of Form RO.**

II. FORM COMPLETION INSTRUCTIONS

1. Site Identification Label/EPA ID

Attach one copy of the preprinted site identification label, if provided, in the upper left corner of the form. If no site identification labels are provided, enter your EPA ID in the upper left corner of the form. Only two copies of the form are provided in the package. If you need to reproduce the form, attach the site identification label OR enter your site's EPA ID number before making copies.

2. Page Number

Enter the page number in the appropriate box on the top right corner of the form. For example, if five copies of Form RO are required to list all of the wastes received from off site, then the forms are to be numbered 1 through 5.

3. Waste Stream Related Information

Complete Sections A through G for each waste or waste mixture entered. Use a separate line entry for each waste or waste mixture.

- A. Waste Reference -- Enter the line and page number from Form WD on which the waste or waste mixture is described.**
- B. Generator EPA ID Number-- Enter the 12-digit U.S. EPA Identification Number of the generator from whom the waste or waste mixture was received.**

FORM RO INSTRUCTIONS (Continued)

- C. Quantity Generated -- Enter the quantity of the waste or waste mixture received during the reporting year.
- D. Unit of Measure (UOM) -- Enter the UOM code for the quantity of waste entry. Quantities must be reported in the units of measure listed below.

<u>Code</u>	<u>Unit of Measure</u>
P	Pounds
T	Short tons (2,000 pounds)
K	Kilograms
M	Metric tonnes (1,000 kilograms)
G	Gallons
L	Liters

- E. Density -- If gallons or liters are used as the UOM, enter the density. Provide the density in pounds per gallon (lbs/gal) or specific gravity (sg). Check the appropriate box.
- F. Management Sequence -- Enter the sequence of 3-digit management codes that best describes the management process for the waste or waste mixture entry. The management process codes are listed on page ____.
- G. Number of Shipments -- Enter the number of shipments (waste manifests) of that waste type that were received from the generator.
4. Comments

This space may be used to explain, clarify, or continue any entry. If used, cross-reference the comment by entering in the appropriate Section and line number.

INSTRUCTIONS FOR COMPLETING

FORM PS

WASTE MANAGEMENT PROCESS SUMMARY

I. INTRODUCTION

Form PS, Waste Management Process Summary, is to be used to describe the hazardous waste management processes which occur on site during the reporting year. The waste management processes to be described on Form PS are the same as the on-site processes used in the description of the management sequence for each waste stream on Form RO (Section F) and Form PG (Section F). A list of possible waste management processes codes appears on page ____.

Complete one copy of Form PS for each unique combination of process (defined by its process code) regulatory status (State or Federally regulated) and Operational Status (in operation, under construction, etc.).

For each process/regulatory status/operational status combination, the information requested is a description of the process, the capacity of the process, the number of units represented, information on the expected changes in the capacity, the quantity of material entering the process, and the quantities of material leaving the process. The hazardous material leaving the process (secondary generation of hazardous waste) is described in detail.

The definition of capacity is different for different types of processes, therefore Form PS has four sections in which capacity is defined (Sections B through E), corresponding to each of 4 different types of processes. For each process, complete only the sections which applies to the type of process being described. Complete sections A and F for all processes, and the appropriate section of B through E as described below:

- **Complete Section B if the process described is STORAGE. For storage, the capacity is the total amount of waste which might be stored in the storage area, tank, impoundment, or waste pile.**
- **Complete Section C if the process is treatment in single units characterized by a maximum flow rate. Section C is to be completed for units which are connected in parallel and any process which is limited by the maximum flow rate even if it is not usually considered treatment, such as underground injection.**
- **Complete Section D if the process is treatment in a sequence in dependent units. A sequence of treatment units which can be operated independently are to be described in section C.**
- **Complete Section E for landfill type processes.**

The waste type is indicated by reference to a detailed waste description which is to be provided on Form WD, Waste Description. If you are required to complete Form PS then Form WD must be completed also.

FORM PS INSTRUCTIONS (Continued)

II. FORM COMPLETION INSTRUCTIONS

1. Site Identification Label/EPA ID

Attach one copy of the preprinted site identification label, if provided, in the upper left corner of the form. If no site identification labels are provided, enter your EPA ID in the upper left corner of the form. Only two copies of the form are provided in the package. If you need to reproduce the form, attach the site identification label OR enter your site's EPA ID number before making copies.

2. Page Number

Enter the page number in the appropriate box on the top right corner of the form. For example, if five copies of Form PS are required to describe the hazardous waste management processes used during the year, then the forms are to be numbered 1 through 5.

3. Waste Management Process Related Information

A. Description of the process -- Note that a separate copy of Form PS must be completed for each combination of process type, regulatory status, and operational status.

- 1) Process Code -- Enter the process code for the waste management process being described from the list on page ____.
- 2) Regulatory Status -- Enter the appropriate code from the list below which describes how this process is regulated:

<u>Code</u>	<u>Regulatory Status</u>
R	RCRA Regulated
S	State Regulated only
N	Not regulated

- 3) Operational Status -- Enter the appropriate code from the list below which describes the operation of this process at the end of the reporting year:

<u>Code</u>	<u>Operational Status</u>
A	Active
B	Temporarily Closed
C	Permanently Closed

- 4) Process Description -- Enter a narrative description of the process.

FORM PS INSTRUCTIONS (Continued)

B. Capacity for Storage Processes -- Complete this section only if the process described is STORAGE.

- 1) Capacity in 1987 -- Enter the capacity of the storage process at the end of 1987. The capacity is the total amount of waste which might be stored in the storage area, tank, impoundment, or waste pile including waste presently stored. When calculating capacity, consider the design size and any other limitations (physical, regulatory, etc.) which determine the maximum usable capacity.

Report the capacity in weight units assuming the total volume for storage will be used in a manner similar to its present use. If the storage is used for wastes typically measured in volume units (gallons, barrels, etc.) convert the volume to weight using the density of the wastes. If different types of waste are stored, convert all volumes to weight using the appropriate density and determine the total weight for all wastes (liquid and dry) which might be stored.

- 2) UOM Wt. -- Enter the unit of weight measure for the capacity. Quantities can be reported in the weight units listed below.

<u>Code</u>	<u>Units of Measure</u>
P	Pounds
T	Short Tons (2000 pounds)
K	Kilograms
M	Metric Tonnes (1000 kilograms)

- 3) Number of Units -- Enter the number of storage units (tanks, impoundments, waste piles or storage areas) with the listed combination of process type, regulatory status, and operational status.

- C. Capacity for Treatment processes in single units -- Complete this section only if the process described is TREATMENT IN SINGLE UNITS (including units operating in parallel and injection wells).

- 1) Annual Capacity -- Enter the annual capacity of the treatment process. The capacity is the total amount of waste which can be treated in the process in a year assuming typical operating schedules, mixture of wastes and expected maintenance downtime, a regulatory constraints.

Report the capacity in weight units. If the treatment is used for wastes typically measured in volume units (gallons, barrels, etc.) convert the volume to weight using the density of the wastes. If different types of waste are treated, convert all volumes to weight using the appropriate density and determine the total weight for all wastes (liquid and dry) which were treated.

FORM PS INSTRUCTIONS (Continued)

- 2) **8 Hour Shift Capacity** -- Enter the design capacity or maximum capacity of the treatment process for an 8 hour shift. The capacity is the total amount of waste which can be treated in the process during an 8 hour shift.

Report the capacity in weight units. If the treatment is used for wastes typically measured in volume units (gallons, barrels, etc.) convert the volume to weight using the density of the wastes. If different types of waste are treated, convert all volumes to weight using the appropriate density and determine the total weight for all wastes (liquid and dry) which were treated.

- 3) **UOM Wt.** -- Enter the unit of weight measure for the capacity. Quantities can be reported in the weight units listed below.

<u>Code</u>	<u>Units of Measures</u>
P	Pounds
T	Short Tons (2000 pounds)
K	Kilograms
M	Metric Tonnes (1000 kilograms)

- 4) **Number of Units** -- Enter the number of treatment units with the listed combination of process type, regulatory status, and operational status.

D. **Capacity for Treatment processes in a sequence on treatments units** -- Complete this section only if the process described is TREATMENT IN UNITS IN SEQUENCE.

- 1) **Annual Capacity** -- Enter the annual capacity of the treatment process. The capacity is the total amount of waste (entering the first treatment unit of the sequence) which can be treated in the process in a year assuming typical operating schedules, mixture of wastes and expected maintenance downtime, a regulatory constraints.

Report the capacity in weight units. If the treatment is used for wastes typically measured in volume units (gallons, barrels, etc.) convert the volume to weight using the density of the wastes. If different types of waste are treated, convert all volumes to weight using the appropriate density and determine the total weight for all wastes (liquid and dry) which were treated.

- 2) **8 Hr. Shift Capacity** -- Enter the design capacity or maximum capacity (amount of material entering the first treatment unit of the sequence) of the treatment process for an 8 hour shift. The capacity is the total amount of waste which can be treated in the process during an 8 hour shift.

Report the capacity in weight units. If the treatment is used for wastes typically measured in volume units (gallons, barrels, etc.) convert the volume to weight using the density of the wastes. If different types of waste are treated, convert all volumes to weight using the appropriate density and determine the total weight for all wastes (liquid and dry) which were treated.

FORM PS INSTRUCTIONS (Continued)

- 3) UOM Wt. -- Enter the unit of measure for the capacity. Quantities can be reported in the weight units listed below.

<u>Code</u>	<u>Units of Measure</u>
P	Pounds
T	Short Tons (2000 pounds)
K	Kilograms
M	Metric Tonnes (1000 kilograms)
G	Gallons
L	Liters

- D. Unit of Measure (UOM) -- Enter the UOM code for the quantity of waste entry. Quantities must be reported in the units of measure listed below.

<u>Code</u>	<u>Unit of Measure</u>
P	Pounds
T	Short tons (2,000 pounds)
K	Kilograms
M	Metric tonnes (1,000 kilograms)
G	Gallons
L	Liters

- 4) Density -- If gallons or liters are used as the UOM, enter the density. Provide the density in pounds per gallon (lbs/gal) or specific gravity (sp). Check the appropriate box.
- 5) Unit Type and Number of Units -- Enter the number of treatment units by unit type which make up the sequence of units in this process. Possible unit types are:

<u>Code</u>	<u>Unit Type</u>
T	Tank
I	Impoundment
O	Other

- E. Capacity for Landfill type processes -- Complete this section only if the process described is LANDFILL.

- 1) Remaining Capacity, end of 1987 -- Enter the capacity of the storage process at the end of 1987. The total remaining capacity at the end of 1987 does not include daily cover and final cover. When calculating capacity, consider the design size and any other limitations (physical, regulatory, etc.) which affect the maximum usable capacity.

Report the capacity in weight units assuming the total volume for waste will be used in a manner similar to its present use.

FORM PS INSTRUCTIONS (Continued)

- 2) UOM Wt. -- Enter the unit of weight measure for the capacity. Quantities can be reported in the weight units listed below.

<u>Code</u>	<u>Units of Measure</u>
P	Pounds
T	Short Tons (2000 pounds)
K	Kilograms
M	Metric Tonnes (1000 kilograms)

- 3) Number of Units -- Enter the number of landfill units with the listed combination of process type, regulatory status, and operational status.

**F. Additional information for all management processes --
Line 1, limitations on capacity.**

- 1) Limitations on capacity -- Enter codes to describe the limitations on capacity, in order of importance. The relevant codes are shown below. Enter N (no limitations) only if Capacity in 1987, Annual Capacity, or Remaining Capacity, end of 1987 is limited ONLY by engineering design.

<u>Code</u>	<u>Limitations on Capacity</u>
A	Operating permit
B	Compliance with permit standards
C	Other regulatory limitations
D	Planned maintenance downtime
E	Number of shifts operated/yr.
F	Other Physical Factors
O	Other Factors
N	No limitations beyond design

- 2) Percent of capacity which is commercially available -- Enter the percent of the capacity (as defined in section B, C, D, or E) which is available to commercial use.
- 3) Commercial Availability Code -- Enter the commercial availability code below which best describes the portion of the capacity which is available for commercial use.

<u>Code</u>	<u>Commercial Availability</u>
A	Commercial use
B	Commercial use for a limited number of other firms.
C	Use by firms owned by the same company only.
D	No commercial use available.

ORM PS INSTRUCTIONS (Continued)

F. Line 2, Changes in capacity --

- 1) **Planned Change in Annual or End of Year Capacity --** Enter any changes in capacity (as defined in sections B through E) expected in the next 5 years. Use the same unit of measure used in section B, C, D, or E.
- 2) **Expected Year of the Change --** Enter the expected year of the change in capacity noted above.
- 3) **Change Code --** Enter the code below which best describes the expected change in capacity.

<u>Code</u>	<u>Change Status</u>
A	Change in production
B	Change in production methods
C	Change in waste management methods
D	Change in regulatory status of waste management method
E	Change in commercial status of waste management method
O	Other reasons

- 4) **Percent of capacity change which is commercially available --** Enter the percent of the expected capacity change which is available to commercial use.
- 5) **Commercial Availability Code. --** Enter the commercial availability code below which best describes the portion of the capacity change which is available for commercial use.

<u>Code</u>	<u>Commercial Availability</u>
A	Commercial use
B	Commercial use for a limited number of other firms.
C	Use by firms owned by the same company only.
D	No commercial use available.

F. Line 3, Describe influent flows.

- 1) **Waste Description --** Enter a narrative description of the influent material to the process.
- 2) **Annual Quantity --** Enter the total quantity of material entering the waste management process.

FORM PS INSTRUCTIONS (Continued)

- 3) **UOM** -- Enter the unit of measure for the annual quantity of influent material above using the unit of measure codes below.

<u>Code</u>	<u>Regulatory Status</u>
P	Pounds
T	Short Tons (2000 pounds)
K	Kilograms
M	Metric Tonnes (1000 kilograms)
G	Gallons
L	Liters

- 4) **Density** -- If quantity above is reported with volume unit of measure (gallons or liters) enter the density of the material, and the unit of measure for the density (by checking the appropriate box). If several materials enter the process with different densities, convert all to a common weight unit of measure.
- 5) **% Hazardous** -- Enter the percent of the influent material which is RCRA regulated hazardous waste.

F. Line 4, Describe non-hazardous effluent flows.

- 1) **Waste Description** -- Enter a narrative description of the non-hazardous effluent flow from the process.
- 2) **Annual Quantity** -- Enter the total quantity of non-hazardous material leaving the waste management process.
- 3) **UOM** -- Enter the unit of measure for the quantity of non-hazardous material leaving the waste management process.

<u>Code</u>	<u>Regulatory Status</u>
P	Pounds
T	Short Tons (2000 pounds)
K	Kilograms
M	Metric Tonnes (1000 kilograms)
G	Gallons
L	Liters

- 4) **Density** -- If quantity above is reported with volume unit of measure (gallons or liters) enter the density of the material, and the unit of measure for the density (by checking the appropriate box). If several non-hazardous materials leave the process with different densities, convert all to a common weight unit of measure.

FORM PS INSTRUCTIONS (Continued)

F. Lines 5 to 8, Describe hazardous effluent flows. For each flow of hazardous waste from the process, enter the following information.

- 1) Form WD Waste Reference -- Enter the line and page number from Form WD on which the waste or waste mixture is described.
- 2) Annual Quantity -- Enter the total quantity of this hazardous stream leaving the waste management process.
- 3) UOM -- Enter the unit of measure for the quantity of the hazardous waste stream leaving the waste management process.

<u>Code</u>	<u>Regulatory Status</u>
P	Pounds
T	Short Tons (2000 pounds)
K	Kilograms
M	Metric Tonnes (1000 kilograms)
G	Gallons
L	Liters

- 4) Density -- If quantity above is reported with volume unit of measure (gallons or liters) enter the density of the material, and the unit of measure for the density (by checking the appropriate box).
- 5) Management Sequence -- Usual...

LIST OF SIC CODES

SIC Code	Industry	SIC Code	Industry
0111	Wheat	0821	Forest nurseries and seed gathering
0112	Rice	0843	Extraction of pine gum
0115	Corn	0849	Gathering of forest products, nec
0116	Soybeans	0851	Forestry services
0119	Cash grains, nec	0912	Finfish
0131	Cotton	0913	Shellfish
0132	Tobacco	0919	Miscellaneous marine products
0133	Sugar crops	0921	Fish hatcheries and preserves
0134	Inst potatoes	0971	Hunting, trapping, game propagation
0139	Field crops, except cash grains, nec	1011	Iron ores
0161	Vegetables and melons	1021	Copper ores
0171	Berry crops	1031	Lead and zinc ores
0172	Grapes	1041	Gold ores
0173	Tree nuts	1044	Silver ores
0174	Citrus fruits	1051	Bauxite and other aluminum ores
0175	Deciduous tree fruits	1061	Ferrous alloy ores, except vanadium
0179	Fruits and tree nuts, nec	1081	Metal mining services
0181	Ornamental nursery products	1092	Mercury ores
0182	Food crops grown under cover	1094	Uranium, radium, vanadium ores
0189	Horticultural specialties, nec	1099	Metal ores, nec
0191	General farms, primarily crops	1111	Anthracite
0211	Beef cattle feedlots	1112	Anthracite mining services
0212	Beef cattle, except feedlots	1211	Bituminous coal and lignite
0213	Hogs	1213	Bituminous and lignite services
0214	Sheep and goats	1311	Crude petroleum and natural gas
0219	General livestock, nec	1321	Natural gas liquids
0241	Dairy farms	1381	Drilling oil and gas wells
0251	Broiler, fryer, and roaster chickens	1382	Oil and gas exploration services
0252	Chicken eggs	1389	Oil and gas field services, nec
0253	Turkeys and turkey eggs	1411	Dimension stone
0254	Poultry hatcheries	1422	Crushed and broken limestone
0259	Poultry and eggs, nec	1423	Crushed and broken granite
0271	Fur-bearing animals and rabbits	1429	Crushed and broken stone, nec
0272	Horses and other equines	1442	Construction sand and gravel
0279	Animal specialties, nec	1446	Industrial sand
0291	General farms, primarily livestock	1452	Bentonite
0711	Soil preparation services	1453	Fire clay
0721	Crop planting and protection	1454	Fullers earth
0722	Crop harvesting	1455	Kaolin and ball clay
0723	Crop preparation services for market	1459	Clay and related minerals, nec
0724	Cotton ginning	1472	Barite
0729	General crop services	1473	Fluorspar
0741	Veterinary services, farm livestock	1474	Potash, soda and borate minerals
0742	Veterinary services, specialties	1475	Phosphate rock
0751	Livestock services, except specialties	1476	Rock salt
0752	Animal specialty services	1477	Sulfur
0761	Farm labor contractors	1479	Chemical and fertilizer mining, nec
0762	Farm management services	1481	Nonmetallic minerals services
0781	Landscape counseling and planning	1492	Gypsum
0782	Lawn and garden services	1496	Talc, soapstone, and pyrophyllite
0783	Ornamental shrub and tree services	1499	Nonmetallic minerals, nec
0811	Timber tracts	1521	Single-family housing construction

Note: nec = not elsewhere classified.

SIC Code	Industry	SIC Code	Industry
1522	Residential construction, nec	2065	Confectionery products
1531	Operative builders	2066	Chocolate and cocoa products
1541	Industrial buildings and warehouses	2067	Chewing gum
1542	Nonresidential construction, nec	2074	Cottonseed oil mills
1611	Highway and street construction	2075	Soybean oil mills
1622	Bridge, tunnel, and elevated highway	2076	Vegetable oil mills, nec
1623	Water, sewer, and utility lines	2077	Animal and manne fats and oils
1629	Heavy construction, nec	2079	Shortening and cooking oils
1711	Plumbing, heating, air conditioning	2082	Malt beverages
1721	Painting, paper hanging, decorating	2083	Malt
1731	Electrical work	2084	Wines, brandy, and brandy spirits
1741	Masonry and other stonework	2085	Distilled liquor, except brandy
1742	Plastering, drywall, and insulation	2086	Bottled and canned soft drinks
1743	Terrazzo, tile, marble, mosaic work	2087	Flavoring extracts and syrups, nec
1751	Carpentering	2091	Canned and cured seafoods
1752	Floor laying and floor work, nec	2092	Fresh or frozen packaged fish
1761	Roofing and sheet metal work	2095	Roasted coffee
1771	Concrete work	2097	Manufactured ice
1781	Water well drilling	2098	Macaroni and spaghetti
1791	Structural metal erection	2099	Food preparations, nec
1793	Glass and glazing work	2111	Cigarettes
1794	Excavating and foundation work	2121	Cigars
1795	Wrecking and demolition work	2131	Chewing and smoking tobacco
1796	Installing building equipment, nec	2141	Tobacco stemming and redrying
1799	Special trade contractors, nec	2211	Weaving mills, cotton
2011	Meat packing plants	2221	Weaving mills, synthetics
2013	Sausages and other prepared meats	2231	Weaving and finishing mills, wool
2016	Poultry dressing plants	2241	Narrow fabric mills
2017	Poultry and egg processing	2251	Women's hosiery, except socks
2021	Creamery butter	2252	Hosiery, nec
2022	Cheese, natural and processed	2253	Knit outerwear mills
2023	Condensed and evaporated milk	2254	Knit underwear mills
2024	Ice cream and frozen desserts	2257	Circular knit fabric mills
2026	Fluid milk	2258	Warp knit fabric mills
2032	Canned specialties	2259	Knitting mills, nec
2033	Canned fruits and vegetables	2261	Finishing plants, cotton
2034	Dehydrated fruits, vegetables, soups	2262	Finishing plants, synthetics
2035	Pickles, sauces, and salad dressings	2269	Finishing plants, nec
2037	Frozen fruits and vegetables	2271	Woven carpets and rugs
2038	Frozen specialties	2272	Tufted carpets and rugs
2041	Flour and other grain mill products	2279	Carpets and rugs, nec
2043	Cereal breakfast foods	2281	Yarn mills, except wool
2044	Rice milling	2282	Throwing and winding mills
2045	Blended and prepared flour	2283	Wool yarn mills
2046	Wet corn milling	2284	Thread mills
2047	Dog, cat, and other pet food	2291	Felt goods, except woven felts and hats
2048	Prepared feeds, nec	2292	Lace goods
2051	Bread, cake, and related products	2293	Padding and upholstery filling
2052	Cookies and crackers	2294	Processed textile waste
2061	Raw cane sugar	2295	Coated fabrics, not rubberized
2062	Cane sugar refining	2296	Tire cord and fabric
2063	Beet sugar	2297	Nonwoven fabrics

SIC Code	Industry	SIC Code	Industry
2298	Cordage and twine	2511	Wood household furniture
2299	Textile goods, nec	2512	Upholstered household furniture
2311	Men's and boys' suits and coats	2514	Metal household furniture
2321	Men's and boys' shirts and nightwear	2515	Mattresses and bedsprings
2322	Men's and boys' underwear	2517	Wood TV and radio cabinets
2323	Men's and boys' neckwear	2519	Household furniture, nec
2327	Men's and boys' separate trousers	2521	Wood office furniture
2328	Men's and boys' work clothing	2522	Metal office furniture
2329	Men's and boys' clothing, nec	2531	Public building and related furniture
2331	Women's and misses' blouses and waists	2541	Wood partitions and fixtures
2335	Women's and misses' dresses	2542	Metal partitions and fixtures
2337	Women's and misses' suits and coats	2591	Drapery hardware and blinds and shades
2339	Women's and misses' outerwear, nec	2599	Furniture and fixtures, nec
2341	Women's and children's underwear	2611	Pulp mills
2342	Brassieres and allied garments	2621	Paper mills, except building paper
2351	Millinery	2631	Paperboard mills
2352	Hats and caps, except millinery	2641	Paper coating and glazing
2361	Children's dresses and blouses	2642	Envelopes
2363	Children's coats and suits	2643	Bags, except textile bags
2369	Children's outerwear, nec	2645	Die-cut paper and board
2371	Fur goods	2646	Pressed and molded pulp goods
2381	Fabric dress and work gloves	2647	Sanitary paper products
2394	Robes and dressing gowns	2648	Stationery products
2385	Waterproof outer garments	2649	Converted paper products, nec
2386	Leather and sheep lined clothing	2651	Folding paperboard boxes
2387	Apparel belts	2652	Set-up paperboard boxes
2399	Apparel and accessories, nec	2653	Corrugated and solid fiber boxes
2391	Curtains and draperies	2654	Sanitary food containers
2392	House furnishings, nec	2655	Fiber cans, drums, and similar products
2393	Textile bags	2661	Building paper and board mills
2394	Canvas and related products	2711	Newspapers
2395	Pleating and stitching	2721	Periodicals
2396	Automotive and apparel trimmings	2731	Book publishing
2397	Schiffli machine embroideries	2732	Book printing
2399	Fabricated textile products, nec	2741	Miscellaneous publishing
2411	Logging camps and logging contractors	2751	Commercial printing, letterpress
2421	Sawmills and planing mills, general	2752	Commercial printing, lithographic
2426	Hardwood dimension and flooring	2753	Engraving and plate printing
2429	Special product sawmills, nec	2754	Commercial printing, gravure
2431	Millwork	2761	Manifold business forms
2434	Wood kitchen cabinets	2771	Greeting card publishing
2435	Hardwood veneer and plywood	2782	Blankbooks and looseleaf binders
2436	Softwood veneer and plywood	2789	Bookbinding and related work
2439	Structural wood members, nec	2791	Typesetting
2441	Nailed wood boxes and shooks	2793	Photoengraving
2448	Wood pallets and skids	2794	Electrotyping and stereotyping
2449	Wood containers, nec	2795	Lithographic platemaking services
2451	Mobile homes	2812	Alkalies and chlorine
2452	Prefabricated wood buildings	2813	Industrial gases
2491	Wood preserving	2816	Inorganic pigments
2492	Particleboard	2819	Industrial inorganic chemicals, nec
2499	Wood products, nec	2821	Plastics materials and resins

Note: nec = not elsewhere classified.

SIC Code	Industry	SIC Code	Industry
2822	Synthetic rubber	3255	Clay refractories
2823	Cellulosic man-made fibers	3259	Structural clay products, nec
2824	Organic fibers, noncellulosic	3261	Vitreous plumbing fixtures
2831	Biological products	3262	Vitreous china food utensils
2833	Medicinals and botanicals	3263	Fine earthenware food utensils
2834	Pharmaceutical preparations	3264	Porcelain electrical supplies
2841	Soap and other detergents	3269	Pottery products, nec
2842	Polishes and sanitation goods	3271	Concrete block and brick
2843	Surface active agents	3272	Concrete products, nec
2844	Toilet preparations	3273	Ready-mixed concrete
2851	Paints and allied products	3274	Lime
2861	Gum and wood chemicals	3275	Gypsum products
2865	Cyclic crudes and intermediates	3281	Cut stone and stone products
2869	Industrial organic chemicals, nec	3291	Abrasive products
2873	Nitrogenous fertilizers	3292	Asbestos products
2874	Phosphatic fertilizers	3293	Gaskets, packing, and sealing devices
2875	Fertilizers, mixing only	3295	Minerals, ground or treated
2879	Agricultural chemicals, nec	3296	Mineral wool
2891	Adhesives and sealants	3297	Nonclay refractories
2892	Explosives	3299	Nonmetallic mineral products, nec
2893	Printing ink	3312	Blast furnaces and steel mills
2895	Carbon black	3313	Electrometallurgical products
2899	Chemical preparations, nec	3315	Steel wire and related products
2911	Petroleum refining	3316	Cold finishing of steel shapes
2951	Paving mixtures and blocks	3317	Steel pipe and tubes
2952	Asphalt felts and coatings	3321	Gray iron foundries
2992	Lubricating oils and greases	3322	Malleable iron foundries
2999	Petroleum and coal products, nec	3324	Steel investment foundries
3011	Tires and inner tubes	3325	Steel foundries, nec
3021	Rubber and plastics footwear	3331	Primary copper
3031	Reclaimed rubber	3332	Primary lead
3041	Rubber and plastics hose and belting	3333	Primary zinc
3069	Fabricated rubber products, nec	3334	Primary aluminum
3079	Miscellaneous plastics products	3339	Primary nonferrous metals, nec
3111	Leather tanning and finishing	3341	Secondary nonferrous metals
3131	Boot and shoe cut stock and findings	3351	Copper rolling and drawing
3142	House slippers	3353	Aluminum sheet, plate, and foil
3143	Men's footwear, except athletic	3354	Aluminum extruded products
3144	Women's footwear, except athletic	3355	Aluminum rolling and drawing, nec
3149	Footwear, except rubber, nec	3356	Nonferrous rolling and drawing, nec
3151	Leather gloves and mittens	3357	Nonferrous wire drawing and insulating
3161	Luggage	3361	Aluminum foundries
3171	Women's handbags and purses	3362	Brass, bronze, and copper foundries
3172	Personal leather goods, nec	3369	Nonferrous foundries, nec
3199	Leather goods, nec	3398	Metal heat treating
3211	Fiat glass	3399	Primary metal products, nec
3221	Glass containers	3411	Metal cans
3229	Pressed and blown glass, nec	3412	Metal barrels, drums, and pails
3231	Products of purchased glass	3421	Cutlery
3241	Cement, hydraulic	3423	Hand and edge tools, nec
3251	Brick and structural clay tile	3425	Hand saws and saw blades
3253	Ceramic wall and floor tile	3429	Hardware, nec

Note: nec = not elsewhere classified.

SIC Code	Industry	SIC Code	Industry
3431	Metal sanitary ware	3555	Printing trades machinery
3432	Plumbing fittings and brass goods	3559	Special industry machinery, nec
3433	Heating equipment, except electric	3561	Pumps and pumping equipment
3441	Fabricated structural metal	3562	Ball and roller bearings
3442	Metal doors, sash, and trim	3563	Air and gas compressors
3443	Fabricated plate work (boiler shops)	3564	Blowers and fans
3444	Sheet metal work	3565	Industrial patterns
3446	Architectural metal work	3566	Speed changers, drives, and gears
3448	Prefabricated metal buildings	3567	Industrial furnaces and ovens
3449	Miscellaneous metal work	3568	Power transmission equipment, nec
3451	Screw machine products	3569	General industrial machinery, nec
3452	Bolts, nuts, rivets, and washers	3572	Typewriters
3462	Iron and steel forgings	3573	Electronic computing equipment
3463	Nonferrous forgings	3574	Calculating and accounting machines
3465	Automotive stampings	3576	Scales and balances, except laboratory
3466	Crowns and closures	3579	Office machines, nec
3469	Metal stampings, nec	3581	Automatic merchandising machines
3471	Plating and polishing	3582	Commercial laundry equipment
3479	Metal coating and allied services	3585	Refrigeration and heating equipment
3482	Small arms ammunition	3586	Measuring and dispensing pumps
3483	Ammunition, except for small arms, nec	3589	Service industry machinery, nec
3484	Small arms	3592	Carburetors, pistons, rings, valves
3489	Ordnance and accessories, nec	3599	Machinery except electrical, nec
3493	Steel springs, except wire	3612	Transformers
3494	Valves and pipe fittings	3613	Switchgear and switchboard apparatus
3495	Wire springs	3621	Motors and generators
3496	Miscellaneous fabricated wire products	3622	Industrial controls
3497	Metal foil and leaf	3623	Welding apparatus, electrical
3498	Fabricated pipe and fittings	3624	Carbon and graphite products
3499	Fabricated metal products, nec	3629	Electrical industrial apparatus, nec
3511	Turbines and turbine generator sets	3631	Household cooking equipment
3519	Internal combustion engines, nec	3632	Household refrigerators and freezers
3523	Farm machinery and equipment	3633	Household laundry equipment
3524	Lawn and garden equipment	3634	Electric housewares and fans
3531	Construction machinery	3635	Household vacuum cleaners
3532	Mining machinery	3636	Sewing machines
3533	Oil field machinery	3639	Household appliances, nec
3534	Elevators and moving stairways	3641	Electric lamps
3535	Conveyors and conveying machinery	3643	Current-carrying wiring devices
3536	Hoists, cranes, and monorails	3644	Noncurrent-carrying wiring devices
3537	Industrial trucks and tractors	3645	Residential lighting fixtures
3541	Machine tools, metal cutting types	3646	Commercial lighting fixtures
3542	Machine tools, metal forming types	3647	Vehicular lighting equipment
3544	Special dies, tools, jigs, and fixture	3648	Lighting equipment, nec
3545	Machine tool accessories	3651	Radio and TV receiving sets
3546	Power driven hand tools	3652	Phonograph records
3547	Rolling mill machinery	3661	Telephone and telegraph apparatus
3549	Metalworking machinery, nec	3662	Radio and TV communication equipment
3551	Food products machinery	3671	Electron tubes, receiving type
3552	Textile machinery	3672	Cathode ray television picture tubes
3553	Woodworking machinery	3673	Electron tubes, transmitting
3554	Paper industries machinery	3674	Semiconductors and related devices

Note: nec = not elsewhere classified.

SIC Code	Industry	SIC Code	Industry
3675	Electronic capacitors	3961	Costume jewelry
3676	Electronic resistors	3962	Artificial flowers
3677	Electronic coils and transformers	3963	Buttons
3678	Electronic connectors	3964	Needles, pins, and fasteners
3679	Electronic components, nec	3991	Brooms and brushes
3691	Storage batteries	3993	Signs and advertising displays
3692	Primary batteries, dry and wet	3995	Burial caskets
3693	X-ray apparatus and tubes	3996	Hard surface floor coverings
3694	Engine electrical equipment	3999	Manufacturing industries, nec
3699	Electrical equipment and supplies, nec	4011	Railroads, line-haul operating
3711	Motor vehicles and car bodies	4013	Switching and terminal devices
3713	Truck and bus bodies	4041	Railway express service
3714	Motor vehicle parts and accessories	4111	Local and suburban transit
3715	Truck trailers	4119	Local passenger transportation, nec
3716	Motor homes on purchased chassis	4121	Taxicabs
3721	Aircraft	4131	Intercity highway transportation
3724	Aircraft engines and engine parts	4141	Local passenger charter service
3728	Aircraft equipment, nec	4142	Charter service, except local
3731	Ship building and repairing	4151	School buses
3732	Boat building and repairing	4171	Bus terminal facilities
3743	Railroad equipment	4172	Bus service facilities
3751	Motorcycles, bicycles, and parts	4212	Local trucking, without storage
3761	Guided missiles and space vehicles	4213	Trucking, except local
3764	Space propulsion units and parts	4214	Local trucking and storage
3769	Space vehicle equipment, nec	4221	Farm product warehousing and storage
3792	Travel trailers and campers	4222	Refrigerated warehousing
3795	Tanks and tank components	4224	Household goods warehousing
3799	Transportation equipment, nec	4225	General warehousing and storage
3811	Engineering and scientific instruments	4226	Special warehousing and storage, nec
3822	Environmental controls	4231	Trucking terminal facilities
3823	Process control instruments	4311	U.S. Postal Service
3824	Fluid meters and counting devices	4411	Deep sea foreign transportation
3825	Instruments to measure electricity	4421	Noncontiguous area transportation
3829	Measuring and controlling devices, nec	4422	Coastwise transportation
3832	Optical instruments and lenses	4423	Intercoastal transportation
3841	Surgical and medical instruments	4431	Great Lakes transportation
3842	Surgical appliances and supplies	4441	Transportation on rivers and canals
3843	Dental equipment and supplies	4452	Ferries
3851	Ophthalmic goods	4453	Ligherage
3861	Photographic equipment and supplies	4454	Towing and tugboat service
3873	Watches, clocks, and watchcases	4459	Local water transportation, nec
3911	Jewelry, precious metal	4463	Marine cargo handling
3914	Silverware and plated ware	4464	Canal operation
3915	Jewelers' materials and lapidary work	4469	Water transportation services, nec
3931	Musical instruments	4511	Certified air transportation
3942	Dolls	4521	Noncertified air transportation
3944	Games, toys, and children's vehicles	4582	Airports and flying fields
3949	Sporting and athletic goods, nec	4583	Air terminal services
3951	Pens and mechanical pencils	4612	Crude petroleum pipelines
3952	Lead pencils and art goods	4613	Refined petroleum pipelines
3953	Marking devices	4619	Pipelines, nec
3955	Carbon paper and inked ribbons	4712	Freight forwarding

Note: nec = not elsewhere classified.

SIC Code	Industry	SIC Code	Industry
4722	Passenger transportation arrangement	5087	Service establishment equipment
4723	Freight transportation arrangement	5088	Transportation equipment and supplies
4742	Railroad car rental with service	5093	Scrap and waste materials
4743	Railroad car rental without service	5094	Jewelry, watches, and precious stones
4782	Inspection and weighing services	5099	Durable goods, nec
4783	Packing and crating	5111	Printing and writing paper
4784	Fixed facilities for vehicles, nec	5112	Stationery supplies
4789	Transportation services, nec	5113	Industrial and personal service paper
4811	Telephone communication	5122	Drugs, proprietaries, and sundries
4821	Telegraph communication	5133	Piece goods
4832	Radio broadcasting	5134	Notions and other dry goods
4833	Television broadcasting	5136	Men's clothing and furnishings
4899	Communication services, nec	5137	Women's and children's clothing
4911	Electric services	5139	Footwear
4922	Natural gas transmission	5141	Groceries, general line
4923	Gas transmission and distribution	5142	Frozen foods
4924	Natural gas distribution	5143	Dairy products
4925	Gas production and/or distribution	5144	Poultry and poultry products
4931	Electric and other services combined	5145	Confectionery
4932	Gas and other services combined	5146	Fish and seafoods
4939	Combination utility services, nec	5147	Meats and meat products
4941	Water supply	5148	Fresh fruits and vegetables
4952	Sewerage systems	5149	Groceries and related products, nec
4953	Refuse systems	5152	Cotton
4959	Sanitary services, nec	5153	Grain
4961	Steam supply	5154	Livestock
4971	Irrigation systems	5159	Farm-product raw materials, nec
5012	Automobiles and other motor vehicles	5161	Chemicals and allied products
5013	Automotive parts and supplies	5171	Petroleum bulk stations and terminals
5014	Tires and tubes	5172	Petroleum products, nec
5021	Furniture	5181	Beer and ale
5023	Home furnishings	5182	Wines and distilled beverages
5031	Lumber, plywood, and millwork	5191	Farm supplies
5039	Construction materials, nec	5194	Tobacco and tobacco products
5041	Sporting and recreational goods	5198	Paints, varnishes, and supplies
5042	Toys and hobby goods and supplies	5199	Nondurable goods, nec
5043	Photographic equipment and supplies	5211	Lumber and other building materials
5051	Metals service centers and offices	5231	Paint, glass, and wallpaper stores
5052	Coal and other minerals and ores	5251	Hardware stores
5063	Electrical apparatus and equipment	5261	Retail nurseries and gardens
5064	Electrical appliances, TV and radios	5271	Mobile home dealers
5065	Electronic parts and equipment	5311	Department stores
5072	Hardware	5331	Variety stores
5074	Plumbing and hydronic heating supplies	5399	Miscellaneous general merchandise stores
5075	Warm air heating and air conditioning	5411	Grocery stores
5078	Refrigeration equipment and supplies	5422	Freezer and locker meat provisioners
5081	Commercial machines and equipment	5423	Meat and fish (seafood) markets
5082	Construction and mining machinery	5431	Fruit stores and vegetable markets
5083	Farm machinery and equipment	5441	Candy, nut, and confectionery stores
5084	Industrial machinery and equipment	5451	Dairy products stores
5085	Industrial supplies	5462	Retail bakeries, baking and selling
5086	Professional equipment and supplies	5463	Retail bakeries, selling only

Note: nec = not elsewhere classified.

SIC Code	Industry	SIC Code	Industry
5499	Miscellaneous food stores	6025	National banks, Federal Reserve
5511	New and used car dealers	6026	National banks, not Federal Reserve, FDIC
5521	Used car dealers	6027	National banks, not FDIC
5531	Auto and home supply stores	6028	Private banks, not incorporated, not FDIC
5541	Gasoline service stations	6032	Mutual savings banks, Federal Reserve
5551	Boat dealers	6033	Mutual savings banks, nec
5561	Recreation and utility trailer dealers	6034	Mutual savings banks, not FDIC
5571	Motorcycle dealers	6042	Nondeposit trusts, Federal Reserve
5599	Automotive dealers, nec	6044	Nondeposit trusts, not FDIC
5611	Men's and boys' clothing and furnishings	6052	Foreign exchange establishments
5621	Women's ready-to-wear stores	6054	Safe deposit companies
5631	Women's accessory and specialty stores	6055	Cleaninghouse associations
5641	Children's and infants' wear stores	6056	Corporations for banking abroad
5651	Family clothing stores	6059	Functions related to banking, nec
5661	Shoe stores	6112	Rediscounting, not for agricultural
5681	Furriers and fur shops	6113	Rediscounting, for agricultural
5699	Miscellaneous apparel and accessories	6122	Federal savings and loan associations
5712	Furniture stores	6123	State associations, insured
5713	Floor covering stores	6124	State associations, noninsured, FHLB
5714	Drapery and upholstery stores	6125	State associations, noninsured, nec
5719	Miscellaneous home furnishings stores	6131	Agricultural credit institutions
5722	Household appliance stores	6142	Federal credit unions
5732	Radio and television stores	6143	State credit unions
5733	Music stores	6144	Nondeposit industrial loan companies
5812	Eating places	6145	Licensed small loan lenders
5813	Drinking places	6146	Installment sales finance companies
5912	Drugstores and proprietary stores	6149	Miscellaneous personal credit institutions
5921	Liquor stores	6153	Short-term business credit
5931	Used merchandise stores	6159	Miscellaneous business credit institution
5941	Sporting goods and bicycle shops	6162	Mortgage bankers and correspondents
5942	Book stores	6163	Loan brokers
5943	Stationery stores	6211	Security brokers and dealers
5944	Jewelry stores	6221	Commodity contracts brokers, dealers
5945	Hobby, toy, and game shops	6231	Security and commodity exchanges
5946	Camera and photographic supply stores	6291	Security and commodity services
5947	Gift, novelty, and souvenir shops	6311	Life insurance,
5948	Luggage and leather goods stores	6321	Accident and health insurance
5949	Sewing, needlework, and piece goods	6324	Hospital and medical service plans
5961	Mail order houses	6331	Fire, marine, and casualty insurance
5982	Merchandising machine operators	6351	Surety insurance
5983	Direct selling organizations	6361	Title insurance
5982	Fuel and ice dealers, nec	6371	Pension, health, and welfare funds
5983	Fuel oil dealers	6399	Insurance carriers, nec
5984	Liquefied petroleum gas dealers	6411	Insurance agents, brokers, and service
5992	Florists	6512	Nonresidential building operators
5993	Cigar stores and stands	6513	Apartment building operators
5994	News dealers and newsstands	6514	Dwelling operators, except apartment
5999	Miscellaneous retail stores, nec	6515	Mobile home site operators
6011	Federal Reserve banks	6517	Railroad property lessors
6022	State banks, Federal Reserve	6519	Real property lessors, nec
6023	State banks, not Federal Reserve, FDIC	6531	Real estate agents and managers
6024	State banks, not Federal Reserve, not FDIC	6541	Title abstract offices

SIC Code	Industry	SIC Code	Industry
6552	Subdividers and developers, nec	7374	Data processing services
6553	Cemetery subdividers and developers	7379	Computer related services, nec
6611	Combined real estate, insurance, etc.	7391	Research and development laboratories
6711	Holding offices	7392	Management and public relations
6722	Management investment, open-end	7393	Detective and protective services
6723	Management investment, closed-end	7394	Equipment rental and leasing
6724	Unit investment trusts	7395	Photofinishing laboratories
6725	Face-amount certificate offices	7396	Trading stamp services
6732	Educational, religious, etc. trusts	7397	Commercial testing laboratories
6733	Trusts, nec	7399	Business services, nec
6792	Oil royalty traders	7512	Passenger car rental and leasing
6793	Commodity traders	7513	Truck rental and leasing
6794	Patent owners and lessors	7519	Utility trailer rental
6798	Real estate investment trusts	7523	Parking lots
6799	Investors, nec	7525	Parking structures
7011	Hotels, motels, and tourist courts	7531	Top and body repair shops
7021	Rooming and boarding houses	7534	Tire retreading and repair shops
7032	Sporting and recreational camps	7535	Paint shops
7033	Trailering parks for transients	7538	General automotive repair shops
7041	Membership-basis organization hotels	7539	Automotive repair shops, nec
7211	Power laundries, family and commercial	7542	Car washes
7212	Garment pressing and cleaners agents	7549	Automotive services, nec
7213	Linen supply	7622	Radio and television repair
7214	Diaper service	7623	Refrigeration service and repair
7215	Coin-operated laundries and cleaning	7629	Electrical repair shops, nec
7216	Dry cleaning plants, except rug	7631	Watch, clock, and jewelry repair
7217	Carpet and upholstery cleaning	7641	Reupholstery and furniture repair
7218	Industrial launderers	7692	Welding repair
7219	Laundry and garment services, nec	7694	Armature rewinding shops
7221	Photographic studios, portrait	7699	Repair services, nec
7231	Beauty shops	7813	Motion picture production, except TV
7241	Barber shops	7814	Motion picture production for TV
7251	Shoe repair and hat cleaning shops	7819	Services allied to motion pictures
7261	Funeral service and crematories	7823	Motion picture film exchanges
7299	Miscellaneous personal services	7824	Film or tape distribution for TV
7311	Advertising agencies	7829	Motion picture distribution services
7312	Outdoor advertising services	7832	Motion picture theaters except drive-in
7313	Radio, TV, publisher representatives	7833	Drive-in motion picture theaters
7319	Advertising, nec	7911	Dance halls, studios, and schools
7321	Credit reporting and collection	7922	Theatrical producers and services
7331	Direct mail advertising services	7929	Entertainers and entertainment groups
7332	Blueprinting and photocopying	7932	Billiard and pool establishments
7333	Commercial photography and art	7933	Bowling alleys
7339	Stenographic and reproduction, nec	7941	Sports clubs and promoters
7341	Window cleaning	7948	Racing, including track operation
7342	Disinfecting and exterminating	7992	Public golf courses
7349	Building maintenance services, nec	7993	Coin-operated amusement devices
7351	News syndicates	7996	Amusement parks
7361	Employment agencies	7997	Membership sports and recreation clubs
7362	Temporary help supply services	7999	Amusement and recreation, nec
7369	Personnel supply services, nec	8011	Offices of physicians
7372	Computer programming and software	8021	Offices of dentists

Note: nec = not elsewhere classified.

SIC Code	Industry	SIC Code	Industry
8031	Offices of osteopathic physicians	8661	Religious organizations
8041	Offices of chiropractors	8699	Membership organizations, nec
8042	Offices of optometrists	8811	Private households
8049	Offices of health practitioners, nec	8911	Engineering and architectural services
8051	Skilled nurse care facilities	8922	Noncommercial research organizations
8059	Nursing and personal care, nec	8931	Accounting, auditing, and bookkeeping
8062	General medical and surgical hospitals	8999	Services, nec
8063	Psychiatric hospitals	9111	Executive offices
8069	Specialty hospitals, except psychiatric	9121	Legislative bodies
8071	Medical laboratories	9131	Executive and legislative combined
8072	Dental laboratories	9199	General government, nec
8081	Outpatient care facilities	9211	Courts
8091	Health and allied services, nec	9221	Police protection
8111	Legal services	9222	Legal counsel and prosecution
8211	Elementary and secondary schools	9223	Correctional institutions
8221	Colleges and universities, nec	9224	Fire protection
8222	Junior colleges	9229	Public order and safety, nec
8231	Libraries and information centers	9311	Finance, taxation, and monetary policy
8241	Correspondence schools	9411	Administration of educational programs
8243	Data processing schools	9431	Administration of public health programs
8244	Business and secretarial schools	9441	Administration of social and manpower programs
8249	Vocational schools, nec	9451	Administration of veterans' affairs
8299	Schools and educational services, nec	9511	Air, water, and solid waste management
8321	Individual and family services	9512	Land, mineral, wildlife conservation
8331	Job training and related services	9531	Housing programs
8351	Child day care services	9532	Urban and community development
8361	Residential care	9611	Administration of general economic programs
8399	Social services, nec	9621	Regulation, administration of transportation
8411	Museums and art galleries	9631	Regulation, administration of utilities
8421	Botanical and zoological gardens	9641	Regulation of agricultural marketing
8611	Business associations	9651	Regulation miscellaneous commercial sectors
8621	Professional organizations	9661	Space research and technology
8631	Labor organizations	9711	National security
8641	Civic and social associations	9721	International affairs
8651	Political organizations	9999	Nonclassified establishment

Note: nec = not elsewhere classified.

TENTATIVE LIST OF A/B WASTE DESCRIPTION CODES

WASTE DESCRIPTION CODES FOR RCRA F, K, P, and U WASTE CODES

A01 K waste, exactly as described*	A06 Soil or cleanup residue contaminated with F, K, P, or U	A10 Solidification residual from the treatment of F, K, P, or U
A02 F001-F005, as a spent solvent (organic liquid)	A07 P or U, as a concentrated off-specification or discarded product	A11 Wastewater treatment residual from the treatment of F, K, P, or U
A03 F001-F005, as a still bottom (organic sludge)	A08 Empty containers that held a P or U waste	A12 Other
A04 F006-F028 waste, exactly as described*	A09 Incinerator ash from the treatment of F, K, P, or U	
A05 Aqueous wastes by mixture/derivation rule containing F, K, P, or U (e.g., leachate, scrubber water, or other wastewaters)		

*"Exactly as described" means that we need no further clarification of the description provided in the list of RCRA waste codes in Appendix C of the instructions booklet.

WASTE DESCRIPTION CODES FOR RCRA D and X WASTE CODES

INORGANIC LIQUIDS—Waste that is primarily aqueous and is highly fluid, with low-to-moderate suspended inorganic solids and low organic content

- B01 Solvent-water mixture
- B02 Oil-water emulsion or mixture
- B03 Concentrated water solution of organics
- B04 Wastewater with trace organics
- B05 Concentrated spent acid with no metals
- B06 Spent acids with metals
- B07 Acidic aqueous waste
- B08 Concentrated noncorrosive, aqueous solution of metals
- B09 Wastewater or dilute solution with metals
- B10 Caustic aqueous waste with metals only
- B11 Caustic aqueous waste with cyanides and metals
- B12 Caustic aqueous waste with cyanides only
- B13 Caustic aqueous waste with sulfides
- B14 Caustic aqueous waste
- B15 Concentrated waste caustic
- B16 Aqueous waste with strong oxidizers
- B17 Aqueous waste with strong reductants
- B18 Aqueous waste with explosives
- B19 Waste liquid mercury
- B20 Other aqueous waste with high dissolved solids (brine)
- B21 Other aqueous waste with low dissolved solids content
- B22 Other inorganic liquid

INORGANIC SLUDGES—Waste that is primarily inorganic, with moderate organic content and/or moderate water content; potentially settles into two phases

- B23 Inorganic sludge contaminated primarily with solvents, oil, or other organics
- B24 Highly acidic sludge with metals
- B25 Other highly acidic sludge
- B26 Metal hydroxide sludge
- B27 Sulfide sludge
- B28 Sulfate or sulfite sludge
- B29 Cyanide sludge
- B30 Other caustic sludge
- B31 Sludge with strong oxidizers

- B32 Sludge with strong reductants
- B33 Sludge with explosives
- B34 Brine sludge (with high chloride, fluoride, or bromide)
- B35 Nutrient sludge (with high nitrate, phosphate, or urea)
- B36 Spent filtering aids
- B37 Wet scrubber sludge (fly ash), metal oxides, or ores
- B38 Sludge of metal scale, filings, or scrap (crushed drums)
- B39 Inorganic paint or pigment sludges
- B40 Other inorganic sludges

INORGANIC SOLIDS—Waste that is primarily inorganic and solid, with low organic content and low water content

- B41 Soil or debris contaminated primarily with solvents, oil, or other organics
- B42 Other contaminated soil or debris
- B43 Salt of a strong acid
- B44 Salt of a strong base (solid NaOH, KOH, etc.)
- B45 Sulfate or sulfite
- B46 Cyanide salt
- B47 Chloride, fluoride, or bromide salts
- B48 Nitrate, phosphate, or urea salts
- B49 Other metal salt
- B50 Strong oxidizer salt
- B51 Strong reductant salt
- B52 Solid explosive or propellant
- B53 Solid spent filters
- B54 Dry fly ash, metal oxide, or ores
- B55 Solid metal scale, filings, or scrap (crushed drums)
- B56 Inorganic paint or pigment solids
- B57 Batteries and battery parts, casings, cores, etc.
- B58 Other inorganic solids

ORGANIC LIQUIDS—Waste that is primarily organic and is highly fluid, with low inorganic solids content and low water content

- B59 Halogenated solvent
- B60 Nonhalogenated solvent
- B61 Waste oil
- B62 Any organic liquid with PCBs
- B63 Any organic liquid/solution of other toxic organics

- B64 Organic paint or coating (lacquer, varnish, epoxies)
- B65 Paint thinner or spent petroleum distillates
- B66 Reactive or polymerizable organic liquid
- B67 Other combustible organic liquid
- B68 Other organic liquid

ORGANIC SLUDGES—Waste that is primarily organic, with moderate inorganic solids content and moderate water content; potentially settles into phases

- B69 Still bottoms of halogenated solvents or liquid
- B70 Still bottoms of nonhalogenated solvents or liquid
- B71 Oily sludge
- B72 Sludge with PCBs
- B73 Sludge with other toxic organics
- B74 Organic paint sludge
- B75 Sludge with petroleum distillates
- B76 Reactive or polymerizable organic sludge
- B77 Resins or viscous, nontarry organics
- B78 Tars or tarry sludge
- B79 Biological sludge
- B80 Other organic sludge

ORGANIC SOLIDS—Waste that is primarily organic and solid, with low inorganic content and low water content

- B81 Solid waxes or polymerized organics
- B82 Spent carbon contaminated with toxic organics
- B83 Reactive organic solid
- B84 Halogenated off-spec or discarded solid organic chemical
- B85 Organo-nitrogen organic chemical (nitrogen pesticide)
- B86 Phosphoro-thioate organic chemical
- B87 Miscellaneous off-spec organic chemical
- B88 Other organic solid

TENTATIVE LIST OF MANAGEMENT SEQUENCE CODES

PROCESS CODES

TREATMENT AND RECYCLING

Incineration/thermal treatment

- 1I Liquid injection incineration
- 2I Rotary kiln incineration
- 3I Fluidized bed incineration
- 4I Multiple hearth chamber incineration
- 5I Pyrolytic destruction
- 6I Other incineration/thermal treatment

Reuse as fuel

- 1R Cement kiln
- 2R Aggregate kiln
- 3R Asphalt kiln
- 4R Other kiln
- 5R Blast furnace
- 6R Sulfur recovery furnace
- 7R Smelting, melting, or refining furnace
- 8R Coke oven
- 9R Other furnace
- 10R Industrial boiler
- 11R Utility boiler
- 12R Process heater
- 13R Other reuse as fuel unit

Fuel blending

- 1FB Fuel blending

Solidification

- 1S Cement-based processes
- 2S Pozzolanic processes
- 3S Asphalitic processes
- 4S Thermoplastic techniques
- 5S Organic polymer techniques
- 6S Jacketing (macro-encapsulation)
- 7S Other solidification

Recovery of solvents and other organic chemicals

- 1SR Fractionation
- 2SR Batch still distillation
- 3SR Solvent extraction
- 4SR Thin film evaporation
- 5SR Other solvent recovery

Recovery of metals

- 1MR Activated carbon (for metals recovery)
- 2MR Electrodialysis (for metals recovery)
- 3MR Electrolytic metal recovery
- 4MR Ion exchange (for metals recovery)
- 5MR Reverse osmosis (for metals recovery)
- 6MR Solvent extraction (for metals recovery)
- 7MR Ultrafiltration (for metals recovery)
- 8MR Other metals recovery

Wastewater treatment

Cyanide oxidation

- 1W Alkaline chlorination
- 2W Ozone
- 3W Electrochemical
- 4W Other cyanide oxidation

Chemical precipitation (see Note 1)

- 5W Lime
- 6W Sodium hydroxide
- 7W Soda ash
- 8W Sulfide
- 9W Other precipitation

Chromium reduction

- 10W Sodium bisulfite
- 11W Sulfur dioxide
- 12W Ferrous sulfate
- 13W Other reduction

Complexed metals treatment

- 14W High pH precipitation
- 15W Other complexed metals treatment

Emulsion breaking

- 16W Thermal
- 17W Chemical
- 18W Other emulsion breaking

Adsorption

- 19W Carbon adsorption
- 20W Ion exchange
- 21W Resin adsorption
- 22W Other adsorption

Stripping

- 23W Air stripping
- 24W Steam stripping (see Note 2)

Filtration

- 25W Diatomaceous earth
- 26W Sand
- 27W Multimedia
- 28W Other filtration

Dewatering operations

- 29W Gravity thickening
- 30W Vacuum filtration
- 31W Pressure filtration (belt, plate, frame, and leaf)
- 32W Centrifuge
- 33W Other dewatering

Air flotation

- 34W Dissolved air flotation
- 35W Other air flotation

TREATMENT AND RECYCLING (continued)**Wastewater treatment (continued)****Oil skimming**

- 36W Gravity separation
- 37W Coalescing plate separation
- 38W Other oil skimming

Aerobic biological treatment

- 39W Activated sludge
- 40W Rotating biological contactor
- 41W Trickling filter
- 42W Waste stabilization pond
- 43W Other aerobic treatment

Anaerobic biological treatment

- 44W Anaerobic digestion
- 45W Other anaerobic treatment

Other wastewater treatment

- 46W Wet air oxidation
- 47W Neutralization
- 48W Nitrification
- 49W Denitrification
- 50W Flocculation
- 51W Settling (clarification)
- 52W Other wastewater treatment

OTHER WASTE TREATMENT

- 1T Other waste treatment

ACCUMULATION

- 1A Containers
- 2A Tanks

STORAGE

- 1ST Container (i.e., barrel, drum)
- 2ST Tank
- 3ST Waste pile
- 4ST Surface impoundment
- 5ST Other storage

DISPOSAL

- 1D Landfill
- 2D Land treatment
- 3D Surface impoundment (to be closed as a landfill)
- 4D Underground injection well

Off-Site Management Codes -- Enter the Management Process Code that you believe will be used by the facility receiving the waste or waste mixture entered. Management process codes are listed below.

<u>Code</u>	<u>Off-Site Management Process</u>
C01	Burning in boiler
C02	Recovery/reclamation
C03	Incineration
C04	Landfill
C05	Surface impoundment
C06	Underground injection
C07	Discharge to POTW
C08	Discharge to surface water under NPDES
C09	Discharge to privately-owned wastewater treatment works
C10	Land application
C11	Other, Specify in "Comments"

DEFINITIONS

CONDITIONALLY EXEMPT SMALL QUANTITY GENERATOR -- A site is a conditionally exempt small quantity generator (CESQG) in any given month, if for that month it meets the following criteria: (1) the site generated no more than 100 kilograms of hazardous waste, AND no more than 1 kilogram of acutely hazardous waste, AND no more than 100 kilograms of material from the cleanup of a spillage of acutely hazardous wastes; AND (2) the site accumulated no more than 1,000 kilograms of hazardous waste, AND no more than 1 kilogram of acutely hazardous waste, AND no more than 100 kilograms of material from the cleanup of a spillage of acutely hazardous wastes; AND (3) the site treated or disposed of the hazardous wastes in a manner consistent with regulatory provisions. (261.5f3 and 261.5g3)

To be a CESQG for the entire survey year, a site must meet these criteria each month of that year. If a site meets the criteria for Full Regulation (see definition below) in any month of the survey year, the site is subject to quantity reporting requirements for that month.

EPA NOTIFICATION OF HAZARDOUS WASTE ACTIVITY FORM (EPA FORM 8700-12) -- Under RCRA regulations, generators and processors must notify EPA of their hazardous waste activities. The EPA Notification of Hazardous Waste Activity form is used to make this formal notification. After receiving such a form, the Agency assigns an EPA Identification number to the site submitting this form. So if your site has an EPA number, this form has already been submitted; however, to have indicated generator or small quantity generator status, those boxes indicating this status had to have been checked on the "hazardous waste activity" section of this form. If you are unsure, refer to the form you submitted to EPA to obtain your EPA ID number and look at Section A, "Hazardous Waste Activity," under "VI. Type of Regulated Waste Activity."

EPA PART A PERMIT APPLICATION -- This is the first step in obtaining a RCRA permit to treat, store, or dispose of hazardous waste. This application defines the processes to be used for treatment, storage, and disposal of hazardous waste; the design capacity of such processes; and the specific hazardous wastes to be handled at the applying facility. A Part A application must have been filed to obtain "interim status" to allow hazardous waste facilities, existing prior to promulgation of the RCRA regulations, to continue operations until their final permit is issued. Thus, if your site has either interim status or a final RCRA permit to handle hazardous waste, a Part A application has been submitted for your site. If you submitted a Part A application as a protective measure, but you have never handled hazardous waste nor submitted a modification to your original application, you should answer yes to the form selection question which asks if you have ever submitted such an application.

EXIST -- A treatment, storage, or disposal method whose intended function is hazardous waste handling is felt to "exist" at a site regardless of whether or not it is operational or used. Thus, this term not only includes methods which are operational, and used, but those which were not used, were not operational, or were being built during the survey year.

FORMALLY WITHDRAWN -- ?

FULL RCRA REGULATION -- This term is used with regard to hazardous waste generation. Those generators subject to full RCRA regulation are those which meet the following criteria: (1) generated within any single month of the reporting year: 1,000 or more kg of hazardous waste, more than 1 kg of acute hazardous waste, or more than 100 kg of acute hazardous spill

debris; or (2) accumulated at any time during the reporting year more than: 1,000 kg of hazardous waste, 1 kg of acute hazardous waste, or 100 kg acute hazardous spill debris.

MANAGEMENT -- Includes the following hazardous waste handling methods: (1) storage in units requiring a RCRA permit, (2) treatment in permitted or RCRA exempt processes, (3) recycling in permitted or RCRA exempt processes, and (4) disposal in permitted or RCRA exempt units. Excluded are containers and tanks subject to an accumulation exemption under 262.34.

The major requirements for the 262.34 accumulation exemption vary by level of waste generation. For generators subject to full RCRA regulation, the waste cannot be stored for more than 90 days and there are specific labeling and handling requirements. For small quantity generators, the storage limit is 180 days, unless the generator must transport his waste or offer his waste for transportation over a distance of 200 miles or more. Then, the storage period is extended to 270 days. Small quantity generators are subject to an accumulation limit of 6,000 kilograms as well as labeling and handling requirements.

PRIMARY SOURCES -- This term refers to the non-hazardous waste material from which a hazardous waste was originally generated. Wastes or residues which are derived from a hazardous waste are considered to have been generated from a secondary source.

REGULATED FACILITY -- This is a site which treats, stores, or disposes of hazardous waste and is subject to regulation, i.e., required to have a RCRA permit. Facilities which have interim status are included.

SMALL QUANTITY GENERATOR (SQG) -- A site is a small quantity generator in any given month if it meets the following criteria: (1) in every single month, the site generated more than 100 but no more than 1,000 kilograms of hazardous waste, AND no more than 1 kilogram of acutely hazardous waste, AND no more than 100 kilograms of material from the cleanup of a spillage of acutely hazardous wastes; AND (2) the site accumulated no more than 1 kilogram of acutely hazardous waste, AND no more than 100 kilograms of material from the cleanup of a spillage of acutely hazardous wastes; AND (3) the site stored its wastes in tanks or containers in a manner consistent with regulatory provisions.

To be an SQG for the entire survey year, a site must meet these criteria each month of the survey year. If a site meets the criteria for full regulation (see definition below) in any month of the survey year, the site is subject to the reporting requirements for that month.

EXCLUDED WASTES
(Reference 261.4 and 261.3c2ii of 40 CFR)

Waste Category	Waste Description
Acid	Potentially recyclable spent sulfuric acid that is used to produce virgin sulfuric acid. To be exempt, the acid must not be accumulated speculatively as defined in 40 CFR 261.1c.
Agriculture, Irrigation	Irrigation return flow.
Cement Kiln Dust	Waste from a cement kiln.
Chromium, Leather Tanning	A waste which is considered hazardous because (1) it is a listed due to the presence of chromium or (2) it has the characteristics of EP toxicity due to chromium's presence. This waste must also meet the criteria for exclusion listed in 261.4b6. See flowchart on page for reference.
Drilling Fluids	A drilling fluid, produced water or other waste associated with the exploration, development or production of crude oil, natural gas or geothermal energy.
Emission Control Wastes	Fly ash waste, bottom ash waste, slag waste or flue gas emission control waste generated primarily from the combustion of coal or other fossil fuels.
Fertilizer	Solid wastes generated from growing and harvesting of agriculture crops or raising of animals (including manure), where the waste is returned to soil as a fertilizer.
Household	Household waste, including household waste that has been collected, transported, stored, treated, disposed, recovered (e.g., refuse-derived fuel), or reused. "Household waste" means any waste material (including garbage, trash, and sanitary wastes in septic tanks) derived from households (including single and multiple residences, hotels and motels, bunkhouses, ranger stations, crew quarters, campgrounds, picnic grounds, and day use recreation areas).

Note: A resource recovery facility managing municipal solid waste shall not be deemed to be treatment, storing, disposing of, or otherwise managing hazardous wastes for the purposes of regulation under RCRA if that facility: (1) receives and burns only household wastes (from single and multiple dwellings, hotels, motels and other residential sources) and solid waste from commercial or industrial sources that does not contain hazardous waste; and (2) does not accept hazardous wastes and the owner or operator of the facility has established contractual requirements or other appropriate notification or inspection procedure to assure that hazardous wastes are neither received nor burned in the facility.

Excluded Wastes (Continued)

Waste Category	Waste Description
Mining	A solid waste from the extraction, beneficiation and processing of ores and minerals. (This includes phosphate rock and overburden from the mining of uranium ore.)
Mining, In-situ	Material subjected to in-situ mining techniques where the material is not removed as part of the extraction process.
Mining, Overburden	Mining overburden returned to the mine site.
Nuclear	<p>Source, special nuclear or byproduct material as defined by the Atomic Energy Act of 1954, as amended 42 U.S.C. 2011 et seq. From the Atomic Energy Act, these terms are defined as follows:</p> <p>"Byproduct material" means: (1) any radioactive material (except special nuclear material) yielded in or made radioactive by exposure to the radiation incident to the process of producing or utilizing special nuclear material, and (2) the tailings or wastes produced by the extraction or concentration of uranium or thorium from any ore processed primarily for its source material content.</p> <p>"Source material" means: (1) uranium, thorium, or any other material which is determined by the Commission pursuant to the provisions of Section 2091 of this title to be source material; or (2) ores containing one or more of the foregoing materials in such concentration as the Commission may by regulation determine from time to time.</p> <p>"Special nuclear material" means: (1) plutonium, uranium enriched in the isotope 233 or in the isotope 235, and any other material which the Commission, pursuant to the provisions of Section 2071 of this title, determines to be special nuclear material, but does not include source material; or (2) any material artificially enriched by any of the foregoing, but does not include source material.</p> <p>If the excluded material described above is mixed with a hazardous waste, the material is regulated under RCRA as well as under the Nuclear Regulatory Act.</p>
Precipitation Runoff	Precipitation runoff generated by the treatment, storage, or disposal of hazardous waste.
Pulping Liquor	Potentially recyclable pulping liquor (black liquor) reclaimed in pulping liquor recovery furnace so long as the material is reused in the pulping process and is not accumulated speculatively as defined in 40 CFR 261.1c.
Sewage, Domestic	Domestic sewage -- any untreated sanitary wastes that pass through a sewer system.

Excluded Wastes (Continued)

Waste Category	Waste Description
Sewage, Domestic	Any mixture of domestic sewage and other wastes that pass through a sewer system to a publicly owned treatment works (POTW).
Wastewater, Point Source	Industrial wastewater discharges that are point source discharges subject to regulation under Section 402 of the Clean Water Act, as amended. This exclusion applies only to the actual point source discharge. It does not exclude industrial wastewaters while they are being collected, stored, or treated before discharge, nor does it exclude sludges that are generated by industrial wastewater treatment.
Wood, Wood Products	A solid waste consisting of discarded wood or wood products which fail the test for the characteristics of EP toxicity (but is not considered hazardous for any other reason) and is generated by persons who utilize the arsenical-treatment wood and wood products for these materials' intended end uses.



National Governors' Association

Bill Clinton
Governor of Arkansas
Chairman

Raymond C. Scheppach
Executive Director

APPENDIX C

Detail System Flow Diagrams

APPENDIX C

SYSTEM DEFINITION

This appendix presents the current logical description of the system in the form of diagrams generated by a system development tool. Following the diagrams are written descriptions of the entities appearing on the diagrams. For clarity, some of the terms used in the diagrams are defined in the following paragraphs.

The items appearing on the diagrams are external entities, data stores, data flows, and processes. These diagrams are intended to show the flow of data from sources to sinks (destinations) through a variety of transformations, represented by processes. External Entities, processes, and data stores each have a code associated with them to facilitate reference. External entities are represented by a box and have identifiers prefixed by "EE" (for example "EE 1" is the entity named "RESPONDENT (HANDLER)"). Data stores have identifiers prefixed by "D". Data stores local to a process will have the form "Dxx/n" where "xx" is the process number and "n" is a unique number. For example "D01/1" is a data store used by process 01 exclusively. Processes are numbered using a decimal code. At the highest level, the numbers are two digit numbers. More decimal places are added to show increasing levels of detail. For example, 01.01 is a subprocess of 01. Processes which are "exploded" in another diagram have that diagram referenced in the bottom of the process box.

Data flows are represented by a single-headed arrow. The arrowhead designates the direction of the data flow. Data flows do not show flows of control nor do they indicate concurrency of activities. The intent is simply to show where the data comes from and where it goes, not how, not why, and not when.

The following definitions are applicable to these diagrams:

- o Entity -- (1) External entity: a source or destination of data on a data flow diagram; and (2) something about which information is stored in a data store, e.g., customer, employees.
- o External Entity (EE) -- An entity that represents the scope of the system being identified. Each external entity in the system needs to be represented by a decision maker that will help in determining the scope and protecting the entity's position.
- o Data Flow -- A group of data moving on a data flow diagram connecting one function to another. The origin of the data is the source, and the receiver of the data, the destination. One data flow (identified by a name) can occur multiple times on a diagram and will be logged separately in the dictionary as unique occurrences for the same data flow name.

- o Data Store -- A resting place for data, once captured by a system, that includes facts about a system's external entities, past transactions, business policy, and rules. Data Stores provide the 'slack' or 'give' in a system that uses information about real-world events across disjointed intervals of time; facts that cannot be expressed by an algorithm are recorded.
- o Process -- (Transform, Transformation). A set of operations transforming data, logically or physically, according to some process logic.

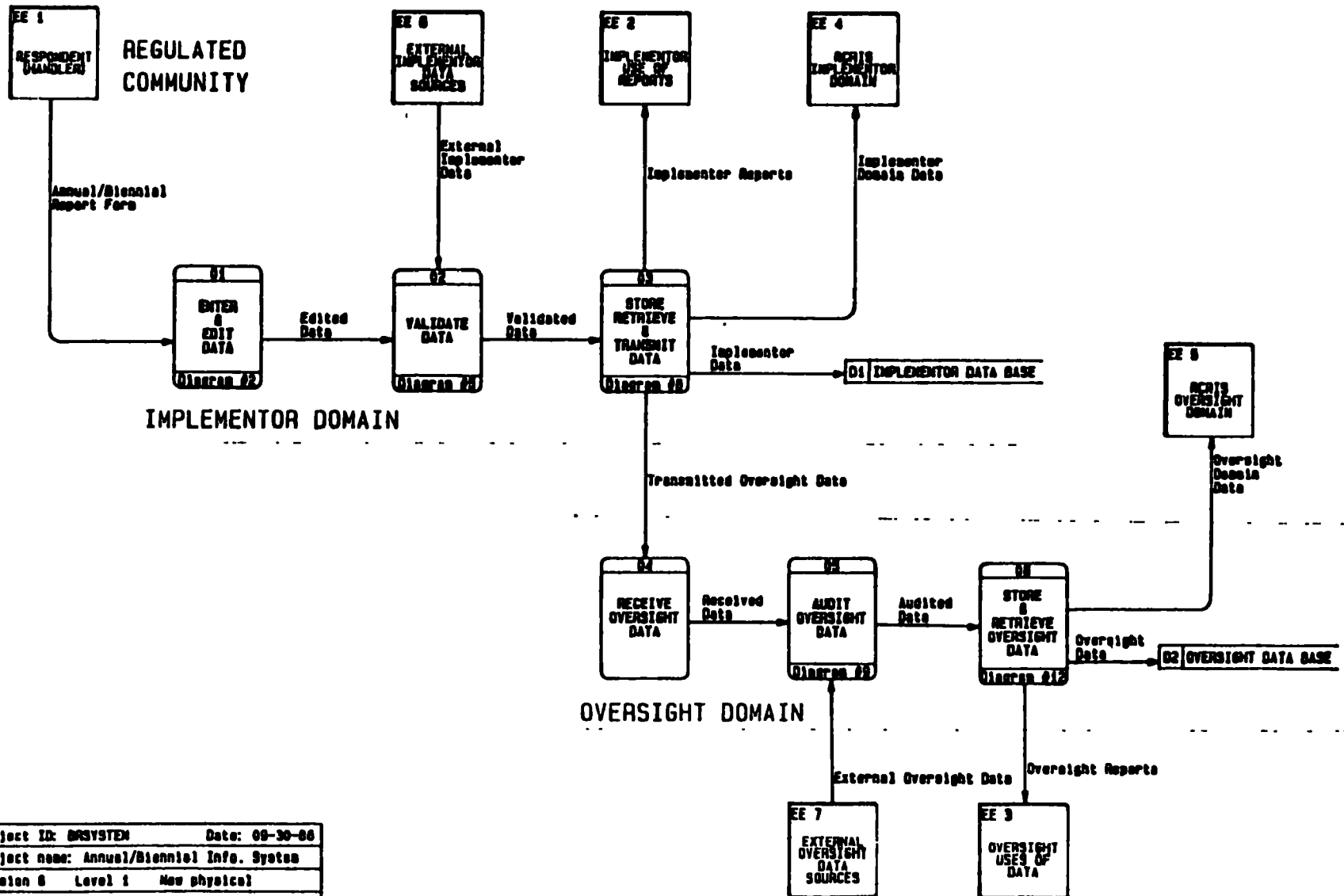
Following the twelve pages of data flow diagrams, the various entities appearing in the diagrams are defined. The definitions are presented by type of entity:

- o External Entities,
- o Data Stores, and
- o Processes.

Each entry for these entities contains a short description of the entity and other information that aids in understanding the purpose of the entity and its relationship with other entities in the system. The next section of this appendix contains the data dictionary for the data flows appearing in the system descriptions. This appendix concludes with a summary of each of the processes appearing in the diagrams. The summary provides in tabular form a description of each diagram in terms of the entities it contains. These sections comprise the system data dictionary as it now stands. They will be refined and expanded as system development proceeds. Once the issues presented in this paper are resolved, sections will be added to this dictionary. These sections will define data bases, data structures, and data elements. At this point the data dictionary will serve as the system functional description.

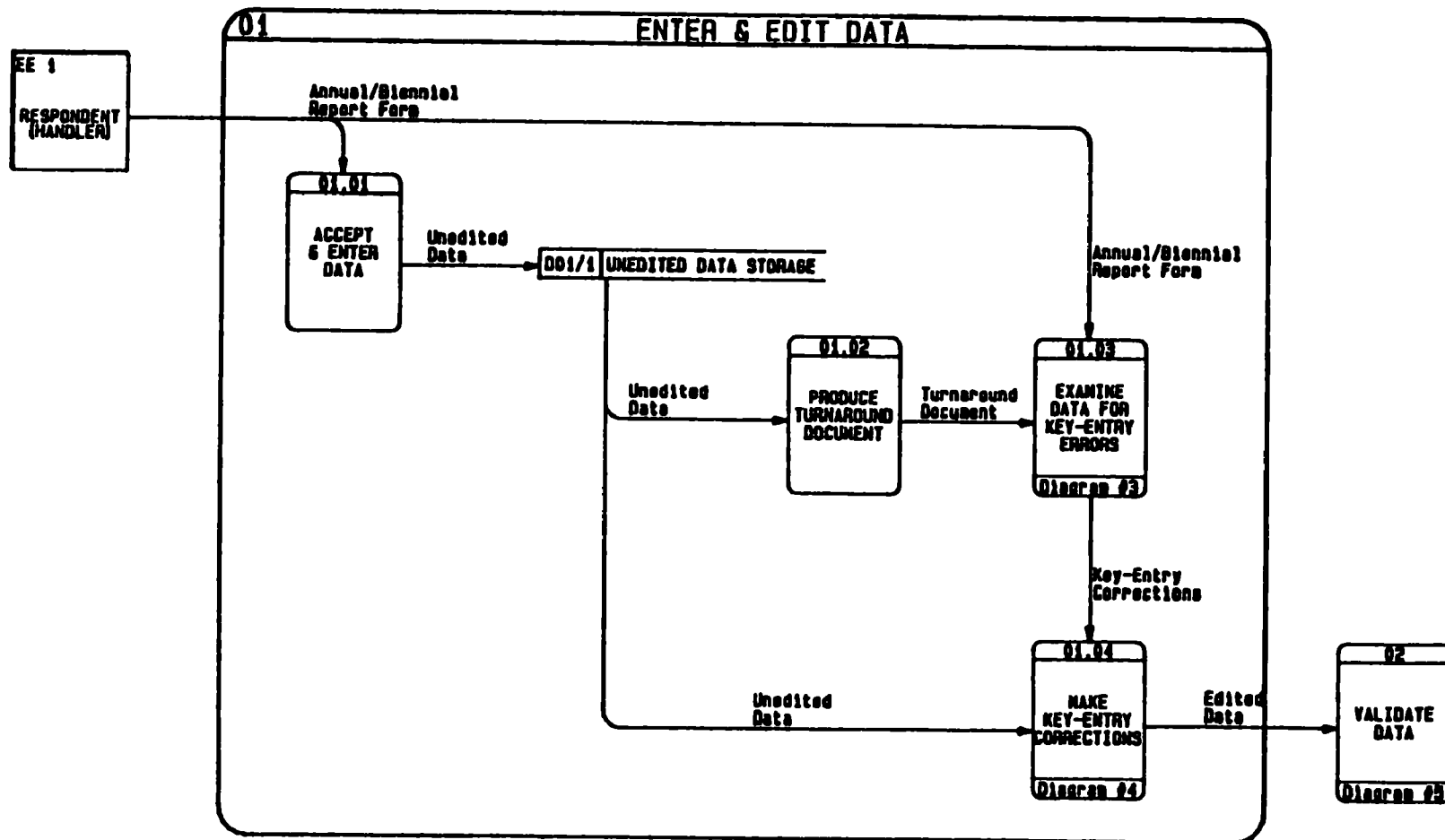
DATA FLOW DIAGRAMS

ANNUAL/BIENNIAL REPORT SYSTEM



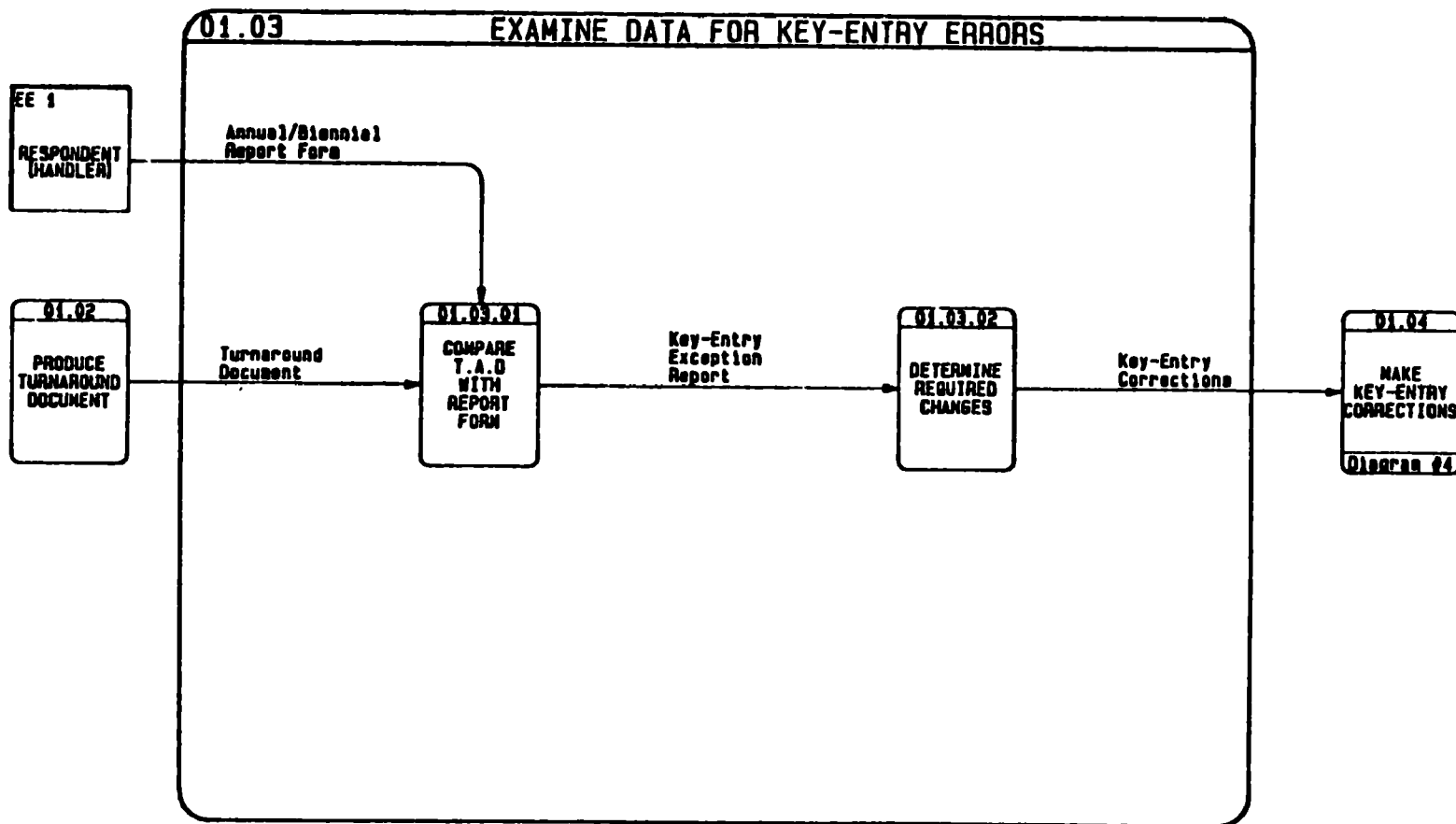
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Project name: Annual/Biennial Info. System	
Version 8	Level 1 New physical
Diagram name: BRSYSTEM	Last Rev. 07-12-87

DIAGRAM #1



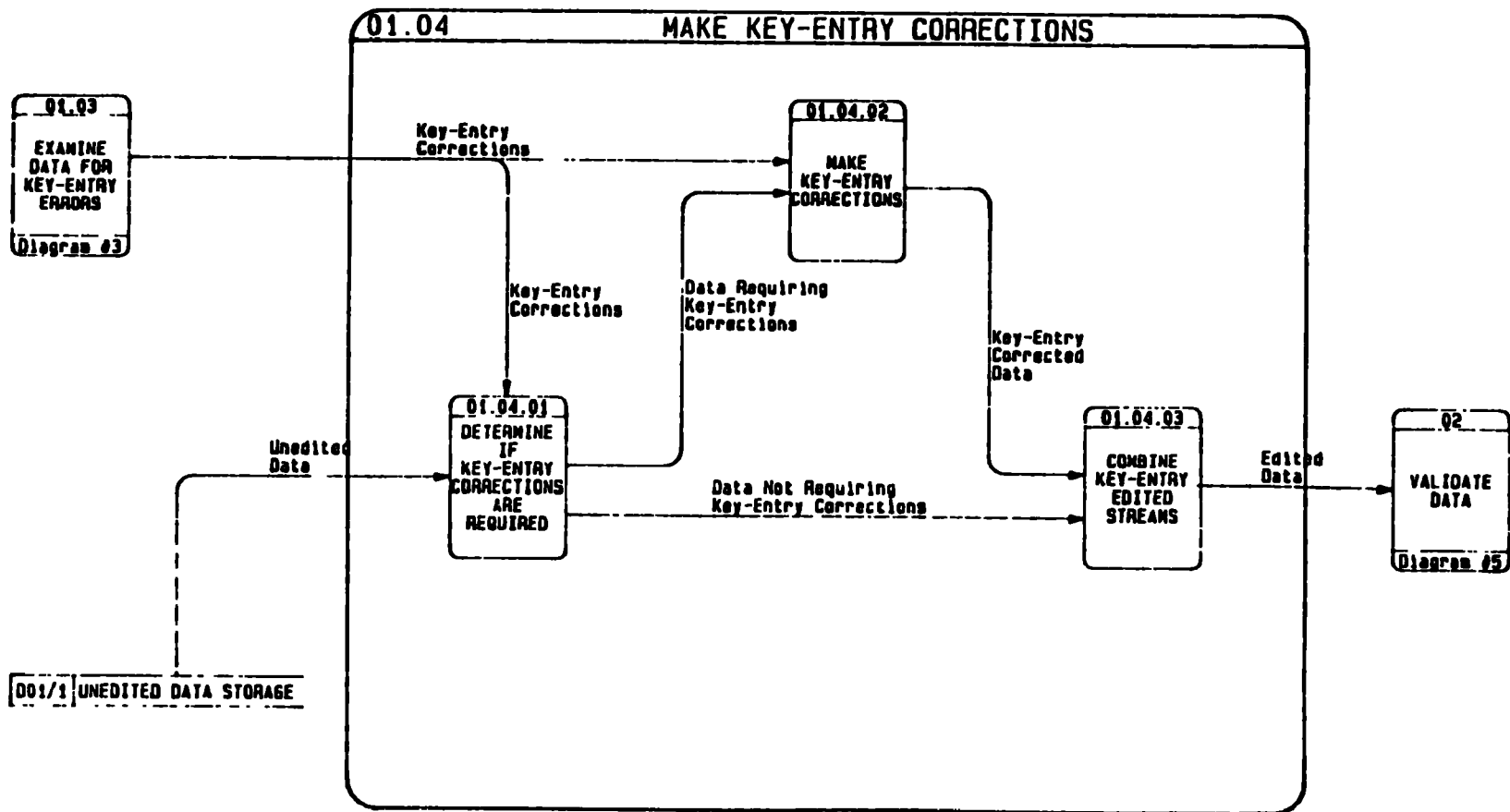
Project ID: BRSYSTEM	Date: 09-30-88
Project name: Annual/Biennial Info. System	
Version 8 Level 2 New physical	
Diagram name: 01	Last Rev. 06-26-87

DIAGRAM #2



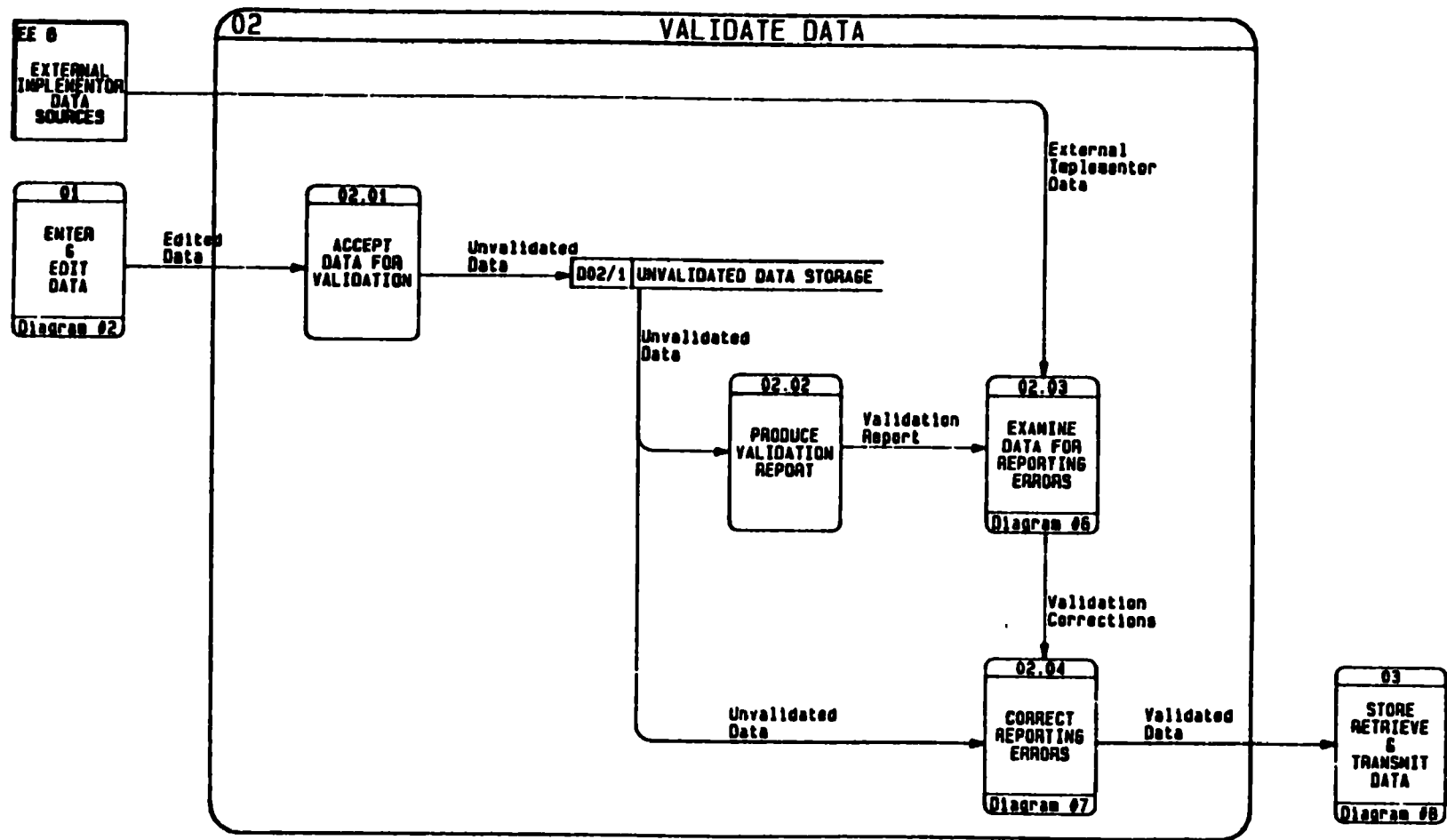
Project ID: BASYSYTEM	Date: 09-30-88
Project name: Annual/Biennial Info. System	
Version 8	Level 3 New physical
Diagram name: 01.03	Last Rev. 06-24-87

DIAGRAM #3



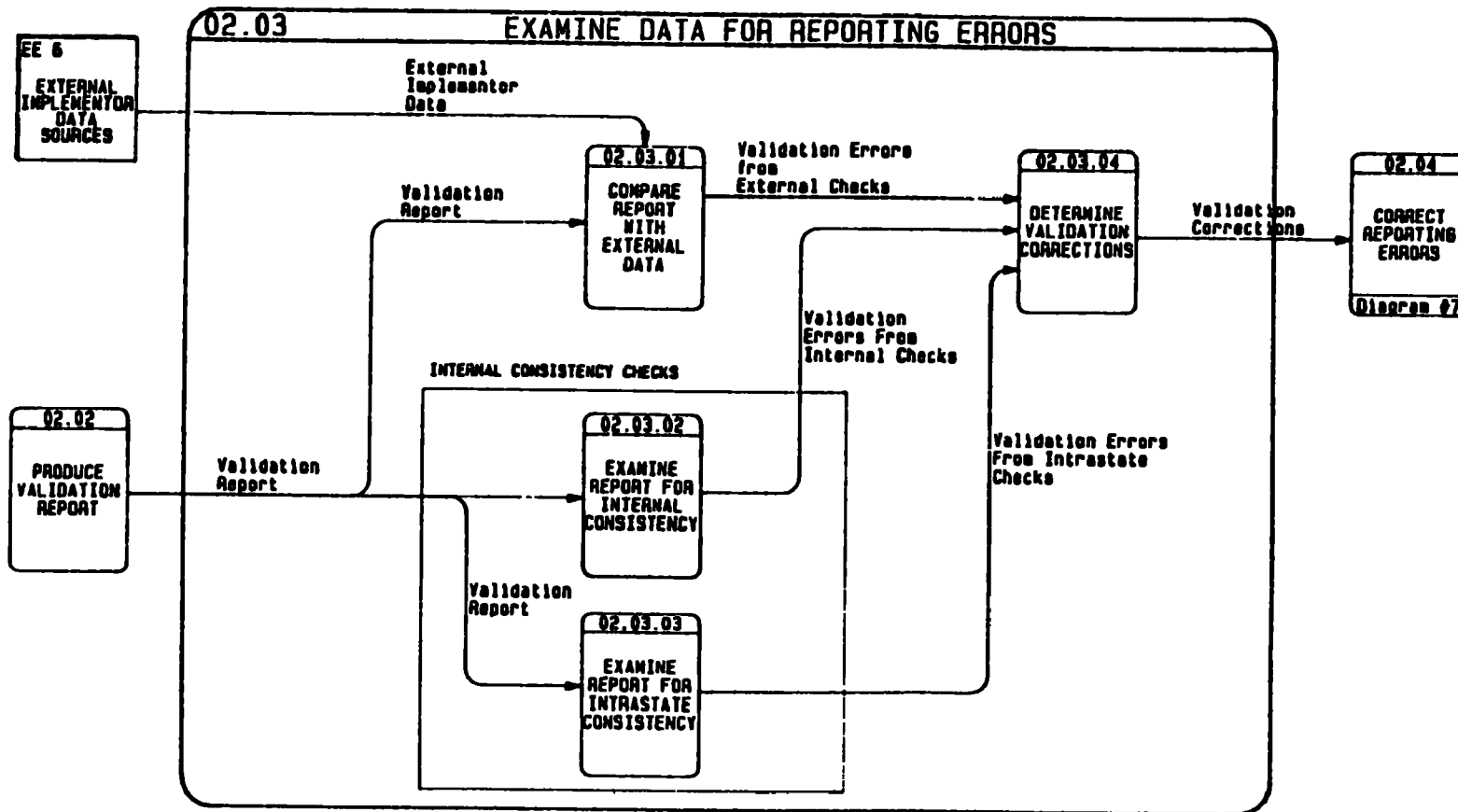
Project ID: BASYSYEM	Date: 09-30-86
Project name: Annual/Biennial Info. System	
Version 6 Level 3 New physical	
Diagram name: 01.04	Last Rev. 06-24-87

DIAGRAM #4



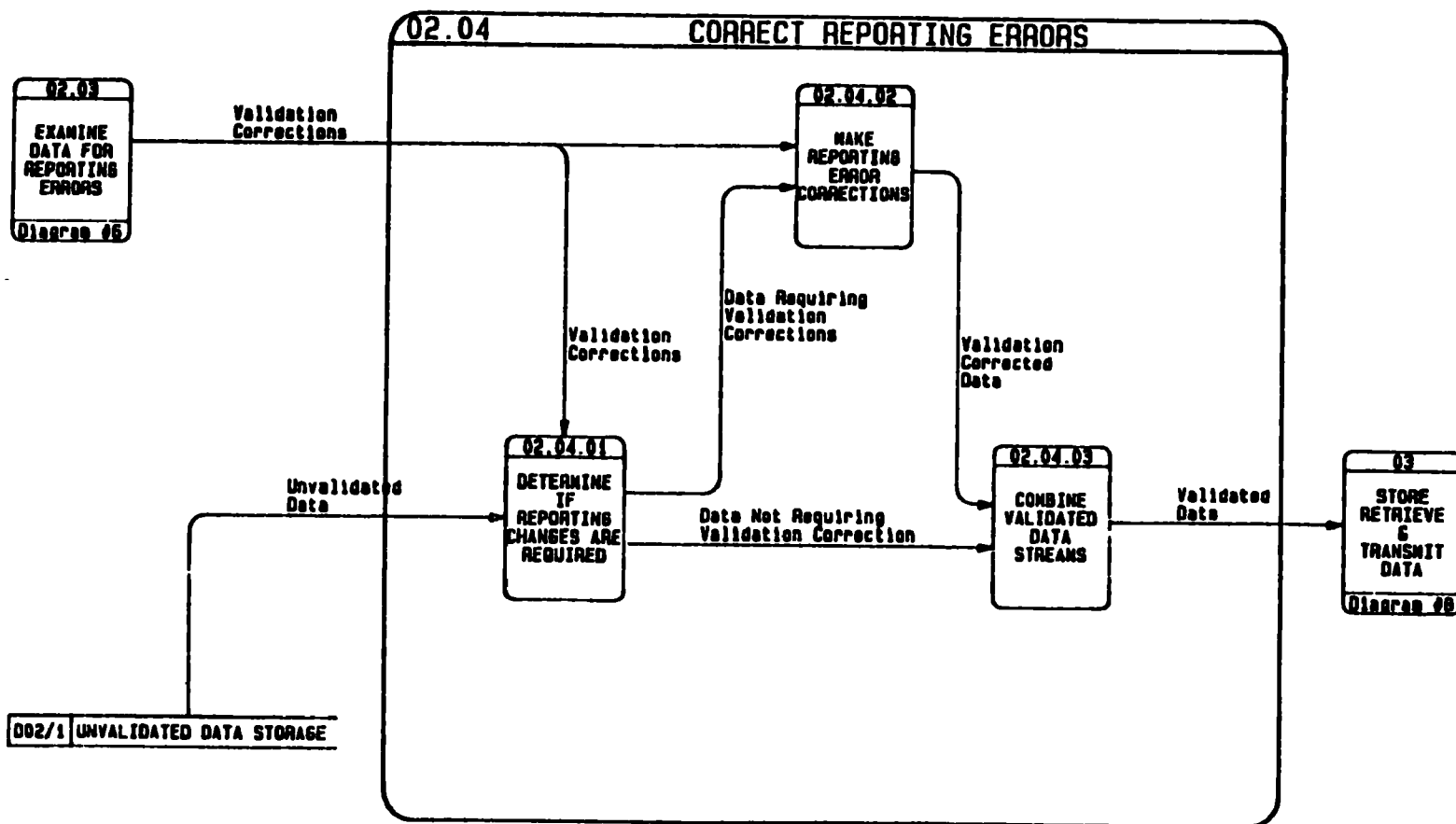
Project ID: BRSYSTEM	Date: 09-30-86
Project name: Annual/Biennial Info. System	
Version 6 Level 2 New physical	
Diagram name: 02	Last Rev. 07-12-87

DIAGRAM #5



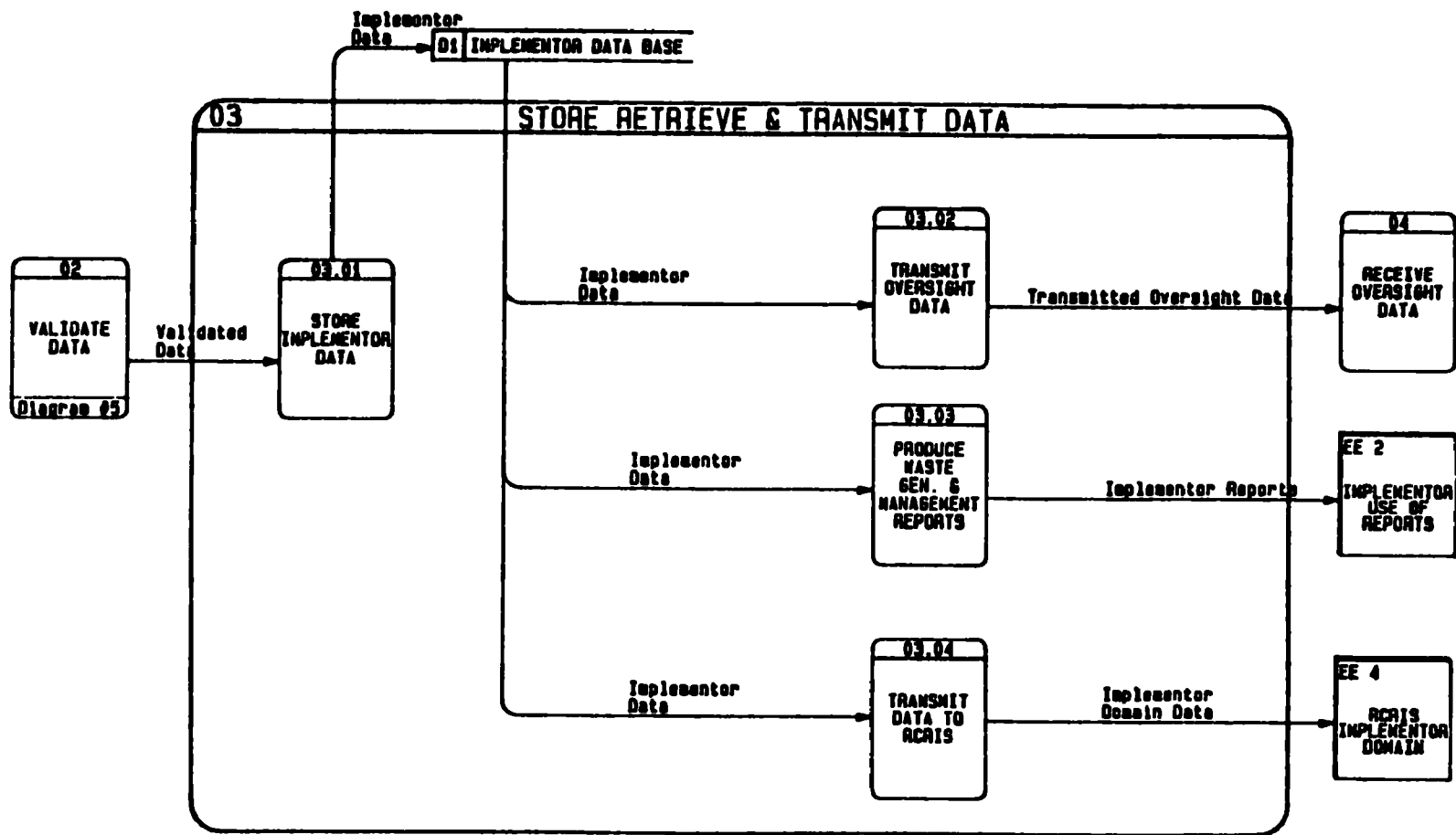
Project ID: BRSYSTEM	Date: 09-30-86
Project name: Annual/Biennial Info. System	
Version 6	Level 3
New physical	
Diagram name: 02.03	Last Rev. 07-12-87

DIAGRAM #6



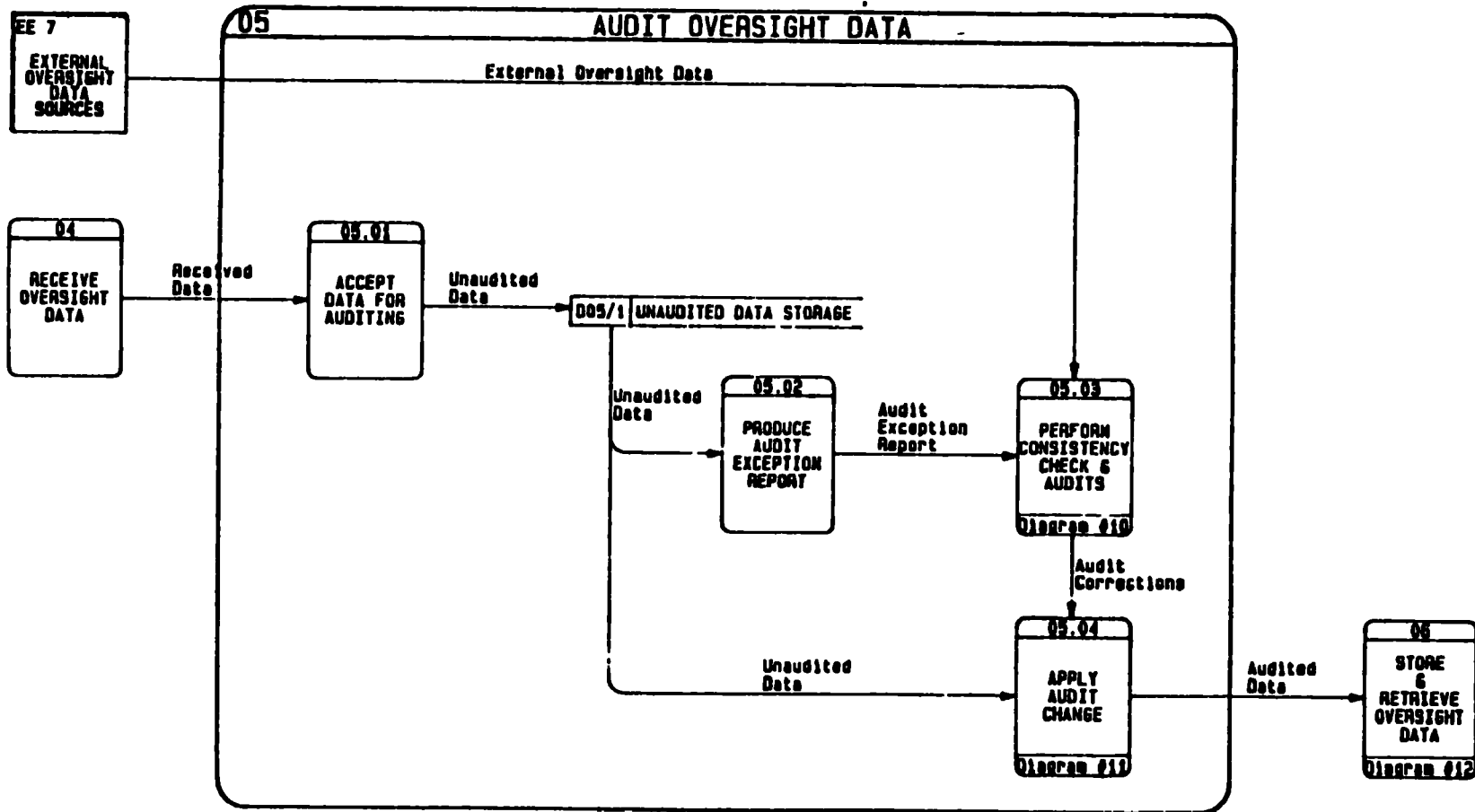
Project ID: BRSYSTEM	Date: 07-15-87
Project name: Annual/Biennial Info. System	
Version 6	Level 3 New physical
Diagram name: 02 04	Last Rev. 06-24-87

DIAGRAM #7



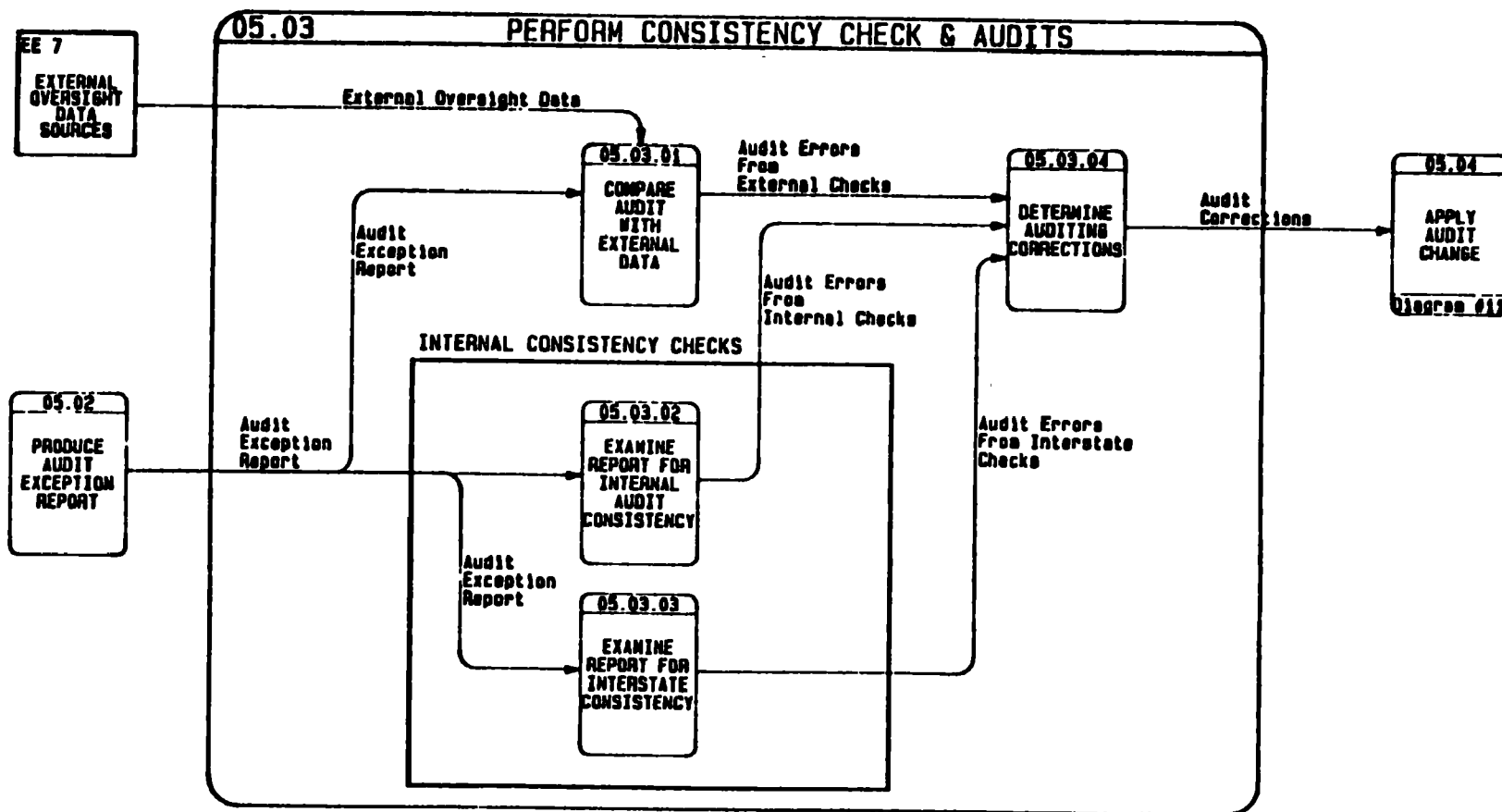
Project ID: BRSYSTEM	Date: 07-15-87
Project name: Annual/Biennial Info. System	
Version 6 Level 2 New physical	
Diagram name: 03	Last Rev. 06-26-87

DIAGRAM #8



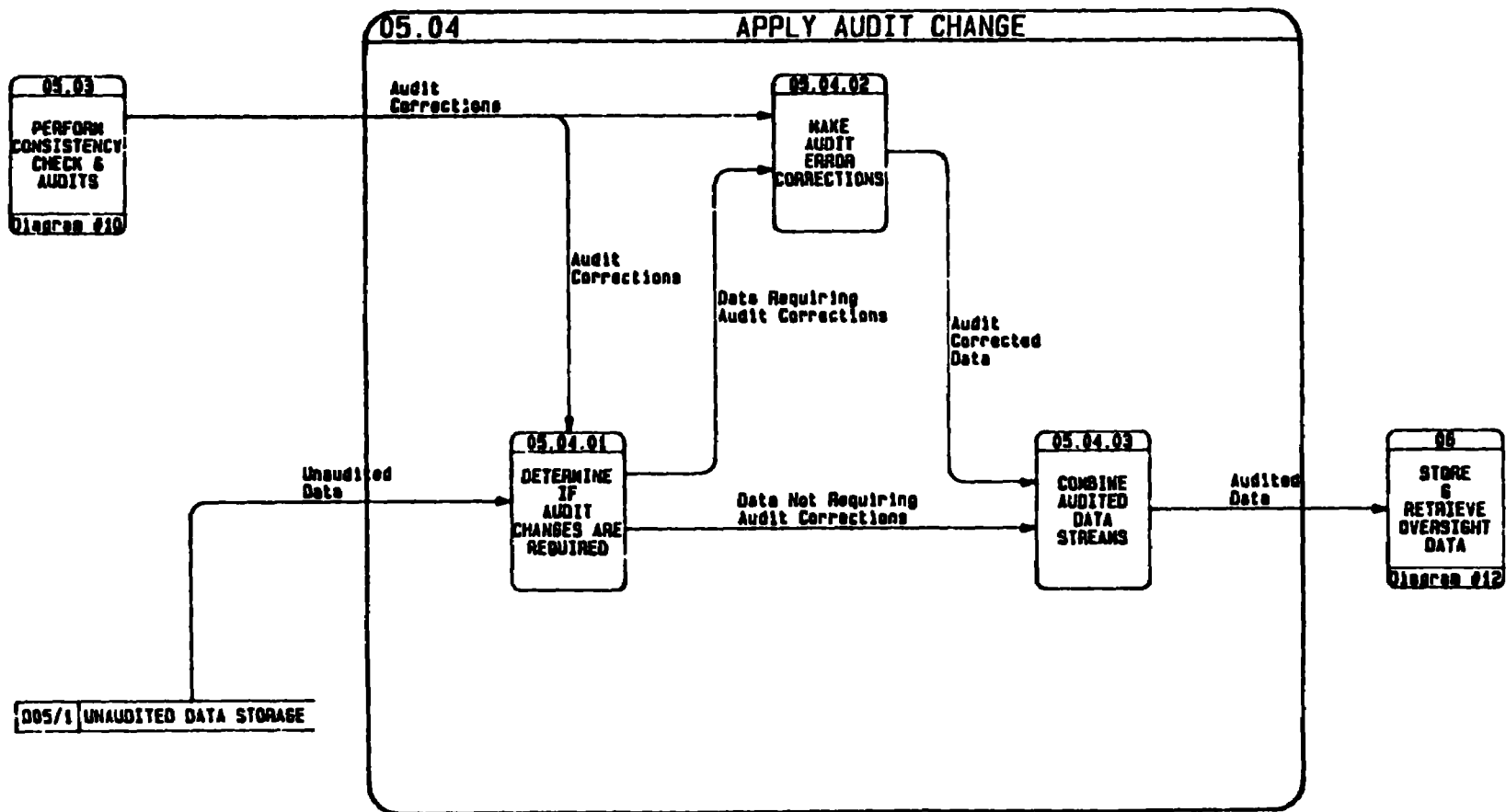
Project ID: BASYSYEM	Date: 07-15-87
Project name: Annual/Biennial Info. System	
Version 6 Level 2 New physical	
Diagram name: 05	Last Rev. 07-11-87

DIAGRAM #9



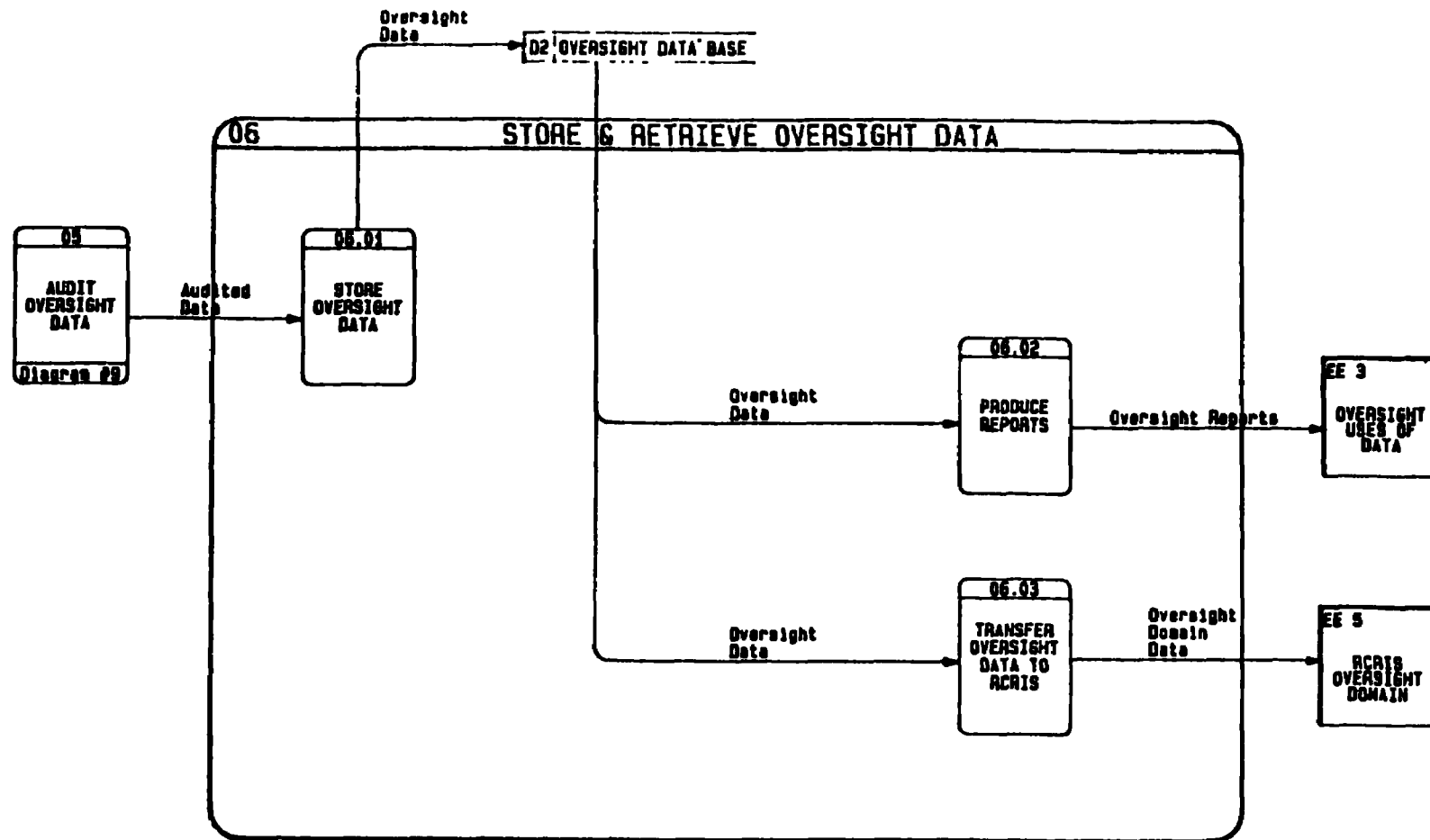
Project ID: BRSYSTEM	Date: 07-15-87
Project name: Annual/Biennial Info. System	
Version 6 Level 3 New physical	
Diagram name: 05.03	Last Rev. 07-11-87

DIAGRAM #10



Project ID: BASYSTEM	Date: 07-15-87
Project name: Annual/Biennial Info. System	
Version 6	Level 3 New physical
Diagram name: 05.04	Last Rev. 06-25-87

DIAGRAM #11



Project ID: BRSYSTEM	Date: 07-15-07
Project name: Annual/Biennial Info. System	
Version 8	Level 2 New physical
Diagram name: 06	Last Rev. 07-12-07

DIAGRAM #12

EXTERNAL ENTITY DESCRIPTIONS

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480	481	482	483	484	485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500	501	502	503	504	505	506	507	508	509	510	511	512	513	514	515	516	517	518	519	520	521	522	523	52
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*** NO PHONE NUMBER ***

*** NO PHONE NUMBERS ***

- reports to Congress including the national summary.
- responses to public information requests.
- support for program management activities.
- analysis of inter-state waste management system.

*** CONTINUED ***

EXTERNAL ENTITY ATTRIBUTES

=====

*** CONTINUED ***

EXTERNAL ENTITY ID : EE 3

-----PRIMARY / PHONE----- -----ALTERNATE / PHONE-----
*** NO REPRESENTATIVE *** *** NO ALTERNATE ***
*** NO PHONE NUMBER *** *** NO PHONE NUMBER ***

-----EXTERNAL ENTITY DESCRIPTION-----

EXTERNAL ENTITY ID : EE 4

NAME : RCRIS
IMPLEMENTOR
DOMAIN

LAST UPDATED : 6/26/87

This entity is the RCRIS data system at the implementor domain. All data requested by implementors (in RCRIS) will be transferred at this point.

-----PRIMARY / PHONE----- -----ALTERNATE / PHONE-----
*** NO REPRESENTATIVE *** *** NO ALTERNATE ***
*** NO PHONE NUMBER *** *** NO PHONE NUMBER ***

-----EXTERNAL ENTITY DESCRIPTION-----

EXTERNAL ENTITY ID : EE 5

NAME : RCRIS
OVERSIGHT
DOMAIN

LAST UPDATED : 6/26/87

This entity represents the RCRIS data system at the oversight domain. All data requested by oversight personnel will be transferred at this point.

-----PRIMARY / PHONE----- -----ALTERNATE / PHONE-----
*** NO REPRESENTATIVE *** *** NO ALTERNATE ***
*** NO PHONE NUMBER *** *** NO PHONE NUMBER ***

-----EXTERNAL ENTITY DESCRIPTION-----

EXTERNAL ENTITY ID : EE 6

NAME : EXTERNAL
IMPLEMENTOR
DATA
SOURCES

LAST UPDATED : 7/12/87

These are sources of data external to the annual/biennial reporting process which are used to verify and validate the data which has been reported.

-----PRIMARY / PHONE----- -----ALTERNATE / PHONE-----
*** NO REPRESENTATIVE *** *** NO ALTERNATE ***
*** NO PHONE NUMBER *** *** NO PHONE NUMBER ***

ANALYST
ID: STEM VERSION: 6

Annual/Biennial Report System

ANALYST
07/18/87 18:44:11

EXTERNAL ENTITY ATTRIBUTES

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-----EXTERNAL ENTITY DESCRIPTION-----

EXTERNAL ENTITY ID : EE 7

NAME : EXTERNAL
OVERSIGHT
DATA
SOURCES

These are sources of data available at the oversight level
which are external to the annual/biennial reporting
process. They are used to insure reported data is
consistent with the "real world".

LAST UPDATED : 7/12/87

-----PRIMARY / PHONE-----
*** NO REPRESENTATIVE ***
*** NO PHONE NUMBER ***

-----ALTERNATE / PHONE-----
*** NO ALTERNATE ***
*** NO PHONE NUMBER ***

=====

TOTAL NUMBER OF EXTERNAL ENTITIES ON PROJECT DICTIONARY VERSION 6 : 7

TOTAL NUMBER OF EXTERNAL ENTITIES ON REPORT: 7

DATA STORE DESCRIPTIONS

Pre ANALYST
ID: /STEM VERSION: 6

Annual/Bi 1 Report System

ANAL200 10L 1
07/18/8 19:30:11

DATA STORE ATTRIBUTES

-----DATA STORE ID & NAME-----

D01/1 UNEDITED DATA STORAGE

-----DATA STORE DESCRIPTION-----

This is the repository for all data accepted by the data entry process. It has been subjected to no editing or validation procedures. As data passes the key entry editing process, it is removed from this data base store.

LAST UPDATE: 07/17/87

NORMALIZED: NO

KEY SEQ	EXT INDEX	CONTAINS \DATA STRUCTURES, ELEMENTS	ALTERNATE\ DISCRIMINANT	TYPE	SIZE	MAXIMUM ITERATION	DECIMALS
		\REPORT FORM PACKAGE EPA IDENTIFIER		C	12		
		\FORM SUBPACKAGE - ALL					
		\FORM IC - IDENT & CERT					
		\FORM FS - FORM SELECTION					
		[\FORM RS - REGULATORY STATUS]					
		[\FORM WD - WASTE DESCRIPTION]					
		\FORM SUBPACKAGE - TSD					
		[\FORM DI - OFFSITE IDENT.]					
		[\FORM RO - REC. FROM OFFSITE]					
		[\FORM PS - PROCESS SUMMARY]					
		\FORM SUBPACKAGE - GENERATOR					
		\FORM PG - PRIMARY GENERATION					
		[\FORM WM - WASTE MINIMIZATION]					
		[\FORM SO - SHIPPED OFFSITE]					

TOTAL ITEMS IN DATA STORE:

15

TOTAL DATA STORE SIZE:

12

12

-----DATA STORE ID & NAME-----

D02/1 UNVALIDATED DATA STORAGE

-----DATA STORE DESCRIPTION-----

This is data has passed the key-entry editing processes and is accumulated until data validation (a batch process) is performed. As data passes the validation processes, it is removed from this data store.

LAST UPDATE: 07/17/87

NORMALIZED: NO

KEY SEQ	EXT INDEX	CONTAINS \DATA STRUCTURES, ELEMENTS	ALTERNATE\ DISCRIMINANT	TYPE	SIZE	MAXIMUM ITERATION	DECIMALS
		\REPORT FORM PACKAGE EPA IDENTIFIER		C	12		
		\FORM SUBPACKAGE - ALL					
		\FORM IC - IDENT & CERT					
		\FORM FS - FORM SELECTION					
		[\FORM RS - REGULATORY STATUS]					

*** CONTINUED ***

DATA STORE ATTRIBUTES

-----DATA STORE ID & NAME-----
 *** CONTINUED ***

DO2/1 UNVALIDATED DATA STORAGE

KEY SEQ	EXT INDEX	CONTAINS DATA STRUCTURES, ELEMENTS	ALTERNATE\ DISCRIMINANT	TYPE	SIZE	MAXIMUM ITERATION	DECIMALS
		[\FORM WD - WASTE DESCRIPTION]					
		\FORM SUBPACKAGE - TSD					
		[\FORM OI - OFFSITE IDENT.]					
		[\FORM RO - REC. FROM OFFSITE]					
		[\FORM PS - PROCESS SUMMARY]					
		\FORM SUBPACKAGE - GENERATOR					
		\FORM PG - PRIMARY GENERATION					
		[\FORM WM - WASTE MINIMIZATION]					
		[\FORM SD - SHIPPED OFFSITE]					

TOTAL ITEMS IN DATA STORE:	15	TOTAL DATA STORE SIZE:	12	12
----------------------------	----	------------------------	----	----

-----DATA STORE ID & NAME-----

DO5/1 UNAUDITED DATA STORAGE

-----DATA STORE DESCRIPTION-----

This data has been received from the implementor domain. At this point the data has been certified as valid by the implementors creating it. Data is stored at this point until data auditing (a batch process) is performed. When data passes the auditing processes, it is removed from this data store.

LAST UPDATE: 07/17/87 NORMALIZED: NO

KEY SEQ	EXT INDEX	CONTAINS DATA STRUCTURES, ELEMENTS	ALTERNATE\ DISCRIMINANT	TYPE	SIZE	MAXIMUM ITERATION	DECIMALS
		\REPORT FORM PACKAGE					
		EPA IDENTIFIER		C	12		
		\FORM SUBPACKAGE - ALL					
		\FORM IC - IDENT & CERT					
		\FORM FS - FORM SELECTION					
		[\FORM RS - REGULATORY STATUS]					
		[\FORM WD - WASTE DESCRIPTION]					
		\FORM SUBPACKAGE - TSD					
		[\FORM OI - OFFSITE IDENT.]					
		[\FORM RO - REC. FROM OFFSITE]					
		[\FORM PS - PROCESS SUMMARY]					
		\FORM SUBPACKAGE - GENERATOR					
		\FORM PG - PRIMARY GENERATION					
		[\FORM WM - WASTE MINIMIZATION]					

*** CONTINUED ***

DATA STORE ATTRIBUTES

-----DATA STORE ID & NAME-----

*** CONTINUED ***

D05/1 UNAUDITED DATA STORAGE

KEY SEQ	EXT INDEX	CONTAINS DATA STRUCTURES, ELEMENTS	ALTERNATE\ DISCRIMINANT	TYPE	SIZE	MAXIMUM ITERATION	DECIMALS
------------	--------------	---------------------------------------	----------------------------	------	------	----------------------	----------

[\FORM SO - SHIPPED OFFSITE]

TOTAL ITEMS IN DATA STORE: 15

TOTAL DATA STORE SIZE: 12 12

-----DATA STORE ID & NAME-----

D1 IMPLEMENTOR DATA BASE

-----DATA STORE DESCRIPTION-----
This data base stores all accepted and validated data at the implementor level. Typically one data base will exist for each state. A state may be responsible its own data base or have it created managed by the Region.

LAST UPDATE: 07/17/87

NORMALIZED: NO

KEY SEQ	EXT INDEX	CONTAINS DATA STRUCTURES, ELEMENTS	ALTERNATE\ DISCRIMINANT	TYPE	SIZE	MAXIMUM ITERATION	DECIMALS
------------	--------------	---------------------------------------	----------------------------	------	------	----------------------	----------

\REPORT FORM PACKAGE
EPA IDENTIFIER
\FORM SUBPACKAGE - ALL
\FORM IC - IDENT & CERT
\FORM FS - FORM SELECTION
[\FORM RS - REGULATORY STATUS]
[\FORM WD - WASTE DESCRIPTION]
\FORM SUBPACKAGE - TSD
[\FORM OI - OFFSITE IDENT.]
[\FORM RO - REC. FROM OFFSITE]
[\FORM PS - PROCESS SUMMARY]
\FORM SUBPACKAGE - GENERATOR
\FORM PG - PRIMARY GENERATION
[\FORM WM - WASTE MINIMIZATION]
[\FORM SO - SHIPPED OFFSITE]

C 12

TOTAL ITEMS IN DATA STORE: 15

TOTAL DATA STORE SIZE: 12 12

-----DATA STORE ID & NAME-----

D2 OVERSIGHT DATA BASE

-----DATA STORE DESCRIPTION-----
This data base stores all data received from the implementor domain. The data stored here has been

*** CONTINUED ***

DATA STORE ATTRIBUTES

-----DATA STORE ID & NAME-----

*** CONTINUED ***

D2 OVERSIGHT DATA BASE

-----DATA STORE DESCRIPTION-----

subjected to a level of auditing beyond the QA activities performed on implementor data. This assures the suitability of this data for nationwide summary and analyses and validity in producing intrastate waste management system reports.

LAST UPDATE: 06/26/87

NORMALIZED: NO

KEY SEQ	EXT INDEX	CONTAINS DATA STRUCTURES, ELEMENTS	ALTERNATE\ DISCRIMINANT	TYPE	SIZE	MAXIMUM ITERATION	DECIMALS
		\REPORT FORM PACKAGE					
		EPA IDENTIFIER		C	12		
		\FORM SUBPACKAGE - ALL					
		\FORM IC - IDENT & CERT					
		\FORM FS - FORM SELECTION					
		[\FORM RS - REGULATORY STATUS]					
		[\FORM WD - WASTE DESCRIPTION]					
		\FORM SUBPACKAGE - TSD					
		[\FORM OI - OFFSITE IDENT.]					
		[\FORM RO - REC. FROM OFFSITE]					
		[\FORM PS - PROCESS SUMMARY]					
		\FORM SUBPACKAGE - GENERATOR					
		\FORM PG - PRIMARY GENERATION					
		[\FORM WM - WASTE MINIMIZATION]					
		[\FORM SO - SHIPPED OFFSITE]					

TOTAL ITEMS IN DATA STORE: 15

TOTAL DATA STORE SIZE: 12 12

TOTAL NUMBER OF DATA STORES ON PROJECT DICTIONARY VERSION 6 : 5

TOTAL NUMBER OF DATA STORES ON REPORT: 5

DATA STRUCTURE ATTRIBUTES

-----DATA STRUCTURE NAME-----

-----DATA STRUCTURE DESCRIPTION-----

REPORT FORM PACKAGE

This is the data structure defined by a collection of forms completed and submitted by a waste generator or handler. This is the primary source of information for this system. Not all handlers will be required to complete all parts of the form. This determination is made by instructions associated with certain answers to questions on the form. In addition, the modular nature of the form allows implementors (states) to collect additional information by inserting additional forms into the collection package and providing additional questions and/or instructions to aid handlers in completing the forms.

CONTAINS DATA STRUCTURES, ELEMENTS	ALTERNATE\ DISCRIMINANT	TYPE	SIZE	MAXIMUM ITERATION	DECIMALS
EPA IDENTIFIER		C	12		
FORM SUBPACKAGE - ALL					
FORM IC - IDENT & CERT					
FORM FS - FORM SELECTION					
[FORM RS - REGULATORY STATUS]					
[FORM WD - WASTE DESCRIPTION]					
FORM SUBPACKAGE - TSD					
[FORM OI - OFFSITE IDENT.]					
[FORM RO - REC. FROM OFFSITE]					
[FORM PS - PROCESS SUMMARY]					
FORM SUBPACKAGE - GENERATOR					
FORM PG - PRIMARY GENERATION					
[FORM WM - WASTE MINIMIZATION]					
[FORM SO - SHIPPED OFFSITE]					

TOTAL ITEMS IN DATA STRUCTURE: 14

TOTAL DATA STRUCTURE SIZE: 12 12

IS CONTAINED IN THESE:

DATA STORES

-----ID-----	-----NAME-----	-----DATA FLOWS-----	---SOURCE---	DESTINATION	-----DATA STRUCTURES-----	D/I
D01/1	UNEDITED DATA STORA	ANNUAL/BIENNIAL REPORT FORM	EE 1	01.03.01	*** NOT IN ANY DATA STRUCTURE ***	
			EE 1	01		
			EE 1	01.01		
			EE 1	01.03		
	EDITED DATA		01.04.03	02		
			01	02		
			01.04	02		
			01	02.01		
	UNEDITED DATA		01.01	D01/1		
			D01/1	01.04.01		
			D01/1	01.02		
			D01/1	01.04		

*** CONTINUED ***

FROM ANALYST
ID. SYSTEM VERSION: 6

Annual/Budget Report System

ANALYST
07/10/1 19:44:44

DATA STRUCTURE ATTRIBUTES

-----DATA STRUCTURE NAME-----
*** CONTINUED ***

REPORT FORM PACKAGE

IS CONTAINED IN THESE:

DATA STORES

-----ID-----	-----NAME-----	-----DATA FLOWS-----	--SOURCE--	DESTINATION	-----DATA STRUCTURES-----	D/I
		TURNAROUND DOCUMENT	01.02 01.02	01.03.01 01.03		
		KEY-ENTRY CORRECTED DATA	01.04.02	01.04.03		

TOTAL NUMBER OF DATA STRUCTURES ON PROJECT DICTIONARY VERSION 6 : 16

TOTAL NUMBER OF DATA STRUCTURES ON REPORT: 1

Fr ANALYST
II SYSTEM VERSION: 6

Annual/F al Report System

ANALYST
07/18/ 19:47:04

DATA STRUCTURE CONTENTS

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-----DATA STRUCTURE NAME-----	CONTAINS DATA STRUCTURES, ELEMENTS	ALTERNATE\ DISCRIMINANT	TYPE	SIZE	MAXIMUM ITERATION	DECIMALS
REPORT FORM PACKAGE	EPA IDENTIFIER FORM SUBPACKAGE - ALL FORM IC - IDENT & CERT FORM FS - FORM SELECTION [FORM RS - REGULATORY STATUS] [FORM WD - WASTE DESCRIPTION] [FORM SUBPACKAGE - TSD] [FORM OI - OFFSITE IDENT.] [FORM RO - REC. FROM OFFSITE] [FORM PS - PROCESS SUMMARY] [FORM SUBPACKAGE - GENERATOR] FORM PG - PRIMARY GENERATION [FORM WM - WASTE MINIMIZATION] [FORM SO - SHIPPED OFFSITE]		C	12		
TOTAL ITEMS IN DATA STRUCTURE:	14	TOTAL DATA STRUCTURE SIZE:		12		12

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TOTAL NUMBER OF DATA STRUCTURES ON PROJECT DICTIONARY VERSION 6 : 16

TOTAL NUMBER OF DATA STRUCTURES ON REPORT: 1

DATA FLOW DESCRIPTIONS

DATA FLOW ATTR ES

-----DATA FLOW NAME-----DATA FLOW DESCRIPTION-----

ANNUAL/BIENNIAL REPORT FORM
Represents information collected on the EPA Annual/Biennial Report form.

LAST UPDATED: 07-12-87 DATA FLOW TYPE: NORMAL

CONTAINS DATA STRUCTURES, ELEMENTS	ALTERNATE\ DISCRIMINANT	TYPE	SIZE	MAXIMUM ITERATION	DECIMALS
REPORT FORM PACKAGE					
EPA IDENTIFIER		C	12		
FORM SUBPACKAGE - ALL					
FORM IC - IDENT & CERT					
FORM FS - FORM SELECTION					
[FORM RS - REGULATORY STATUS]					
[FORM WD - WASTE DESCRIPTION]					
[FORM SUBPACKAGE - TSD]					
[FORM OI - OFFSITE IDENT.]					
[FORM RO - REC. FROM OFFSITE]					
[FORM PS - PROCESS SUMMARY]					
[FORM SUBPACKAGE - GENERATOR]					
FORM PG - PRIMARY GENERATION					
[FORM WM - WASTE MINIMIZATION]					
[FORM SO - SHIPPED OFFSITE]					

TOTAL ITEMS IN DATA FLOW: 15 TOTAL DATA FLOW SIZE: 12 12

-----DATA FLOW OCCURRENCES INFORMATION-----

SOURCE	DESTINATION	KEY 1 (\DX OR DE)	KEY 2 (\DX OR DE)	KEY 3 (\DX OR DE)
EE 1	01.03.01	*** NO KEYS ON DATA FLOW ***		
EE 1	01	*** NO KEYS ON DATA FLOW ***		
EE 1	01.01	*** NO KEYS ON DATA FLOW ***		
EE 1	01.03	*** NO KEYS ON DATA FLOW ***		

-----DATA FLOW NAME-----DATA FLOW DESCRIPTION-----

AUDIT CORRECTED DATA
The portion of the Validated data to which audit corrections have been applied.

LAST UPDATED: 07-18-87 DATA FLOW TYPE: NORMAL

*** CONTINUED ***

DATA FLOW ATTRIBUTES

-----DATA FLOW NAME-----
*** CONTINUED ***

AUDIT CORRECTED DATA

CONTAINS
DATA STRUCTURES, ELEMENTS

ALTERNATE\
DISCRIMINANT

TYPE

SIZE

MAXIMUM
ITERATION

DECIMALS

NOT DETERMINED

TOTAL ITEMS IN DATA FLOW:

1

TOTAL DATA FLOW SIZE:

0*

0*

-----DATA FLOW OCCURRENCES INFORMATION-----

---SOURCE---	DESTINATION	-----KEY 1 (\DX OR DE)-----	-----KEY 2 (\DX OR DE)-----	-----KEY 3 (\DX OR DE)-----
05.04.02	05.04.03	*** NO KEYS ON DATA FLOW ***		

-----DATA FLOW NAME-----

-----DATA FLOW DESCRIPTION-----

AUDIT CORRECTIONS

The corrections that have been determined to be necessary
by the comparison process.

LAST UPDATED: 07-12-87

DATA FLOW TYPE: NORMAL

CONTAINS
DATA STRUCTURES, ELEMENTS

ALTERNATE\
DISCRIMINANT

TYPE

SIZE

MAXIMUM
ITERATION

DECIMALS

EPA IDENTIFIER
CHANGE DESCRIPTION
EPA IDENTIFIER

C

12

C

12

TOTAL ITEMS IN DATA FLOW:

3

TOTAL DATA FLOW SIZE:

24

24

-----DATA FLOW OCCURRENCES INFORMATION-----

---SOURCE---	DESTINATION	-----KEY 1 (\DX OR DE)-----	-----KEY 2 (\DX OR DE)-----	-----KEY 3 (\DX OR DE)-----
05.03.04	05.04	*** NO KEYS ON DATA FLOW ***		
05.03	05.04	*** NO KEYS ON DATA FLOW ***		
05.03	05.04.01	*** NO KEYS ON DATA FLOW ***		
05.03	05.04.02	*** NO KEYS ON DATA FLOW ***		

DATA FLOW AT. ES

-----DATA FLOW NAME-----

-----DATA FLOW DESCRIPTION-----

AUDIT ERRORS FROM EXTERNAL CHECKS

Errors which have been detected by comparison of data base
contents with external sources of data available at the
oversight level.

LAST UPDATED: 07-12-87

DATA FLOW TYPE: EXCEPTION

CONTAINS
 \DATA STRUCTURES, ELEMENTS

ALTERNATE\
DISCRIMINANT

TYPE

SIZE

MAXIMUM
ITERATION

DECIMALS

EPA IDENTIFIER
 \ERROR DESCRIPTION
 EPA IDENTIFIER

C

12

C

12

TOTAL ITEMS IN DATA FLOW:

3

TOTAL DATA FLOW SIZE:

24

24

-----DATA FLOW OCCURRENCES INFORMATION-----

---SOURCE--- DESTINATION -----KEY 1 (\DX OR DE)----- -----KEY 2 (\DX OR DE)----- -----KEY 3 (\DX OR DE)-----

05.03.01 05.03.04 *** NO KEYS ON DATA FLOW ***

-----DATA FLOW NAME-----

-----DATA FLOW DESCRIPTION-----

AUDIT ERRORS FROM INTERNAL CHECKS

These are errors detected through data examination and by
consistency checks.

LAST UPDATED: 07-12-87

DATA FLOW TYPE: EXCEPTION

CONTAINS
 \DATA STRUCTURES, ELEMENTS

ALTERNATE\
DISCRIMINANT

TYPE

SIZE

MAXIMUM
ITERATION

DECIMALS

EPA IDENTIFIER
 \ERROR DESCRIPTION
 EPA IDENTIFIER

C

12

C

12

TOTAL ITEMS IN DATA FLOW:

3

TOTAL DATA FLOW SIZE:

24

24

-----DATA FLOW OCCURRENCES INFORMATION-----

---SOURCE--- DESTINATION -----KEY 1 (\DX OR DE)----- -----KEY 2 (\DX OR DE)----- -----KEY 3 (\DX OR DE)-----

05.03.02 05.03.04 *** NO KEYS ON DATA FLOW ***

DATA FLOW AT: ES

-----DATA FLOW NAME-----

AUDIT ERRORS FROM INTERSTATE CHECKS

Audit errors detected by comparison of information between states.

LAST UPDATED: 07-12-87

DATA FLOW TYPE: EXCEPTION

CONTAINS DATA STRUCTURES, ELEMENTS	ALTERNATE\ DISCRIMINANT	TYPE	SIZE	MAXIMUM ITERATION	DECIMALS
EPA IDENTIFIER		C	12		
ERROR DESCRIPTION					
EPA IDENTIFIER		C	12		

TOTAL ITEMS IN DATA FLOW: 3

TOTAL DATA FLOW SIZE: 24 24

-----DATA FLOW OCCURRENCES INFORMATION-----

SOURCE	DESTINATION	KEY 1 (\DX OR DE)	KEY 2 (\DX OR DE)	KEY 3 (\DX OR DE)
05.03.03	05.03.04	*** NO KEYS ON DATA FLOW ***		

-----DATA FLOW NAME-----

AUDIT EXCEPTION REPORT

A report used as a source document for the performance of both internal and external audit checks. Automated consistency check results appear in this listing.

LAST UPDATED: 07-12-87

DATA FLOW TYPE: NORMAL

CONTAINS DATA STRUCTURES, ELEMENTS	ALTERNATE\ DISCRIMINANT	TYPE	SIZE	MAXIMUM ITERATION	DECIMALS
EPA IDENTIFIER		C	12		

TOTAL ITEMS IN DATA FLOW: 1

TOTAL DATA FLOW SIZE: 12 12

-----DATA FLOW OCCURRENCES INFORMATION-----

SOURCE	DESTINATION	KEY 1 (\DX OR DE)	KEY 2 (\DX OR DE)	KEY 3 (\DX OR DE)
05.02	05.03	*** NO KEYS ON DATA FLOW ***		
05.02	05.03.01	*** NO KEYS ON DATA FLOW ***		
05.02	05.03.03	*** NO KEYS ON DATA FLOW ***		

*** CONTINUED ***

DATA FLOW ATTR: S

-----DATA FLOW NAME-----
*** CONTINUED ***

AUDIT EXCEPTION REPORT

-----DATA FLOW OCCURRENCES INFORMATION-----				
---SOURCE---	DESTINATION	-----KEY 1 (\DX OR DE)-----	-----KEY 2 (\DX OR DE)-----	-----KEY 3 (\DX OR DE)-----
05.02	05.03.02	*** NO KEYS ON DATA FLOW ***		

-----DATA FLOW NAME-----	-----DATA FLOW DESCRIPTION-----
AUDITED DATA	Data which has completed the auditing process and is ready for storage in the oversight data base.

LAST UPDATED: 07-18-87

DATA FLOW TYPE: NORMAL

CONTAINS \DATA STRUCTURES, ELEMENTS	ALTERNATE\ DISCRIMINANT	TYPE	SIZE	MAXIMUM ITERATION	DECIMALS
NOT DETERMINED			****		
TOTAL ITEMS IN DATA FLOW: 1	TOTAL DATA FLOW SIZE:		0*	0*	

-----DATA FLOW OCCURRENCES INFORMATION-----				
---SOURCE---	DESTINATION	-----KEY 1 (\DX OR DE)-----	-----KEY 2 (\DX OR DE)-----	-----KEY 3 (\DX OR DE)-----
05	06	*** NO KEYS ON DATA FLOW ***		
05	06.01	*** NO KEYS ON DATA FLOW ***		
05.04	06	*** NO KEYS ON DATA FLOW ***		
05.04.03	06	*** NO KEYS ON DATA FLOW ***		

-----DATA FLOW NAME-----	-----DATA FLOW DESCRIPTION-----
DATA NOT REQUIRING AUDIT CORRECTIONS	The portion of the validated data stream not requiring changes.

LAST UPDATED: 07-18-87

DATA FLOW TYPE: NORMAL

*** CONTINUED ***

DATA FLOW ATTR: 8

-----DATA FLOW NAME-----

*** CONTINUED ***

DATA NOT REQUIRING AUDIT CORRECTIONS

CONTAINS
DATA STRUCTURES, ELEMENTS

ALTERNATE\
DISCRIMINANT

TYPE

SIZE

MAXIMUM
ITERATION

DECIMALS

NOT DETERMINED

TOTAL ITEMS IN DATA FLOW:

1

TOTAL DATA FLOW SIZE:

0*

0*

-----DATA FLOW OCCURRENCES INFORMATION-----

---SOURCE--- DESTINATION -----KEY 1 (\DX OR DE)----- -----KEY 2 (\DX OR DE)----- -----KEY 3 (\DX OR DE)-----

05.04.01 05.04.03 *** NO KEYS ON DATA FLOW ***

-----DATA FLOW NAME-----

-----DATA FLOW DESCRIPTION-----

DATA NOT REQUIRING KEY-ENTRY CORRECTIONS

The portion of the unedited data stream not requiring changes.

LAST UPDATED: 07-18-87

DATA FLOW TYPE: NORMAL

CONTAINS
DATA STRUCTURES, ELEMENTS

ALTERNATE\
DISCRIMINANT

TYPE

SIZE

MAXIMUM
ITERATION

DECIMALS

NOT DETERMINED

TOTAL ITEMS IN DATA FLOW:

1

TOTAL DATA FLOW SIZE:

0*

0*

-----DATA FLOW OCCURRENCES INFORMATION-----

---SOURCE--- DESTINATION -----KEY 1 (\DX OR DE)----- -----KEY 2 (\DX OR DE)----- -----KEY 3 (\DX OR DE)-----

01.04.01 01.04.03 *** NO KEYS ON DATA FLOW ***

-----DATA FLOW NAME-----

-----DATA FLOW DESCRIPTION-----

DATA NOT REQUIRING VALIDATION CORRECTION

The portion of the edited data stream not requiring corrections.

LAST UPDATED: 07-18-87

DATA FLOW TYPE: NORMAL

*** CONTINUED ***

DATA FLOW ATT. 28

-----DATA FLOW NAME-----

*** CONTINUED ***

DATA NOT REQUIRING VALIDATION CORRECTION

CONTAINS
DATA STRUCTURES, ELEMENTS

ALTERNATE\
DISCRIMINANT

TYPE

SIZE

MAXIMUM
ITERATION

DECIMALS

NOT DETERMINED

TOTAL ITEMS IN DATA FLOW:

1

TOTAL DATA FLOW SIZE:

0*

0*

-----DATA FLOW OCCURRENCES INFORMATION-----

---SOURCE--- DESTINATION -----KEY 1 (\DX OR DE)----- -----KEY 2 (\DX OR DE)----- -----KEY 3 (\DX OR DE)-----

02.04.01 02.04.03 *** NO KEYS ON DATA FLOW ***

-----DATA FLOW NAME-----

-----DATA FLOW DESCRIPTION-----

DATA REQUIRING AUDIT CORRECTIONS

The portion of the validated data stream which requires corrections. These errors were detected by the audit process.

LAST UPDATED: 07-18-87

DATA FLOW TYPE: NORMAL

CONTAINS
DATA STRUCTURES, ELEMENTS

ALTERNATE\
DISCRIMINANT

TYPE

SIZE

MAXIMUM
ITERATION

DECIMALS

NOT DETERMINED

TOTAL ITEMS IN DATA FLOW:

1

TOTAL DATA FLOW SIZE:

0*

0*

-----DATA FLOW OCCURRENCES INFORMATION-----

---SOURCE--- DESTINATION -----KEY 1 (\DX OR DE)----- -----KEY 2 (\DX OR DE)----- -----KEY 3 (\DX OR DE)-----

05.04.01 05.04.02 *** NO KEYS ON DATA FLOW ***

-----DATA FLOW NAME-----

-----DATA FLOW DESCRIPTION-----

DATA REQUIRING KEY-ENTRY CORRECTIONS

The portion of the unedited data stream which requires corrections. These errors were detected by comparison of entered data with the collection forms.

LAST UPDATED: 07-18-87

DATA FLOW TYPE: NORMAL

*** CONTINUED ***

DATA FLOW AT 16

-----DATA FLOW NAME-----

*** CONTINUED ***

DATA REQUIRING KEY-ENTRY CORRECTIONS

CONTAINS
DATA STRUCTURES, ELEMENTS

ALTERNATE\
DISCRIMINANT

TYPE

SIZE

MAXIMUM
ITERATION

DECIMALS

NOT DETERMINED

TOTAL ITEMS IN DATA FLOW: 1

TOTAL DATA FLOW SIZE:

0*

0*

-----DATA FLOW OCCURRENCES INFORMATION-----

---SOURCE--- DESTINATION -----KEY 1 (\DX OR DE)----- -----KEY 2 (\DX OR DE)----- -----KEY 3 (\DX OR DE)-----

01.04.01 01.04.02 *** NO KEYS ON DATA FLOW ***

-----DATA FLOW NAME-----

-----DATA FLOW DESCRIPTION-----

DATA REQUIRING VALIDATION CORRECTIONS

The portion of the edited data stream requiring
corrections. These errors were detected by the validation
process.

LAST UPDATED: 07-18-87

DATA FLOW TYPE: NORMAL

CONTAINS
DATA STRUCTURES, ELEMENTS

ALTERNATE\
DISCRIMINANT

TYPE

SIZE

MAXIMUM
ITERATION

DECIMALS

NOT DETERMINED

TOTAL ITEMS IN DATA FLOW: 1

TOTAL DATA FLOW SIZE:

0*

0*

-----DATA FLOW OCCURRENCES INFORMATION-----

---SOURCE--- DESTINATION -----KEY 1 (\DX OR DE)----- -----KEY 2 (\DX OR DE)----- -----KEY 3 (\DX OR DE)-----

02.04.01 02.04.02 *** NO KEYS ON DATA FLOW ***

-----DATA FLOW NAME-----

-----DATA FLOW DESCRIPTION-----

EDITED DATA

Data which has passed or been corrected by the editing
process.

LAST UPDATED: 07-12-87

DATA FLOW TYPE: NORMAL

*** CONTINUED ***

DATA FLOW ATTR /ES

-----DATA FLOW NAME-----

*** CONTINUED ***

EDITED DATA

CONTAINS DATA STRUCTURES, ELEMENTS	ALTERNATE\ DISCRIMINANT	TYPE	SIZE	MAXIMUM ITERATION	DECIMALS
REPORT FORM PACKAGE					
EPA IDENTIFIER		C	12		
FORM SUBPACKAGE - ALL					
FORM IC - IDENT & CERT					
FORM FS - FORM SELECTION					
[FORM RS - REGULATORY STATUS]					
[FORM WD - WASTE DESCRIPTION]					
[FORM SUBPACKAGE - TSD]					
[FORM OI - OFFSITE IDENT.]					
[FORM RO - REC. FROM OFFSITE]					
[FORM PS - PROCESS SUMMARY]					
[FORM SUBPACKAGE - GENERATOR]					
FORM PG - PRIMARY GENERATION					
[FORM WM - WASTE MINIMIZATION]					
[FORM SO - SHIPPED OFFSITE]					

TOTAL ITEMS IN DATA FLOW: 15

TOTAL DATA FLOW SIZE: 12 12

-----DATA FLOW OCCURRENCES INFORMATION-----

---SOURCE---	DESTINATION	-----KEY 1 (\DX OR DE)-----	-----KEY 2 (\DX OR DE)-----	-----KEY 3 (\DX OR DE)-----
01.04.03	02	*** NO KEYS ON DATA FLOW ***		
01	02	*** NO KEYS ON DATA FLOW ***		
01.04	02	*** NO KEYS ON DATA FLOW ***		
01	02.01	*** NO KEYS ON DATA FLOW ***		

-----DATA FLOW NAME-----

-----DATA FLOW DESCRIPTION-----

EXTERNAL IMPLEMENTOR DATA

Data at the implementor level which is supplied by entities
and/or processes outside the annual/biennial report
collection process.

LAST UPDATED: 07-18-87

DATA FLOW TYPE: NORMAL

*** CONTINUED ***

-----DATA FLOW NAME-----
*** CONTINUED ***

EXTERNAL IMPLEMENTOR DATA

	CONTAINS DATA STRUCTURES, ELEMENTS	ALTERNATE DISCRIMINANT	TYPE	SIZE	MAXIMUM ITERATION	DECIMALS
	NOT DETERMINED			****		
TOTAL ITEMS IN DATA FLOW:	1					
		TOTAL DATA FLOW SIZE:		0*	0*	

-----DATA FLOW OCCURRENCES INFORMATION-----

SOURCE	DESTINATION	KEY 1 (DX OR DE)	KEY 2 (DX OR DE)	KEY 3 (DX OR DE)
EE 6	02	*** NO KEYS ON DATA FLOW ***		
EE 6	02.03.01	*** NO KEYS ON DATA FLOW ***		
EE 6	02.03	*** NO KEYS ON DATA FLOW ***		

-----DATA FLOW NAME-----DATA FLOW DESCRIPTION-----

EXTERNAL OVERSIGHT DATA

Data at the oversight level which is supplied by entities and/or processes outside the Annual/Biennial Report collection process.

LAST UPDATED: 07-18-87

DATA FLOW TYPE: NORMAL

	CONTAINS DATA STRUCTURES, ELEMENTS	ALTERNATE DISCRIMINANT	TYPE	SIZE	MAXIMUM ITERATION	DECIMALS
	NOT DETERMINED			****		
TOTAL ITEMS IN DATA FLOW:	1					
		TOTAL DATA FLOW SIZE:		0*	0*	

-----DATA FLOW OCCURRENCES INFORMATION-----

SOURCE	DESTINATION	KEY 1 (DX OR DE)	KEY 2 (DX OR DE)	KEY 3 (DX OR DE)
EE 7	05	*** NO KEYS ON DATA FLOW ***		
EE 7	05.03	*** NO KEYS ON DATA FLOW ***		
EE 7	05.03.01	*** NO KEYS ON DATA FLOW ***		

DATA FLOW ATTRI

DATA FLOW NAME		DATA FLOW DESCRIPTION				
PLEMENTOR DATA		Implementor domain annual/biennial report data.				
ST UPDATED: 07-18-87		DATA FLOW TYPE: NORMAL				
		CONTAINS DATA STRUCTURES, ELEMENTS	ALTERNATE\ DISCRIMINANT	TYPE	SIZE	MAXIMUM ITERATION
		NOT DETERMINED			****	DECIMALS
TOTAL ITEMS IN DATA FLOW:		1	TOTAL DATA FLOW SIZE:		0*	0*

DATA FLOW OCCURRENCES INFORMATION				
SOURCE---	DESTINATION	KEY 1 (\DX OR DE)-----	KEY 2 (\DX OR DE)-----	KEY 3 (\DX OR DE)-----
	D1	*** NO KEYS ON DATA FLOW ***		
	03.04	*** NO KEYS ON DATA FLOW ***		
	03.03	*** NO KEYS ON DATA FLOW ***		
	03.02	*** NO KEYS ON DATA FLOW ***		
01	D1	*** NO KEYS ON DATA FLOW ***		

DATA FLOW NAME		DATA FLOW DESCRIPTION				
PLEMENTOR DOMAIN RCRIS DATA		Data supplied to the implementor domain of RCRIS				
T UPDATED: 07/18/87		DATA FLOW TYPE: NORMAL				
		CONTAINS DATA STRUCTURES, ELEMENTS	ALTERNATE\ DISCRIMINANT	TYPE	SIZE	MAXIMUM ITERATION
		NOT DETERMINED			****	DECIMALS
TOTAL ITEMS IN DATA FLOW:		1	TOTAL DATA FLOW SIZE:		0*	0*

DATA FLOW OCCURRENCES INFORMATION				
SOURCE---	DESTINATION	KEY 1 (\DX OR DE)-----	KEY 2 (\DX OR DE)-----	KEY 3 (\DX OR DE)-----
04	EE 4	*** NO KEYS ON DATA FLOW ***		

CONTINUED ***

ION: 6

DATA FLOW ATTR S

-----DATA FLOW NAME-----

*** CONTINUED ***

IMPLEMENTOR DOMAIN RCRIS DATA

-----DATA FLOW OCCURRENCES INFORMATION-----

-----SOURCE---	DESTINATION	-----KEY 1 (\DX OR DE)-----	-----KEY 2 (\DX OR DE)-----	-----KEY 3 (\DX OR DE)-----
----------------	-------------	-----------------------------	-----------------------------	-----------------------------

EE 4	*** NO KEYS ON DATA FLOW ***
------	------------------------------

-----DATA FLOW NAME-----

-----DATA FLOW DESCRIPTION-----

IMPLEMENTOR REPORTS

Reports generated from the implementor data base. These include both standard and ad hoc reports.

LAST UPDATED: 07-18-87

DATA FLOW TYPE: NORMAL

CONTAINS
DATA STRUCTURES, ELEMENTS

ALTERNATE\	TYPE	SIZE	MAXIMUM	DECIMALS
DISCRIMINANT			ITERATION	

NOT DETERMINED

TOTAL ITEMS IN DATA FLOW: 1

TOTAL DATA FLOW SIZE: 0* 0*

-----DATA FLOW OCCURRENCES INFORMATION-----

-----SOURCE---	DESTINATION	-----KEY 1 (\DX OR DE)-----	-----KEY 2 (\DX OR DE)-----	-----KEY 3 (\DX OR DE)-----
----------------	-------------	-----------------------------	-----------------------------	-----------------------------

EE 2	*** NO KEYS ON DATA FLOW ***
------	------------------------------

.03	EE 2	*** NO KEYS ON DATA FLOW ***
-----	------	------------------------------

-----DATA FLOW NAME-----

-----DATA FLOW DESCRIPTION-----

Y-ENTRY CORRECTED DATA

Data to which key-entry corrections have been made.

LAST UPDATED: 07-12-87

DATA FLOW TYPE: NORMAL

CONTAINS
DATA STRUCTURES, ELEMENTS

ALTERNATE\	TYPE	SIZE	MAXIMUM	DECIMALS
DISCRIMINANT			ITERATION	

\REPORT FORM PACKAGE
EPA IDENTIFIER
\FORM SUBPACKAGE - ALL

C	12
---	----

*** CONTINUED ***

DATA FLOW ATTRI

-----DATA FLOW NAME-----
CONTINUED ***

-ENTRY CORRECTED DATA

CONTAINS
DATA STRUCTURES, ELEMENTSALTERNATE\
DISCRIMINANT

TYPE

SIZE

MAXIMUM
ITERATION

DECIMALS

\FORM IC - IDENT & CERT
\FORM FS - FORM SELECTION
[\FORM RS - REGULATORY STATUS]
[\FORM WD - WASTE DESCRIPTION]
[\FORM SUBPACKAGE - TSD]
[\FORM OI - OFFSITE IDENT.]
[\FORM RO - REC. FROM OFFSITE]
[\FORM PS - PROCESS SUMMARY]
[\FORM SUBPACKAGE - GENERATOR]
\FORM PG - PRIMARY GENERATION
[\FORM WM - WASTE MINIMIZATION]
[\FORM SO - SHIPPED OFFSITE]

TOTAL ITEMS IN DATA FLOW: 15

TOTAL DATA FLOW SIZE: 12 12

-----DATA FLOW OCCURRENCES INFORMATION-----

SOURCE--- DESTINATION -----KEY 1 (\DX OR DE)----- -----KEY 2 (\DX OR DE)----- -----KEY 3 (\DX OR DE)-----
04.02 01.04.03 *** NO KEYS ON DATA FLOW ***

-----DATA FLOW NAME-----

-----DATA FLOW DESCRIPTION-----

-ENTRY CORRECTIONS

Corrections which have been determined necessary to bring
data base contents into agreement with the report form.

IT UPDATED: 07-12-87

DATA FLOW TYPE: EXCEPTION

CONTAINS
DATA STRUCTURES, ELEMENTSALTERNATE\
DISCRIMINANT

TYPE

SIZE

MAXIMUM
ITERATION

DECIMALS

EPA IDENTIFIER *
\CHANGE DESCRIPTION
EPA IDENTIFIER

C

12

1

C

12

TOTAL ITEMS IN DATA FLOW: 3

TOTAL DATA FLOW SIZE: 24 24

-----DATA FLOW OCCURRENCES INFORMATION-----

SOURCE--- DESTINATION -----KEY 1 (\DX OR DE)----- -----KEY 2 (\DX OR DE)----- -----KEY 3 (\DX OR DE)-----
03 01.04 *** NO KEYS ON DATA FLOW ***

CONTINUED ***

FLOW NAME-----

* CONTINUED

Y-ENTRY CORRECTIONS

-----DATA FLOW OCCURRENCES INFORMATION-----

SOURCE	DESTINATION	KEY 1 (\DX OR DE)	KEY 2 (\DX OR DE)	KEY 3 (\DX OR DE)
.03	01.04.01	*** NO KEYS ON DATA FLOW ***		
.03.02	01.04	*** NO KEYS ON DATA FLOW ***		
.03	01.04.02	*** NO KEYS ON DATA FLOW ***		

-----DATA FLOW NAME-----

-----DATA FLOW DESCRIPTION-----

Y-ENTRY EXCEPTION REPORT

This is a flow of exceptions detected by comparison of data
base contents with the turnaround document.

BT UPDATED: 07-12-87

DATA FLOW TYPE: EXCEPTION

CONTAINS
DATA STRUCTURES, ELEMENTSALTERNATE\
DISCRIMINANT

TYPE

SIZE

MAXIMUM
ITERATION

DECIMALS

EPA IDENTIFIER
ERROR DESCRIPTION
EPA IDENTIFIER

C

12

C

12

TOTAL ITEMS IN DATA FLOW:

3

TOTAL DATA FLOW SIZE:

24

24

-----DATA FLOW OCCURRENCES INFORMATION-----

SOURCE	DESTINATION	KEY 1 (\DX OR DE)	KEY 2 (\DX OR DE)	KEY 3 (\DX OR DE)
.03.01	01.03.02	*** NO KEYS ON DATA FLOW ***		

-----DATA FLOW NAME-----

-----DATA FLOW DESCRIPTION-----

RIGHT DATA

Oversight domain annual/biennial report data.

BT UPDATED: 07-18-87

DATA FLOW TYPE: NORMAL

* CONTINUED ***

DATA FLOW ATTRI

-----DATA FLOW NAME-----DATA FLOW DESCRIPTION-----

ERSIGHT REPORTS

Reports used at the oversight level. These are both
standard and ad hoc report.

ST UPDATED: 07-18-87

DATA FLOW TYPE: NORMAL

CONTAINS
DATA STRUCTURES, ELEMENTS

ALTERNATE\
DISCRIMINANT

TYPE

SIZE

MAXIMUM
ITERATION

DECIMALS

NOT DETERMINED

TOTAL ITEMS IN DATA FLOW:

1

TOTAL DATA FLOW SIZE:

0*

0*

-----DATA FLOW OCCURRENCES INFORMATION-----

SOURCE--- DESTINATION -----KEY 1 (\DX OR DE)----- KEY 2 (\DX OR DE)----- KEY 3 (\DX OR DE)-----

EE 3

*** NO KEYS ON DATA FLOW ***

02

EE 3

*** NO KEYS ON DATA FLOW ***

-----DATA FLOW NAME-----DATA FLOW DESCRIPTION-----

REIVED DATA

Data received from various implementors.

ST UPDATED: 07-18-87

DATA FLOW TYPE: NORMAL

CONTAINS
DATA STRUCTURES, ELEMENTS

ALTERNATE\
DISCRIMINANT

TYPE

SIZE

MAXIMUM
ITERATION

DECIMALS

NOT DETERMINED

TOTAL ITEMS IN DATA FLOW:

1

TOTAL DATA FLOW SIZE:

0*

0*

-----DATA FLOW OCCURRENCES INFORMATION-----

SOURCE--- DESTINATION -----KEY 1 (\DX OR DE)----- KEY 2 (\DX OR DE)----- KEY 3 (\DX OR DE)-----

05

*** NO KEYS ON DATA FLOW ***

05.01

*** NO KEYS ON DATA FLOW ***

DATA FLOW ATTF

9

DATA FLOW NAME

DATA FLOW DESCRIPTION

TRANSMITTED OVERSIGHT DATA

Data transmitted from the implementor to the oversight domain.

ST UPDATED: 07-18-87

DATA FLOW TYPE: NORMAL

CONTAINS DATA STRUCTURES, ELEMENTS	ALTERNATE\ DISCRIMINANT	TYPE	SIZE	MAXIMUM ITERATION	DECIMALS
NOT DETERMINED			****		
TOTAL ITEMS IN DATA FLOW: 1			TOTAL DATA FLOW SIZE: 0*	0*	

DATA FLOW OCCURRENCES INFORMATION

SOURCE	DESTINATION	KEY 1 (DX OR DE)	KEY 2 (DX OR DE)	KEY 3 (DX OR DE)
	04	*** NO KEYS ON DATA FLOW ***		
.02	04	*** NO KEYS ON DATA FLOW ***		

DATA FLOW NAME

DATA FLOW DESCRIPTION

ROUND DOCUMENT

This is a computer produced report which closely resembles the input form. The primary purpose of printing it is to compare to the original input form.

ST UPDATED: 07-12-87

DATA FLOW TYPE: NORMAL

CONTAINS DATA STRUCTURES, ELEMENTS	ALTERNATE\ DISCRIMINANT	TYPE	SIZE	MAXIMUM ITERATION	DECIMALS
REPORT FORM PACKAGE EPA IDENTIFIER FORM SUBPACKAGE - ALL FORM IC - IDENT & CERT FORM FS - FORM SELECTION [FORM RS - REGULATORY STATUS] [FORM WD - WASTE DESCRIPTION] [FORM SUBPACKAGE - TSD] [FORM OI - OFFSITE IDENT.] [FORM RO - REC. FROM OFFSITE] [FORM PS - PROCESS SUMMARY] [FORM SUBPACKAGE - GENERATOR] FORM PG - PRIMARY GENERATION [FORM WM - WASTE MINIMIZATION] [FORM SO - SHIPPED OFFSITE]		C	12		
TOTAL ITEMS IN DATA FLOW: 15			TOTAL DATA FLOW SIZE: 12	12	

CONTINUED ***

DATA FLOW AT

TEB

-----DATA FLOW NAME-----
* CONTINUED ***

RNAROUND DOCUMENT

-----DATA FLOW OCCURRENCES INFORMATION-----				
-----SOURCE-----	DESTINATION	-----KEY 1 (\DX OR DE)-----	-----KEY 2 (\DX OR DE)-----	-----KEY 3 (\DX OR DE)-----
.02	01.03.01	*** NO KEYS ON DATA FLOW ***		
.02	01.03	*** NO KEYS ON DATA FLOW ***		

-----DATA FLOW NAME-----

-----DATA FLOW DESCRIPTION-----

AUDITED DATA

Data accepted from implementor domain data bases.

ST UPDATED: 07-18-87	DATA FLOW TYPE: NORMAL						
	CONTAINS DATA STRUCTURES, ELEMENTS	ALTERNATE DISCRIMINANT	TYPE	SIZE	MAXIMUM ITERATION	DECIMALS	
	NOT DETERMINED			****			
TOTAL ITEMS IN DATA FLOW:	1	TOTAL DATA FLOW SIZE:		0*		0*	

-----DATA FLOW OCCURRENCES INFORMATION-----				
-----SOURCE-----	DESTINATION	-----KEY 1 (\DX OR DE)-----	-----KEY 2 (\DX OR DE)-----	-----KEY 3 (\DX OR DE)-----
.01	D05/1	*** NO KEYS ON DATA FLOW ***		
5/1	05.04.01	*** NO KEYS ON DATA FLOW ***		
5/1	05.04	*** NO KEYS ON DATA FLOW ***		
5/1	05.02	*** NO KEYS ON DATA FLOW ***		

-----DATA FLOW NAME-----

-----DATA FLOW DESCRIPTION-----

EDITED DATA

Data which has been entered but which has not yet been subjected to any key-entry editing changes.

ST UPDATED: 07-12-87

DATA FLOW TYPE: NORMAL

* CONTINUED ***

DATA FLOW AT TES

-----DATA FLOW NAME-----

** CONTINUED **

EDITED DATA

CONTAINS DATA STRUCTURES, ELEMENTS	ALTERNATE\ DISCRIMINANT	TYPE	SIZE	MAXIMUM ITERATION	DECIMALS
REPORT FORM PACKAGE * EPA IDENTIFIER FORM SUBPACKAGE - ALL FORM IC - IDENT & CERT FORM F8 - FORM SELECTION [FORM R8 - REGULATORY STATUS] [FORM WD - WASTE DESCRIPTION] [FORM SUBPACKAGE - TSD] [FORM OI - OFFSITE IDENT.] [FORM RO - REC. FROM OFFSITE] [FORM PS - PROCESS SUMMARY] [FORM SUBPACKAGE - GENERATOR] FORM PG - PRIMARY GENERATION [FORM WM - WASTE MINIMIZATION] [FORM SO - SHIPPED OFFSITE]		C	12	1	

TOTAL ITEMS IN DATA FLOW: 15 TOTAL DATA FLOW SIZE: 12 12

-----DATA FLOW OCCURRENCES INFORMATION-----

SOURCE	DESTINATION	KEY 1 (\DX OR DE)	KEY 2 (\DX OR DE)	KEY 3 (\DX OR DE)
.01	D01/1	*** NO KEYS ON DATA FLOW ***		
1/1	01.04.01	*** NO KEYS ON DATA FLOW ***		
1/1	01.02	*** NO KEYS ON DATA FLOW ***		
1/1	01.04	*** NO KEYS ON DATA FLOW ***		

-----DATA FLOW NAME-----

-----DATA FLOW DESCRIPTION-----

VALIDATED DATA

Data which has passed the key-entry editing process but
which has not yet been subjected to validation.

ST UPDATED: 07-18-87

DATA FLOW TYPE: NORMAL

CONTAINS DATA STRUCTURES, ELEMENTS	ALTERNATE\ DISCRIMINANT	TYPE	SIZE	MAXIMUM ITERATION	DECIMALS
---------------------------------------	----------------------------	------	------	----------------------	----------

* CONTINUED **

DATA FLOW ATTR: IS

-----DATA FLOW NAME-----
* CONTINUED ***

VALIDATED DATA

CONTAINS
DATA STRUCTURES, ELEMENTS

ALTERNATE\
DISCRIMINANT

TYPE

SIZE

MAXIMUM
ITERATION

DECIMALS

NOT DETERMINED

TOTAL ITEMS IN DATA FLOW:

1

TOTAL DATA FLOW SIZE:

0*

0*

-----DATA FLOW OCCURRENCES INFORMATION-----

-SOURCE---	DESTINATION	-----KEY 1 (\DX OR DE)-----	-----KEY 2 (\DX OR DE)-----	-----KEY 3 (\DX OR DE)-----
2/1	02.02	*** NO KEYS ON DATA FLOW ***		
2/1	02.04.01	*** NO KEYS ON DATA FLOW ***		
2/1	02.04	*** NO KEYS ON DATA FLOW ***		
.01	D02/1	*** NO KEYS ON DATA FLOW ***		

-----DATA FLOW NAME-----

-----DATA FLOW DESCRIPTION-----

VALIDATED DATA

Data which has passed both the key-entry edition and validation processes. All input data eventually becomes part of this stream.

LAST UPDATED: 07-18-87

DATA FLOW TYPE: NORMAL

CONTAINS
DATA STRUCTURES, ELEMENTS

ALTERNATE\
DISCRIMINANT

TYPE

SIZE

MAXIMUM
ITERATION

DECIMALS

NOT DETERMINED

TOTAL ITEMS IN DATA FLOW:

1

TOTAL DATA FLOW SIZE:

0*

0*

-----DATA FLOW OCCURRENCES INFORMATION-----

-SOURCE---	DESTINATION	-----KEY 1 (\DX OR DE)-----	-----KEY 2 (\DX OR DE)-----	-----KEY 3 (\DX OR DE)-----
04	03	*** NO KEYS ON DATA FLOW ***		
.04.03	03	*** NO KEYS ON DATA FLOW ***		

* CONTINUED ***

DATA FLOW AT

TES

-----DATA FLOW NAME-----
*** CONTINUED ***

VALIDATED DATA

-----DATA FLOW OCCURRENCES INFORMATION-----				
---SOURCE---	DESTINATION	-----KEY 1 (\DX OR DE)-----	-----KEY 2 (\DX OR DE)-----	-----KEY 3 (\DX OR DE)-----
2	03	*** NO KEYS ON DATA FLOW ***		
2	03.01	*** NO KEYS ON DATA FLOW ***		

-----DATA FLOW NAME-----

-----DATA FLOW DESCRIPTION-----

VALIDATION CORRECTED DATA

The stream of data to which validation corrections have been applied.

LAST UPDATED: 07-18-87	DATA FLOW TYPE: NORMAL
CONTAINS \DATA STRUCTURES, ELEMENTS	ALTERNATE\ DISCRIMINANT
NOT DETERMINED	TYPE
	SIZE
	MAXIMUM ITERATION
	DECIMALS

TOTAL ITEMS IN DATA FLOW: 1	TOTAL DATA FLOW SIZE: 0*
	0*

-----DATA FLOW OCCURRENCES INFORMATION-----				
---SOURCE---	DESTINATION	-----KEY 1 (\DX OR DE)-----	-----KEY 2 (\DX OR DE)-----	-----KEY 3 (\DX OR DE)-----
2.04.02	02.04.03	*** NO KEYS ON DATA FLOW ***		

-----DATA FLOW NAME-----

-----DATA FLOW DESCRIPTION-----

VALIDATION CORRECTIONS

Corrections that have determined to be necessary by the examination process. These corrections will be applied to the data stream.

LAST UPDATED: 07-12-87	DATA FLOW TYPE: NORMAL
CONTAINS \DATA STRUCTURES, ELEMENTS	ALTERNATE\ DISCRIMINANT
EPA IDENTIFIER	TYPE
	SIZE
	MAXIMUM ITERATION
	DECIMALS
	C 12

*** CONTINUED ***

DATA FLOW ATT

TES

-----DATA FLOW NAME-----
*** CONTINUED ***

VALIDATION CORRECTIONS

	CONTAINS DATA STRUCTURES, ELEMENTS	ALTERNATE\ DISCRIMINANT	TYPE	SIZE	MAXIMUM ITERATION	DECIMALS
	CHANGE DESCRIPTION EPA IDENTIFIER		C	12		
TOTAL ITEMS IN DATA FLOW:	3	TOTAL DATA FLOW SIZE:		24	24	

-----DATA FLOW OCCURRENCES INFORMATION-----

SOURCE	DESTINATION	KEY 1 (\DX OR DE)	KEY 2 (\DX OR DE)	KEY 3 (\DX OR DE)
2.03	02.04	*** NO KEYS ON DATA FLOW ***		
2.03.04	02.04	*** NO KEYS ON DATA FLOW ***		
2.03	02.04.01	*** NO KEYS ON DATA FLOW ***		
2.03	02.04.02	*** NO KEYS ON DATA FLOW ***		

-----DATA FLOW NAME-----DATA FLOW DESCRIPTION-----

VALIDATION ERRORS FROM EXTERNAL CHECKS
These are errors detected by validation comparisons between
the data base contents and external implementor data.

AST UPDATED: 07-12-87

DATA FLOW TYPE: EXCEPTION

	CONTAINS DATA STRUCTURES, ELEMENTS	ALTERNATE\ DISCRIMINANT	TYPE	SIZE	MAXIMUM ITERATION	DECIMALS
	EPA IDENTIFIER		C	12		
	ERROR DESCRIPTION EPA IDENTIFIER		C	12		
TOTAL ITEMS IN DATA FLOW:	3	TOTAL DATA FLOW SIZE:		24	24	

-----DATA FLOW OCCURRENCES INFORMATION-----

SOURCE	DESTINATION	KEY 1 (\DX OR DE)	KEY 2 (\DX OR DE)	KEY 3 (\DX OR DE)
03.01	02.03.04	*** NO KEYS ON DATA FLOW ***		

DATA FLOW AT

EB

DATA FLOW NAME

DATA FLOW DESCRIPTION

ALIDATION ERRORS FROM INTERNAL CHECKS

Validation errors detected by internal consistency check activities.

AST UPDATED: 07-12-87

DATA FLOW TYPE: EXCEPTION

CONTAINS DATA STRUCTURES, ELEMENTS	ALTERNATE\ DISCRIMINANT	TYPE	SIZE	MAXIMUM ITERATION	DECIMALS
EPA IDENTIFIER		C	12		
ERROR DESCRIPTION					
EPA IDENTIFIER		C	12		

TOTAL ITEMS IN DATA FLOW: 3

TOTAL DATA FLOW SIZE: 24 24

DATA FLOW OCCURRENCES INFORMATION

SOURCE	DESTINATION	KEY 1 (DX OR DE)	KEY 2 (DX OR DE)	KEY 3 (DX OR DE)
03.02	02.03.04	*** NO KEYS ON DATA FLOW ***		

DATA FLOW NAME

DATA FLOW DESCRIPTION

ALIDATION ERRORS FROM INTRASTATE CHECKS

Validation errors detected by comparisons of facilities' reports within one state.

ST UPDATED: 07-12-87

DATA FLOW TYPE: EXCEPTION

CONTAINS DATA STRUCTURES, ELEMENTS	ALTERNATE\ DISCRIMINANT	TYPE	SIZE	MAXIMUM ITERATION	DECIMALS
EPA IDENTIFIER		C	12		
ERROR DESCRIPTION					
EPA IDENTIFIER		C	12		

TOTAL ITEMS IN DATA FLOW: 3

TOTAL DATA FLOW SIZE: 24 24

DATA FLOW OCCURRENCES INFORMATION

SOURCE	DESTINATION	KEY 1 (DX OR DE)	KEY 2 (DX OR DE)	KEY 3 (DX OR DE)
03.03	02.03.04	*** NO KEYS ON DATA FLOW ***		

DATA FLOW ATY TES

DATA FLOW NAME

DATA FLOW DESCRIPTION

ALIDATION REPORT

A formatted report performing some validation activities
automatically and allowing others to be done manually (for
example reasonableness checks).

AST UPDATED: 07-18-87

DATA FLOW TYPE: NORMAL

CONTAINS
DATA STRUCTURES, ELEMENTS

ALTERNATE\
DISCRIMINANT

TYPE

SIZE

MAXIMUM
ITERATION

DECIMALS

NOT DETERMINED

TOTAL ITEMS IN DATA FLOW:

1

TOTAL DATA FLOW SIZE:

0*

0*

DATA FLOW OCCURRENCES INFORMATION

--SOURCE---	DESTINATION	-----KEY 1 (\DX OR DE)-----	-----KEY 2 (\DX OR DE)-----	-----KEY 3 (\DX OR DE)-----
2.02	02.03	*** NO KEYS ON DATA FLOW ***		
2.02	02.03.03	*** NO KEYS ON DATA FLOW ***		
2.02	02.03.01	*** NO KEYS ON DATA FLOW ***		
2.02	02.03.02	*** NO KEYS ON DATA FLOW ***		

TOTAL NUMBER OF DATA FLOWS ON PROJECT DICTIONARY VERSION 6 : 39

TOTAL NUMBER OF DATA FLOWS ON REPORT: 39

PROCESS DESCRIPTIONS

PROCESS ATTRIBUTES

=====

PROCESS ID	NAME	IMPL-BY	LAST UPDATED
01	ENTER & EDIT DATA	Diagram #2	07/13/87

-----PROCESS NARRATIVE-----

In this process, data from the report form is entered into the system. Editing is performed to assure that the contents of the data base matches the values on the reporting form.

=====

PROCESS ID	NAME	IMPL-BY	LAST UPDATED
01.01	ACCEPT & ENTER DATA		06/26/87

-----PROCESS NARRATIVE-----

This is the data entry (input) process. Data is entered via a terminal and stored in an intermediary data store for editing.

=====

PROCESS ID	NAME	IMPL-BY	LAST UPDATED
01.02	PRODUCE TURNAROUND DOCUMENT		06/26/87

-----PROCESS NARRATIVE-----

This process take the contents of the unedited data store and produces a listing in a format similar to the report form.

=====

PROCESS ID	NAME	IMPL-BY	LAST UPDATED
01.03	EXAMINE DATA FOR KEY-ENTRY ERRORS	Diagram #3	07/13/87

-----PROCESS NARRATIVE-----

The turnaround document is compared to the input form. Any exceptions are noted and changes required are determined.

=====

PROCESS ID	NAME	IMPL-BY	LAST UPDATED
01.03.01	COMPARE T.A.D WITH REPORT FORM		06/26/87

-----PROCESS NARRATIVE-----

The turnaround document will be compared with the original input form submitted. Any exceptions (discrepancies) will be noted and forwarded to the next process which is where required corrections will be determined.

=====

PROCESS ATTRIBUTES

=====

PROCESS ID	NAME	IMPL-BY	LAST UPDATED
01.03.02	DETERMINE REQUIRED CHANGES		06/26/87

-----PROCESS NARRATIVE-----

Discrepancies detected in the previous process will be received by this process. In this process, the changes required to correct the problem will be determined and forwarded to the editing process.

=====

PROCESS ID	NAME	IMPL-BY	LAST UPDATED
01.04	MAKE KEY-ENTRY CORRECTIONS	Diagram #4	07/13/87

-----PROCESS NARRATIVE-----

The editing changes required are applied to the data. All data from the data store passes through this process. Changes are made to those items determined to be in error.

=====

PROCESS ID	NAME	IMPL-BY	LAST UPDATED
01.04.01	DETERMINE IF KEY-ENTRY CORRECTIONS ARE REQUIRED		07/02/87

-----PROCESS NARRATIVE-----

The stream of input data is examined and divided logically into two flows: those records requiring key entry corrections and those not.

=====

PROCESS ID	NAME	IMPL-BY	LAST UPDATED
01.04.02	MAKE KEY-ENTRY CORRECTIONS		07/02/87

-----PROCESS NARRATIVE-----

Corrections determined to be necessary to bring the data into conformance with the report forms are made to the data base.

=====

PROCESS ID	NAME	IMPL-BY	LAST UPDATED
01.04.03	COMBINE KEY-ENTRY EDITED STREAMS		07/02/87

-----PROCESS NARRATIVE-----

The two data streams are combined.

=====

PROCESS ATTRIBUTES

PROCESS ID	NAME	IMPL-BY	LAST UPDATED
02	VALIDATE DATA	Diagram #5	07/13/87

-----PROCESS NARRATIVE-----

Data from the entry and editing process is accepted and subjected to validation procedures. Validation involves checks for responsibility internal consistency and consistency with other data in the implementor domain. Validated data is stored in the implementor data base by a storage procedure.

PROCESS ID	NAME	IMPL-BY	LAST UPDATED
02.01	ACCEPT DATA FOR VALIDATION		06/26/87

-----PROCESS NARRATIVE-----

Data is accepted from the edit and entry process.

PROCESS ID	NAME	IMPL-BY	LAST UPDATED
02.02	PRODUCE VALIDATION REPORT		06/26/87

-----PROCESS NARRATIVE-----

Summary and detailed tables are produced. These tables will provide information which must be verified manually (through telephone calls, comparison with other data sources, etc.).

PROCESS ID	NAME	IMPL-BY	LAST UPDATED
02.03	EXAMINE DATA FOR REPORTING ERRORS	Diagram #6	07/13/87

-----PROCESS NARRATIVE-----

The information provided by validation report generation is analyzed. Exceptions are noted and any changes required are formulated.

PROCESS ID	NAME	IMPL-BY	LAST UPDATED
02.03.01	COMPARE REPORT WITH EXTERNAL DATA		07/02/87

-----PROCESS NARRATIVE-----

The contents of the validation reports are compared with external data sources. Discrepancies are researched and either explained or rectified.

PROCESS ATTRIBUTES

=====

PROCESS ID	NAME	IMPL-BY	LAST UPDATED
02.03.02	EXAMINE REPORT FOR INTERNAL CONSISTENCY		07/12/87

-----PROCESS NARRATIVE-----

The validation report is examined to insure that data base contents are internally consistent. This involves two levels of checks:

- consistency within a given facility (totals and details are consistent)
- consistency between handlers (totals shipped to and received by a given handler are consistent).

This process implements the former check to insure that data reported by a single facility is consistent within itself.

=====

PROCESS ID	NAME	IMPL-BY	LAST UPDATED
02.03.03	EXAMINE REPORT FOR INTRASTATE CONSISTENCY		07/12/87

-----PROCESS NARRATIVE-----

The validation report is examined to insure that data base contents are internally consistent. This involves two levels of checks:

- consistency within a given facility (totals and details are consistent).
- consistency between handlers (totals shipped to and received by a handler are consistent)

This process implements the second of these checks to insure that the totals and detail between all state reports are consistent.

=====

PROCESS ID	NAME	IMPL-BY	LAST UPDATED
02.03.04	DETERMINE VALIDATION CORRECTIONS		07/12/87

-----PROCESS NARRATIVE-----

Based on results of the internal and external consistency checks, corrections needing to be made to the data are determined. These corrections are passed to another process in which they are applied to the data stream.

=====

PROCESS ID	NAME	IMPL-BY	LAST UPDATED
02.04	CORRECT REPORTING ERRORS	Diagram #7	07/13/87

-----PROCESS NARRATIVE-----

Any changes determined to be necessary by the validation process are made to the data. All unvalidated data passes through this process. Changes

*** CONTINUED ***

FRL ATTRIBUTES

```
=====
PROCESS ID      -----NAME----- --IMPL-BY--  LAST UPDATED
02.04          CORRECT REPORTING ERRORS          Diagram #7  07/13/87
*** CONTINUED ***
```

```
-----PROCESS NARRATIVE-----
are made to those items determined to be in error.
```

```
=====
PROCESS ID      -----NAME----- --IMPL-BY--  LAST UPDATED
02.04.01       DETERMINE IF REPORTING CHANGES ARE REQUIRED          07/02/87
```

```
-----PROCESS NARRATIVE-----
The stream of edited data is examined and separated (logically) into two
flows: those records requiring repair and those not.
```

```
=====
PROCESS ID      -----NAME----- --IMPL-BY--  LAST UPDATED
02.04.02       MAKE REPORTING ERROR CORRECTIONS          07/02/87
```

```
-----PROCESS NARRATIVE-----
Reporting errors are repaired through changes to erroneous data.
```

```
=====
PROCESS ID      -----NAME----- --IMPL-BY--  LAST UPDATED
02.04.03       COMBINE VALIDATED DATA STREAMS          07/02/87
```

```
-----PROCESS NARRATIVE-----
The two data streams are combined.
```

```
=====
PROCESS ID      -----NAME----- --IMPL-BY--  LAST UPDATED
02.05          COMPARE REPORT WITH EXTERNAL DATA          07/02/87
```

```
-----PROCESS NARRATIVE-----
The contents of the validation reports are compared with external data
sources. Discrepancies are researched and wither explained or rectified.
```

F JS ATTRIBUTES

=====

PROCESS ID	NAME	IMPL-BY	LAST UPDATED
03	STORE RETRIEVE & TRANSMIT DATA	Diagram #8	07/13/87

-----PROCESS NARRATIVE-----

This process performs three major functions. It created (and maintains) the implementor domain data base, perform retrievals and report generation and transmits the implementor data to the oversight domain. In addition, this process provides any required reporting data to the implementor domain of RCRIS.

=====

PROCESS ID	NAME	IMPL-BY	LAST UPDATED
03.01	STORE IMPLEMENTOR DATA		06/26/87

-----PROCESS NARRATIVE-----

This process writes the validated data to the implementor data base.

=====

PROCESS ID	NAME	IMPL-BY	LAST UPDATED
03.02	TRANSMIT OVERSIGHT DATA		06/26/87

-----PROCESS NARRATIVE-----

This process transmits data to the oversight domain of the reporting system.

=====

PROCESS ID	NAME	IMPL-BY	LAST UPDATED
03.03	PRODUCE WASTE GEN. & MANAGEMENT REPORTS		06/26/87

-----PROCESS NARRATIVE-----

This process fulfills all standard and ad hoc reporting requirements. This process will allow interactive query as well as batch production of reports.

=====

PROCESS ID	NAME	IMPL-BY	LAST UPDATED
03.04	TRANSMIT DATA TO RCRIS		06/26/87

-----PROCESS NARRATIVE-----

This process will perform any reformatting, translation or summarization required and transmit implementor data to the RCRIS implementor domain.

=====

PROCESS ATTRIBUTES

=====

PROCESS ID	NAME	IMPL-BY	LAST UPDATED
03.05	TRANSMIT DATA TO RCRIS		07/02/87

-----PROCESS NARRATIVE-----

Implementor-Domain data which has passed the validation process is transformed as necessary and transferred to RCRIS.

=====

PROCESS ID	NAME	IMPL-BY	LAST UPDATED
04	RECEIVE OVERSIGHT DATA		06/26/87

-----PROCESS NARRATIVE-----

This process will accept data from the implementor domain and provide it to the auditing procedure in the oversight domain.

=====

PROCESS ID	NAME	IMPL-BY	LAST UPDATED
05	AUDIT OVERSIGHT DATA	Diagram #9	07/13/87

-----PROCESS NARRATIVE-----

Data received from the implementor domain is subjected to auditing procedures. Auditing involves checks for resonability and consistency with other data in the data store. Data that passed the auditing process is stored in the national data base by a following storage procedure.

=====

PROCESS ID	NAME	IMPL-BY	LAST UPDATED
05.01	ACCEPT DATA FOR AUDITING		06/26/87

-----PROCESS NARRATIVE-----

Data is accepted from the data transmission/receipt process.

=====

PROCESS ID	NAME	IMPL-BY	LAST UPDATED
05.02	PRODUCE AUDIT EXCEPTION REPORT		06/26/87

-----PROCESS NARRATIVE-----

Summary, detail and comparison reports are produced. These listing will provide information on exceptions which may be detected by machine and information which must be verified manually. These checks go beyond checks performed in the validation process as interstate comparisons may be performed and evaluated.

=====

PROL ATTRIBUTES

=====

PROCESS ID	-----NAME-----	--IMPL-BY--	LAST UPDATED
05.03	PERFORM CONSISTENCY CHECK & AUDITS	Diagram #10	07/13/87

-----PROCESS NARRATIVE-----

The reports are examined. Any exceptions will be identified and corrections to problems will be defined.

=====

PROCESS ID	-----NAME-----	--IMPL-BY--	LAST UPDATED
05.03.01	COMPARE AUDIT WITH EXTERNAL DATA		07/02/87

-----PROCESS NARRATIVE-----

The contents of the audit reports are compared with external data sources. One class of exception is generated by this check.

=====

PROCESS ID	-----NAME-----	--IMPL-BY--	LAST UPDATED
05.03.02	EXAMINE REPORT FOR INTERNAL AUDIT CONSISTENCY		07/12/87

-----PROCESS NARRATIVE-----

The audit report is examined to insure that data base contents are internally consistent. This involves two levels of checks:

- consistency within a given facility (totals and details are consistent)
- consistency between states (totals shipped to and received by a state)

This process implements the first of these two checks. This is similar to the process performed at the implementor level.

=====

PROCESS ID	-----NAME-----	--IMPL-BY--	LAST UPDATED
05.03.03	EXAMINE REPORT FOR INTERSTATE CONSISTENCY		07/12/87

-----PROCESS NARRATIVE-----

The audit report is examined to insure that data base contents are internally consistent. This involves two levels of checks:

- consistency within a given handler report (totals and details are consistent with each other).
- consistency within and between states (totals shipped to or generated by a handler agrees with the amounts reported handled).

This process implements the second of these two activities.

=====

PROCESS ATTRIBUTES

=====

PROCESS ID	NAME	IMPL-BY	LAST UPDATED
05.03.04	DETERMINE AUDITING CORRECTIONS		07/12/87

-----PROCESS NARRATIVE-----

Based on results of the internal and external consistency checks, corrections needing to be made to the data are determined. They are then passed to another process in which the corrections are applied to the data stream.

=====

PROCESS ID	NAME	IMPL-BY	LAST UPDATED
05.04	APPLY AUDIT CHANGE	Diagram #11	07/13/87

-----PROCESS NARRATIVE-----

Changes determined necessary through the auditing process are supplied to the data base. All data passes through this process. Changes are made as per corrections specified by the audit process.

=====

PROCESS ID	NAME	IMPL-BY	LAST UPDATED
05.04.01	DETERMINE IF AUDIT CHANGES ARE REQUIRED		07/02/87

-----PROCESS NARRATIVE-----

The data stream consisting of all unaudited (yet validated) data is split (logically) into two subsets, that requiring changes and that not requiring changes. This determination is made on the presence or absence of an "audit correction" for a given element.

=====

PROCESS ID	NAME	IMPL-BY	LAST UPDATED
05.04.02	MAKE AUDIT ERROR CORRECTIONS		07/02/87

-----PROCESS NARRATIVE-----

Audit error corrections are applied to those data elements requiring such changes.

=====

PROCESS ID	NAME	IMPL-BY	LAST UPDATED
05.04.03	COMBINE AUDITED DATA STREAMS		07/02/87

-----PROCESS NARRATIVE-----

The two data streams are combined. This process demonstrates that all

*** CONTINUED ***

FRG. J ATTRIBUTES

=====

PROCESS ID	NAME	IMPL-BY	LAST UPDATED
05.04.03	COMBINE AUDITED DATA STREAMS		07/02/87

*** CONTINUED ***

-----PROCESS NARRATIVE-----

data, both that which required audit changes and that which does not is passed to the store and receive process.

=====

PROCESS ID	NAME	IMPL-BY	LAST UPDATED
06	STORE & RETRIEVE OVERSIGHT DATA	Diagram #12	07/13/87

-----PROCESS NARRATIVE-----

In this process, the final oversight domain data is stored and managed. Oversight reports are produced by this process. Additionally, data is transferred to the oversight RCRIS by this process.

=====

PROCESS ID	NAME	IMPL-BY	LAST UPDATED
06.01	STORE OVERSIGHT DATA		07/02/87

-----PROCESS NARRATIVE-----

Oversight data received from the auditing process is transformed as necessary and stored in the oversight data base.

=====

PROCESS ID	NAME	IMPL-BY	LAST UPDATED
06.02	PRODUCE REPORTS		07/02/87

-----PROCESS NARRATIVE-----

Ad hoc and standard oversight reports are produced at this level. For a description of these reports, see the description of EE 3.

=====

PROCESS ID	NAME	IMPL-BY	LAST UPDATED
06.03	TRANSFER OVERSIGHT DATA TO RCRIS		07/02/87

-----PROCESS NARRATIVE-----

Data which has been subjected to the auditing process and has been accepted as oversight data is transferred to RCRIS. Any transformations required for compatibility with the RCRIS data system are made.

=====

TOTAL NUMBER OF PROCESSES ON PROJECT DICTIONARY VERSION 6 : 46

TOTAL NUMBER OF PROCESSES ON REPORT: 46

DIAGRAM SUMMARIES

From ANALYST
ID: STEM VERSION: 6

Annual/Bie Report System

ANALYSIS
07/18/8 9:47:00

DATA FLOW DIAGRAM INFORMATION

```
=====
DFD NAME    LEVEL    LOGICAL/    CURRENT    DESCRIPTION
                PHYSICAL  / NEW
01           2        LOGICAL    NEW
```

LAST UPDATED: 06-26-87

```
DATA FLOWS:  --SOURCE---  DESTINATION  -----NAME-----
              EE1         01.03    ANNUAL/BIENNIAL REPORT FORM
              EE1         01.01    ANNUAL/BIENNIAL REPORT FORM
              01.01       D01/1    UNEDITED DATA
              D01/1       01.02    UNEDITED DATA
              D01/1       01.04    UNEDITED DATA

              01.04       02       EDITED DATA
              01.03       01.04    KEY-ENTRY CORRECTIONS
              01.02       01.03    TURNAROUND DOCUMENT
```

TOTAL NUMBER OF DATA FLOWS ON DIAGRAM: 8

```
=====
DATA STORES:  ----ID-----  -----NAME-----
              D01/1         UNEDITED DATA STORAGE
```

TOTAL NUMBER OF DATA STORES ON DIAGRAM: 1

```
=====
PROCESSES:    ----ID-----  -----NAME-----  --IMPLBY--
              01.01         ACCEPT & ENTER DATA
              01.02         PRODUCE TURNAROUND DOCUMENT
              01.03         EXAMINE DATA FOR KEY-ENTRY ERRORS  Diagram #3
              01.04         MAKE KEY-ENTRY CORRECTIONS        Diagram #4
              02            VALIDATE DATA                    Diagram #5
              02.01         ACCEPT DATA FOR VALIDATION
              02.03         EXAMINE DATA FOR REPORTING ERRORS  Diagram #6
              02.04         CORRECT REPORTING ERRORS          Diagram #7
              03            STORE RETRIEVE & TRANSMIT DATA    Diagram #8
              04            RECEIVE OVERSIGHT DATA
              06            STORE & RETRIEVE OVERSIGHT DATA    Diagram #12
```

TOTAL NUMBER OF PROCESSES ON DIAGRAM: 11

```
=====
EXTERNAL ENTITIES:  ----ID-----  -----NAME-----
                  EE 1         RESPONDENT (HANDLER)
```

TOTAL NUMBER OF EXTERNAL ENTITIES ON DIAGRAM: 1

DATA FLOW DIAGRAM INFORMATION

=====

DFD NAME	LEVEL	LOGICAL/ PHYSICAL	CURRENT / NEW	DESCRIPTION
01.02	3	LOGICAL	NEW	

LAST UPDATED: 06-25-87

DATA FLOWS: --SOURCE--- DESTINATION -----NAME-----

*** NO DATA FLOWS FOUND ON THE DIAGRAM

DATA STORES: ----ID----- NAME-----

*** NO DATA STORES FOUND ON THE DIAGRAM

PROCESSES: ----ID----- NAME----- --IMPLBY---

*** NO PROCESSES FOUND ON THE DIAGRAM

EXTERNAL ENTITIES: ----ID----- NAME-----

*** NO EXTERNAL ENTITIES FOUND ON THE DIAGRAM

DATA FLOW DIAGRAM INFORMATION

```
=====
DFD NAME      LEVEL      LOGICAL/    CURRENT    ----- DESCRIPTION -----
                        PHYSICAL   / NEW
01.03          3          LOGICAL     NEW
```

LAST UPDATED: 06-24-87

```
DATA FLOWS:  --SOURCE--  DESTINATION  -----NAME-----
              EE1         01.03.01    ANNUAL/BIENNIAL REPORT FORM
              01.03.01    01.03.02    KEY-ENTRY EXCEPTION REPORT
              01.03.02    01.04      KEY-ENTRY CORRECTIONS
              01.02       01.03.01    TURNAROUND DOCUMENT
```

TOTAL NUMBER OF DATA FLOWS ON DIAGRAM: 4

```
=====
DATA STORES:  ----ID-----  -----NAME-----
```

** NO DATA STORES FOUND ON THE DIAGRAM

```
=====
PROCESSES:    ----ID-----  -----NAME-----  --IMPLBY--
              01.02         PRODUCE TURNAROUND DOCUMENT
              01.03.01      COMPARE T.A.D WITH REPORT FORM
              01.03.02      DETERMINE REQUIRED CHANGES
              01.04         MAKE KEY-ENTRY CORRECTIONS          Diagram #4
```

TOTAL NUMBER OF PROCESSES ON DIAGRAM: 4

```
=====
EXTERNAL ENTITIES:  ----ID-----  -----NAME-----
                   EE 1         RESPONDENT (HANDLER)
```

TOTAL NUMBER OF EXTERNAL ENTITIES ON DIAGRAM: 1

DATA FLOW DIAGRAM INFORMATION

DFD NAME	LEVEL	LOGICAL/ PHYSICAL	CURRENT / NEW	DESCRIPTION
01.04	3	LOGICAL	NEW	

LAST UPDATED: 06-24-87

DATA FLOWS:	--SOURCE---	DESTINATION	-----NAME-----
	D01/1	01.04.01	UNEDITED DATA
	01.04.03	02	EDITED DATA
	01.03	01.04.02	KEY-ENTRY CORRECTIONS
	01.03	01.04.01	KEY-ENTRY CORRECTIONS
	01.04.01	01.04.02	DATA REQUIRING KEY-ENTRY CORRECTIONS
	01.04.01	01.04.03	DATA NOT REQUIRING KEY-ENTRY CORRECTIONS
	01.04.02	01.04.03	KEY-ENTRY CORRECTED DATA

TOTAL NUMBER OF DATA FLOWS ON DIAGRAM: 7

DATA STORES:	---ID---	-----NAME-----
	D01/1	UNEDITED DATA STORAGE

TOTAL NUMBER OF DATA STORES ON DIAGRAM: 1

PROCESSES:	---ID---	-----NAME-----	--IMPLBY--
	01.03	EXAMINE DATA FOR KEY-ENTRY ERRORS	
	01.04.01	DETERMINE IF KEY-ENTRY CORRECTIONS ARE REQUIRED	Diagram #3
	01.04.02	MAKE KEY-ENTRY CORRECTIONS	
	01.04.03	COMBINE KEY-ENTRY EDITED STREAMS	
	02	VALIDATE DATA	Diagram #5

TOTAL NUMBER OF PROCESSES ON DIAGRAM: 5

EXTERNAL ENTITIES:	---ID---	-----NAME-----
--------------------	----------	----------------

*** NO EXTERNAL ENTITIES FOUND ON THE DIAGRAM

DATA FLOW DIAGRAM INFORMATION

=====

DFD NAME	LEVEL	LOGICAL/ PHYSICAL	CURRENT / NEW	DESCRIPTION
02	2	LOGICAL	NEW	

LAST UPDATED: 07-12-87

DATA FLOWS:	--SOURCE---	DESTINATION	-----NAME-----
	02.04	03	VALIDATED DATA
	01	02.01	EDITED DATA
	D02/1	02.02	UNVALIDATED DATA
	D02/1	02.04	UNVALIDATED DATA
	02.01	D02/1	UNVALIDATED DATA
	02.03	02.04	VALIDATION CORRECTIONS
	02.02	02.03	VALIDATION REPORT
	EE6	02.03	EXTERNAL IMPLEMENTOR DATA

TOTAL NUMBER OF DATA FLOWS ON DIAGRAM: 8

=====

DATA STORES:	----ID----	-----NAME-----
	D02/1	UNVALIDATED DATA STORAGE

TOTAL NUMBER OF DATA STORES ON DIAGRAM: 1

=====

PROCESSES:	----ID----	-----NAME-----	--IMPLBY--
	01	ENTER & EDIT DATA	Diagram #2
	02.01	ACCEPT DATA FOR VALIDATION	
	02.02	PRODUCE VALIDATION REPORT	
	02.03	EXAMINE DATA FOR REPORTING ERRORS	Diagram #6
	02.04	CORRECT REPORTING ERRORS	Diagram #7
	03	STORE RETRIEVE & TRANSMIT DATA	Diagram #8
	05	AUDIT OVERSIGHT DATA	Diagram #9

TOTAL NUMBER OF PROCESSES ON DIAGRAM: 7

=====

EXTERNAL ENTITIES:	----ID----	-----NAME-----
	EE 6	EXTERNAL IMPLEMENTOR DATA SOURCES

TOTAL NUMBER OF EXTERNAL ENTITIES ON DIAGRAM: 1

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Annual/Bi al Report System

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DATA FLOW DIAGRAM INFORMATION

DFD NAME	LEVEL	LOGICAL/ PHYSICAL	CURRENT / NEW	DESCRIPTION
02.01	3	LOGICAL	NEW	

LAST UPDATED: 06-24-87

DATA FLOWS: --SOURCE--- DESTINATION -----NAME-----

*** NO DATA FLOWS FOUND ON THE DIAGRAM

DATA STORES: ----ID-----NAME-----

*** NO DATA STORES FOUND ON THE DIAGRAM

PROCESSES: ----ID-----NAME----- --IMPLBY---

*** NO PROCESSES FOUND ON THE DIAGRAM

EXTERNAL ENTITIES: ----ID-----NAME-----

*** NO EXTERNAL ENTITIES FOUND ON THE DIAGRAM

DATA FLOW DIAGRAM INFORMATION

```
=====
DFD NAME      LEVEL      LOGICAL/  CURRENT  DESCRIPTION
                        PHYSICAL / NEW
02.03          3          LOGICAL   NEW
```

LAST UPDATED: 07-12-87

```
DATA FLOWS:  --SOURCE---  DESTINATION  -----NAME-----
              02.03.04    02.04             VALIDATION CORRECTIONS
              02.02       02.03.02          VALIDATION REPORT
              02.02       02.03.03          VALIDATION REPORT
              02.02       02.03.01          VALIDATION REPORT
              02.03.02    02.03.04          VALIDATION ERRORS FROM INTERNAL CHECKS
              02.03.01    02.03.04          VALIDATION ERRORS FROM EXTERNAL CHECKS
              EE6         02.03.01          EXTERNAL IMPLEMENTOR DATA
              02.03.03    02.03.04          VALIDATION ERRORS FROM INTRASTATE CHECKS
```

TOTAL NUMBER OF DATA FLOWS ON DIAGRAM: 8

DATA STORES: ----ID----- -----NAME-----

*** NO DATA STORES FOUND ON THE DIAGRAM

```
PROCESSES:  ----ID-----  -----NAME-----  --IMPLBY--
            02.02          PRODUCE VALIDATION REPORT
            02.03.01      COMPARE REPORT WITH EXTERNAL DATA
            02.03.02      EXAMINE REPORT FOR INTERNAL CONSISTENCY
            02.03.03      EXAMINE REPORT FOR INTRASTATE CONSISTENCY
            02.03.04      DETERMINE VALIDATION CORRECTIONS
            02.04          CORRECT REPORTING ERRORS
```

Diagram #7

TOTAL NUMBER OF PROCESSES ON DIAGRAM: 6

EXTERNAL ENTITIES: ----ID----- -----NAME-----

EE 6 EXTERNAL IMPLEMENTOR DATA SOURCES

TOTAL NUMBER OF EXTERNAL ENTITIES ON DIAGRAM: 1

DATA FLOW DIAGRAM INFORMATION

DFD NAME	LEVEL	LOGICAL/ PHYSICAL	CURRENT / NEW	DESCRIPTION
02.04	3	LOGICAL	NEW	

LAST UPDATED: 06-24-87

DATA FLOWS:	--SOURCE--	DESTINATION	NAME
	02.04.03	03	VALIDATED DATA
	D02/1	02.04.01	UNVALIDATED DATA
	02.03	02.04.02	VALIDATION CORRECTIONS
	02.03	02.04.01	VALIDATION CORRECTIONS
	02.04.01	02.04.03	DATA NOT REQUIRING VALIDATION CORRECTION
	02.04.01	02.04.02	DATA REQUIRING VALIDATION CORRECTIONS
	02.04.02	02.04.03	VALIDATION CORRECTED DATA

TOTAL NUMBER OF DATA FLOWS ON DIAGRAM: 7

DATA STORES:	---ID---	NAME
	D02/1	UNVALIDATED DATA STORAGE

TOTAL NUMBER OF DATA STORES ON DIAGRAM: 1

PROCESSES:	---ID---	NAME	IMPLBY
	02.03	EXAMINE DATA FOR REPORTING ERRORS	
	02.04.01	DETERMINE IF REPORTING CHANGES ARE REQUIRED	Diagram #6
	02.04.02	MAKE REPORTING ERROR CORRECTIONS	
	02.04.03	COMBINE VALIDATED DATA STREAMS	
	03	STORE RETRIEVE & TRANSMIT DATA	Diagram #8
	04	RECEIVE OVERSIGHT DATA	
	05.03	PERFORM CONSISTENCY CHECK & AUDITS	Diagram #11

TOTAL NUMBER OF PROCESSES ON DIAGRAM: 7

EXTERNAL ENTITIES:	---ID---	NAME
--------------------	----------	------

*** NO EXTERNAL ENTITIES FOUND ON THE DIAGRAM

DATA FLOW DIAGRAM INFORMATION

DFD NAME	LEVEL	LOGICAL/ PHYSICAL	CURRENT / NEW	DESCRIPTION
03	2	LOGICAL	NEW	

LAST UPDATED: 06-26-87

DATA FLOWS:	--SOURCE---	DESTINATION	NAME
02	03.01	03.01	VALIDATED DATA
03.01	D1	D1	IMPLEMENTOR DATA
D1	03.04	03.04	IMPLEMENTOR DATA
D1	03.03	03.03	IMPLEMENTOR DATA
D1	03.02	03.02	IMPLEMENTOR DATA
03.03	EE2	EE2	IMPLEMENTOR REPORTS
03.02	04	04	TRANSMITTED OVERSIGHT DATA
03.04	EE4	EE4	IMPLEMENTOR DOMAIN RCRIS DATA

TOTAL NUMBER OF DATA FLOWS ON DIAGRAM: 8

DATA STORES:	---ID---	NAME
D1	D1	IMPLEMENTOR DATA BASE

TOTAL NUMBER OF DATA STORES ON DIAGRAM: 1

PROCESSES:	---ID---	NAME	IMPLBY
02	02	VALIDATE DATA	
03.01	03.01	STORE IMPLEMENTOR DATA	
03.02	03.02	TRANSMIT OVERSIGHT DATA	
03.03	03.03	PRODUCE WASTE GEN. & MANAGEMENT REPORTS	
03.04	03.04	TRANSMIT DATA TO RCRIS	
04	04	RECEIVE OVERSIGHT DATA	

Diagram #5

TOTAL NUMBER OF PROCESSES ON DIAGRAM: 6

EXTERNAL ENTITIES:	---ID---	NAME
EE 2	EE 2	IMPLEMENTOR USE OF REPORTS
EE 4	EE 4	RCRIS IMPLEMENTOR DOMAIN

TOTAL NUMBER OF EXTERNAL ENTITIES ON DIAGRAM: 2

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ID SYSTEM VERSION: 6

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DATA FLOW DIAGRAM INFORMATION

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=====
DFD NAME      LEVEL    LOGICAL/    CURRENT    DESCRIPTION
                  PHYSICAL  / NEW
04             2        LOGICAL      NEW
```

LAST UPDATED: 06-19-87

DATA FLOWS: --SOURCE-- DESTINATION -----NAME-----

*** NO DATA FLOWS FOUND ON THE DIAGRAM

DATA STORES: ----ID---- -----NAME-----

*** NO DATA STORES FOUND ON THE DIAGRAM

```
=====
PROCESSES: ----ID---- -----NAME----- --IMPLBY--
              05      AUDIT OVERSIGHT DATA      Diagram #9
```

TOTAL NUMBER OF PROCESSES ON DIAGRAM: 1

EXTERNAL ENTITIES: ----ID---- -----NAME-----

*** NO EXTERNAL ENTITIES FOUND ON THE DIAGRAM

DATA FLOW DIAGRAM INFORMATION

=====

DFD NAME	LEVEL	LOGICAL/ PHYSICAL	CURRENT / NEW	DESCRIPTION
05	2	LOGICAL	NEW	

LAST UPDATED: 07-11-87

DATA FLOWS:	--SOURCE---	DESTINATION	NAME
	05.01	D05/1	UNAUDITED DATA
	D05/1	05.04	UNAUDITED DATA
	D05/1	05.02	UNAUDITED DATA
	05.04	06	AUDITED DATA
	04	05.01	RECEIVED DATA
	05.02	05.03	AUDIT EXCEPTION REPORT
	EE7	05.03	EXTERNAL OVERSIGHT DATA
	05.03	05.04	AUDIT CORRECTIONS

TOTAL NUMBER OF DATA FLOWS ON DIAGRAM: 8

=====

DATA STORES:	---ID---	NAME
	D05/1	UNAUDITED DATA STORAGE

TOTAL NUMBER OF DATA STORES ON DIAGRAM: 1

=====

PROCESSES:	---ID---	NAME	--IMPLBY--
	01	ENTER & EDIT DATA	
	02	VALIDATE DATA	Diagram #2
	03	STORE RETRIEVE & TRANSMIT DATA	Diagram #5
	04	RECEIVE OVERSIGHT DATA	Diagram #8
	05.01	ACCEPT DATA FOR AUDITING	
	05.02	PRODUCE AUDIT EXCEPTION REPORT	
	05.03	PERFORM CONSISTENCY CHECK & AUDITS	Diagram #10
	05.04	APPLY AUDIT CHANGE	Diagram #11
	06	STORE & RETRIEVE OVERSIGHT DATA	Diagram #12

TOTAL NUMBER OF PROCESSES ON DIAGRAM: 9

=====

EXTERNAL ENTITIES:	---ID---	NAME
	EE 7	EXTERNAL OVERSIGHT DATA SOURCES

TOTAL NUMBER OF EXTERNAL ENTITIES ON DIAGRAM: 1

DATA FLOW JRAM INFORMATION

=====

DFD NAME	LEVEL	LOGICAL/ PHYSICAL	CURRENT / NEW	DESCRIPTION
05.03	3	LOGICAL	NEW	

=====

LAST UPDATED: 07-11-87

DATA FLOWS:	--SOURCE---	DESTINATION	NAME
	05.02	05.03.02	AUDIT EXCEPTION REPORT
	05.02	05.03.01	AUDIT EXCEPTION REPORT
	05.02	05.03.03	AUDIT EXCEPTION REPORT
	EE7	05.03.01	EXTERNAL OVERSIGHT DATA
	05.03.01	05.03.04	AUDIT ERRORS FROM EXTERNAL CHECKS
	05.03.02	05.03.04	AUDIT ERRORS FROM INTERNAL CHECKS
	05.03.04	05.04	AUDIT CORRECTIONS
	05.03.03	05.03.04	AUDIT ERRORS FROM INTERSTATE CHECKS

TOTAL NUMBER OF DATA FLOWS ON DIAGRAM: 8

DATA STORES: ----ID-----NAME-----

*** NO DATA STORES FOUND ON THE DIAGRAM

PROCESSES:	----ID-----	NAME	--IMPLBY--
	05.02	PRODUCE AUDIT EXCEPTION REPORT	
	05.03.01	COMPARE AUDIT WITH EXTERNAL DATA	
	05.03.02	EXAMINE REPORT FOR INTERNAL AUDIT CONSISTENCY	
	05.03.03	EXAMINE REPORT FOR INTERSTATE CONSISTENCY	
	05.03.04	DETERMINE AUDITING CORRECTIONS	
	05.04	APPLY AUDIT CHANGE	

Diagram #11

TOTAL NUMBER OF PROCESSES ON DIAGRAM: 6

EXTERNAL ENTITIES: ----ID-----NAME-----

EE 7	EXTERNAL OVERSIGHT DATA SOURCES
------	---------------------------------

TOTAL NUMBER OF EXTERNAL ENTITIES ON DIAGRAM: 1

DATA FLOW DIAGRAM INFORMATION

=====

DFD NAME	LEVEL	LOGICAL/ PHYSICAL	CURRENT / NEW	DESCRIPTION
05.04	3	LOGICAL	NEW	

LAST UPDATED: 06-25-87

DATA FLOWS:	--SOURCE--	DESTINATION	-----NAME-----
	D05/1	05.04.01	UNAUDITED DATA
	05.04.03	06	AUDITED DATA
	05.03	05.04.02	AUDIT CORRECTIONS
	05.03	05.04.01	AUDIT CORRECTIONS
	05.04.01	05.04.02	DATA REQUIRING AUDIT CORRECTIONS
	05.04.01	05.04.03	DATA NOT REQUIRING AUDIT CORRECTIONS
	05.04.02	05.04.03	AUDIT CORRECTED DATA

TOTAL NUMBER OF DATA FLOWS ON DIAGRAM: 7

=====

DATA STORES:	----ID----	-----NAME-----
	D05/1	UNAUDITED DATA STORAGE

TOTAL NUMBER OF DATA STORES ON DIAGRAM: 1

=====

PROCESSES:	----ID----	-----NAME-----	--IMPLBY--
	05.03	PERFORM CONSISTENCY CHECK & AUDITS	Diagram #10
	05.04.01	DETERMINE IF AUDIT CHANGES ARE REQUIRED	
	05.04.02	MAKE AUDIT ERROR CORRECTIONS	
	05.04.03	COMBINE AUDITED DATA STREAMS	
	06	STORE & RETRIEVE OVERSIGHT DATA	Diagram #12

TOTAL NUMBER OF PROCESSES ON DIAGRAM: 5

=====

EXTERNAL ENTITIES:	----ID----	-----NAME-----
--------------------	------------	----------------

*** NO EXTERNAL ENTITIES FOUND ON THE DIAGRAM

=====

DATA FLOW DIAGRAM INFORMATION

=====

DFD NAME	LEVEL	LOGICAL/ PHYSICAL	CURRENT / NEW	DESCRIPTION
06	2	LOGICAL	NEW	

=====

LAST UPDATED: 07-12-87

DATA FLOWS:	--SOURCE---	DESTINATION	NAME
	05	06.01	AUDITED DATA
	06.01	D2	OVERSIGHT DATA
	D2	06.03	OVERSIGHT DATA
	D2	06.02	OVERSIGHT DATA
	06.02	EE3	OVERSIGHT REPORTS
	06.03	EE5	OVERSIGHT DOMAIN RCRIS DATA

TOTAL NUMBER OF DATA FLOWS ON DIAGRAM: 6

=====

DATA STORES:	---ID---	NAME
	D2	OVERSIGHT DATA BASE

TOTAL NUMBER OF DATA STORES ON DIAGRAM: 1

=====

PROCESSES:	---ID---	NAME	--IMPLBY--
	05	AUDIT OVERSIGHT DATA	
	06.01	STORE OVERSIGHT DATA	Diagram #9
	06.02	PRODUCE REPORTS	
	06.03	TRANSFER OVERSIGHT DATA TO RCRIS	

TOTAL NUMBER OF PROCESSES ON DIAGRAM: 4

=====

EXTERNAL ENTITIES:	---ID---	NAME
	EE 3	OVERSIGHT USES OF DATA
	EE 5	RCRIS OVERSIGHT DOMAIN

TOTAL NUMBER OF EXTERNAL ENTITIES ON DIAGRAM: 2

=====

DATA FLOW DIAGRAM INFORMATION

```
=====
DFD NAME      LEVEL    LOGICAL/    CURRENT    DESCRIPTION
PHYSICAL      / NEW
BRSYSTEM      1        PHYSICAL    NEW        ANNUAL/BIENNIAL INFORMATION SYSTEM
                                           PRIMARY DATA FLOW DIAGRAM
LAST UPDATED: 07-12-87
```

```
DATA FLOWS:  --SOURCE---  DESTINATION  -----NAME-----
              02          03          VALIDATED DATA
              03          01          IMPLEMENTOR DATA
              EE1         01          ANNUAL/BIENNIAL REPORT FORM
              01          02          EDITED DATA
              05          06          AUDITED DATA

              06          02          OVERSIGHT DATA
              03          EE2         IMPLEMENTOR REPORTS
              04          05          RECEIVED DATA
              06          EE3         OVERSIGHT REPORTS
              03          04          TRANSMITTED OVERSIGHT DATA

              03          EE4         IMPLEMENTOR DOMAIN RCRIS DATA
              06          EE5         OVERSIGHT DOMAIN RCRIS DATA
              EE6         02          EXTERNAL IMPLEMENTOR DATA
              EE7         05          EXTERNAL OVERSIGHT DATA
```

TOTAL NUMBER OF DATA FLOWS ON DIAGRAM: 14

```
DATA STORES:  ----ID-----  -----NAME-----
              D1          IMPLEMENTOR DATA BASE
              D2          OVERSIGHT DATA BASE
```

TOTAL NUMBER OF DATA STORES ON DIAGRAM: 2

```
PROCESSES:  ----ID-----  -----NAME-----  --IMPLBY--
              01          ENTER & EDIT DATA          Diagram #2
              02          VALIDATE DATA          Diagram #5
              03          STORE RETRIEVE & TRANSMIT DATA  Diagram #8
              04          RECEIVE OVERSIGHT DATA
              05          AUDIT OVERSIGHT DATA          Diagram #9
              05.03        PERFORM CONSISTENCY CHECK & AUDITS  Diagram #10
              05.04        APPLY AUDIT CHANGE          Diagram #11
              06          STORE & RETRIEVE OVERSIGHT DATA  Diagram #12
```

TOTAL NUMBER OF PROCESSES ON DIAGRAM: 8

```
EXTERNAL ENTITIES:  ----ID-----  -----NAME-----
                    EE 1          RESPONDENT (HANDLER)
                    EE 2          IMPLEMENTOR USE OF REPORTS
```

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Annual/ Trial Report System

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DATA FLOW DIAGRAM INFORMATION

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=====
DFD NAME    LEVEL    LOGICAL/    CURRENT    DESCRIPTION
                PHYSICAL  / NEW
BRSYSTEM      1    PHYSICAL    NEW
```

LAST UPDATED: 07-12-87

```
EXTERNAL ENTITIES:  ----ID-----NAME-----
*** CONTINUED ***
                EE 3    OVERSIGHT USES OF DATA
                EE 4    RCRIS IMPLEMENTOR DOMAIN
                EE 5    RCRIS OVERSIGHT DOMAIN
                EE 6    EXTERNAL IMPLEMENTOR DATA SOURCES
                EE 7    EXTERNAL OVERSIGHT DATA SOURCES
```

TOTAL NUMBER OF EXTERNAL ENTITIES ON DIAGRAM: 7

=====



National Governors' Association

Bill Clinton
Governor of Arkansas
Chairman

Raymond C. Scheppach
Executive Director

APPENDIX D

**Project Management Plan For Annual/Biennial
Report Software Development**

**PROJECT PLAN FOR
ANNUAL/BIENNIAL
REPORT SOFTWARE
DEVELOPMENT**

Presented to:
Environmental Protection Agency
Office of Solid Waste
Information Management Section
401 M Street, S.W.
Washington, DC 20460

Prepared by:
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11242 Waples Mill Road
Fairfax, Virginia 22030
(703) 359-9400

July 22, 1987



SECTION 1

UNDERSTANDING THE REQUIREMENTS

1.1 BACKGROUND

EPA's mission to protect human health and the environment includes the responsibility of jointly regulating with the states all parties involved in the management of hazardous waste, as hazardous waste is defined by the Resource Conservation and Recovery Act (RCRA) of 1976. As part of this regulatory activity, EPA is required to collect information on a biennial basis from generators and other handlers of hazardous waste, as a means to report to Congress and the public on locations, quantities, and disposition of the waste and to be able to assess the effectiveness of existing regulations. The mandate for EPA to require handlers of regulated wastes to submit reports biennially appears in the 40CFR, section 264.75.

Although the various states have individual reporting requirements for their handlers, all the generators in all states are responsible to EPA, as well. It is of great concern to the EPA, and vital to the mission of protection of health and environment, that certain information on generation, treatment, storage and disposal of hazardous waste nationwide be available and kept up-to-date through biennial reporting. The information must be uniform across states, to be amenable to analysis. The EPA needs such information to assess the state of the hazardous waste industry on a national basis, and to measure EPA nationwide progress in its mission. The information must also be readily available outside the EPA because states and regions need immediate access to data to support activities in enforcement, permitting, and program management.

Within the existing Biennial Reporting System, EPA has the capability of producing reports, but they are not accurate nor are they timely. Software is required to support the Biennial Report. This Project Plan addresses the software development effort.

1.2

PROJECT PLAN

The Biennial Report software development project consists of four major elements:

- o **Data Entry Screens** - The screens and software which will allow states to enter the data required for the Biennial Report. This software must be consistent with the final forms developed by the Advisory Council, and must allow entry of data as reported by handlers, even if it is incorrect.
- o **Quality Assurance** - Software which will allow validation of the data entry, including the mechanisms required to follow up on incomplete forms or inaccurate data submitted by handlers.
- o **Summary Reports** - Software which will produce the Summary Report information required by Headquarters, and for Congressional reports.
- o **National Data Base** - Software and operating protocols to provide for national processing of data.

The first three of these elements are most critical for release, while the national data base can be developed after report data entry has begun. This Project Plan addresses the project for the development of a complete automated system to support the data entry, quality assurance, other reports, and the national data base requirements to fulfill EPA's mandate for the biennial reporting system.

1.3

EFFORTS TO DATE

At the request of the U.S. Environmental Protection Agency (EPA), the National Governors' Association (NGA) has formed a RCRA Annual/Biennial Reporting System Advisory Council to participate in revising RCRA's primary reporting system for handlers of hazardous waste. The Council is composed of representatives from State Governments, the RCRA-regulated community, interested outside parties (including environmental groups), and representatives from EPA's headquarters and regional offices. NGA and EPA provide staff support to the Advisory Council.

The first aspect of the reporting system which is being addressed by the Council is the redesign of the forms to be used by handlers in reporting information on their hazardous-waste activities to States and EPA regional offices. The Advisory Council defined five major information objectives to be achieved through the reporting system:

- (1) **Waste Characterization** - Information describing the nature of wastes subject to regulation under RCRA and associated State regulatory programs.
- (2) **Waste and Process Quantity Tracking** - Information detailing the quantities of RCRA and State hazardous wastes that are generated, the sources of such quantities, and the manner in which such quantities are subsequently managed.
- (3) **Regulatory Status** - Information describing the reporting-year status of hazardous-waste handlers subject to regulation under RCRA and associated State regulatory programs.
- (4) **Waste Minimization** - Information describing handlers' practices and accomplishments in reducing both the quantities of hazardous waste and the nature of the hazards posed by such wastes.
- (5) **Capacity Availability** - Information detailing the amount of capacity remaining at the end of the reporting period for processes used in treating, storing, or disposing of hazardous wastes.

A paper discussing alternatives and recommendations for these five (5) areas, titled "Five Priority Subject Areas to be addressed in the 1987 Biennial Report" was prepared, and will likely be the primary basis for the forms to be developed for use by the states.

The Software Development Project is progressing in concert with the development of Biennial Report forms by the Advisory Council, and the remainder of this Project Plan addresses the following for the Software Development Project:

- o **Project Organization and Responsibilities**
- o **Methodology and Tools**
- o **Documentation Requirements**
- o **Schedule and Milestones**

SECTION 2

PROJECT ORGANIZATION AND RESPONSIBILITIES

2.1 PROJECT TEAM COMPOSITION

The Biennial Report Software Development Project will be addressed by a team consisting of the following EPA organizations and outside contractors:

- o Office of Solid Waste (OSW) Information Management Staff (IMS)
- o Office of Information Resources Management (OIRM)
- o National Governors Association Council (NGA) Advisory Council
- o CRC Systems, Inc.
- o Development Planning and Research Associates (DPRA)
- o TECHLAW

The roles and responsibilities of each are described in the following sections.

2.2 OFFICE OF SOLID WASTE, INFORMATION MANAGEMENT STAFF

2.2.1 RESPONSIBILITIES

The following tasks will be the primary responsibility of OSW staff:

- o Development of Mission Element Needs (MENS) statement, required by the OSWER Life Cycle Management Guidelines
- o Development of the Annual/Biennial Report forms, in conjunction with the National Governors' Association Advisory Council
- o Development of the Feasibility Study
- o Development of the Requirements definition for the system, including identifying all interviewees
- o Development of system architecture

- o Development of system design
- o Overall project management, design, and coordination with functional requirements

2.2.2 STAFF ASSIGNMENTS

Donna Inman is the Project Manager within OSW, working under the direction of George Bonina.

Michael Burns is responsible for forms development, coordination between the Advisory Council and the software development project team, and for final decisions on all functional and EPA program aspects of user requirements.

Alex Salpeter is responsible for all coordination with the OSWER Configuration Management Board and Steering Committee.

2.3 OFFICE OF INFORMATION RESOURCES MANAGEMENT

2.3.1 RESPONSIBILITIES

OIRM will review products during the Software Development Project, and will provide advice and oversight related to EPA's software and hardware directions.

2.4 DEVELOPMENT PLANNING AND RESEARCH ASSOCIATES (DPRA)

2.4.1 RESPONSIBILITIES

The following tasks will be completed by DPRA:

- o Maintain the Project Notebook, including minutes of weekly progress meetings
- o Provide assistance to OSW in system requirements, architecture, and design
- o Provide programming for data entry screens, summary reports, quality assurance, and the national database

- o Act as the project librarian for storage and dissemination of all materials to all Project Team members
- o Provide User Support after implementation
- o Provide logistical support to OSW for scheduling of meetings and notification to all team members

2.4.2 STAFF ASSIGNMENTS

Thomas Graham will serve as the Responsible Corporate Officer for DPRA. He will supervise DPRA's activities during system requirements, specification, design and programming activities. He will provide technical assistance in the development of system specifications and determination of the system architecture.

Sue Graham will serve as the Project Manager for the system development effort. She will be responsible for DPRA's deliverables and staff assignments during the specification, design, programming, and testing activities. She will provide technical support to all phases of system development.

Kathy Corcoran will be the Project Librarian and will maintain the Project Notebook.

Programming staff will be assigned to this project as resource requirements are finalized.

2.5 TECHLAW

2.5.1 RESPONSIBILITIES

The following tasks will be completed by TECHLAW:

- o Assistance in Requirements Definition, by providing interviews related to problems which existed in the last Biennial Report cycle.
- o Assistance in developing system operation and maintenance cost estimates based upon TECHLAW's work on the 1985 Alabama Biennial Report.
- o Assistance in developing specifications for turnaround reports and summary reports for the system.
- o Preparing a test data set by developing requirements for sample data forms to be used to test the system, and completing sample test forms.
- o Manually preparing turnaround and summary reports for comparison with system generated reports.

2.5.2 STAFF ASSIGNMENTS

Brian Eaton will be the primary consultant and Project Manager for TECHLAW.

Karen Kraynak will be the Staff Associate assigned to this project.

Additional staff for test form preparation and manual report preparation will be identified as resource requirements are finalized.

2.6 CRC SYSTEMS

2.6.1 RESPONSIBILITIES

The following tasks will be completed by CRC:

- o Preparation of the task plans for data entry, the summary reports, quality assurance, and the national database.
- o Independent testing and acceptance of software for data entry, summary reports, quality assurance, and the national database.
- o Review of all project deliverables for compliance to OSW standards and project plan requirements.
- o Preparation of training materials and presentation of training to users for data entry, quality assurance, and summary reports.
- o Project management support to OSW, including maintenance of the Project Plan on MICROSOFT PROJECT, and tracking of deliverables.
- o Project plan preparation.
- o Preparation of Documentation Standards for all documents to be produced on the project.
- o Data entry support, analytical reports, and maintenance for data flow diagrams.

2.6.2 STAFF ASSIGNMENTS

Theresa Bousquin will serve as Project Manager for CRC Systems, providing key technical and administrative support in the overall project management and coordination of the tasks for this project.

Julia Towler will be the Junior Analyst assigned. She will provide support in project scheduling, tracking, testing and training activities.

A senior analyst and additional staff for testing will be assigned as resource requirements are finalized.

2.7 *NATIONAL GOVERNOR'S ASSOCIATION*

The National Governors' Association will staff the Advisory Council and will be responsible for verifying the requirements of the system for State users.

2.8 *CMB AND OSWER STEERING COMMITTEE*

2.8.1 *RESPONSIBILITIES*

All OSWER Life Cycle Management Guidelines will be followed, including submission of all required documents to the Configuration Management Board and Steering Committee. Alex Salpeter will coordinate these efforts.

SECTION 3

METHODOLOGY AND TOOLS

3.1 *DESIGN TOOLS*

This project will follow a structured design and development approach, using data flow diagrams for representation of the system and operations.

Visible Analyst, a product of Visible Systems Corporation, will be used as an automated design tool for structured systems analysis tasks. Visible Analyst is a multi-purpose design tool which operates on personal computers, and is comprised of three basic software modules:

- o A module as an analyzing tool;
- o A diagramming module:
- o A data dictionary as an organizing module.

The diagramming module provides the standard diagram symbols, and contains a level-to-level balancing feature which verifies the conservation of data flows by comparing a specific process with its lower level diagrams. Processes can be nested, and customized symbols can be added to diagrams as needed.

The data dictionary module serves as the central repository for all data and other information about a system's design. Entries for the processes, data flows, data stores, sources, and sinks are created as diagrams are stored. Additional information can be added and stored in VISIBLE ANALYST about each data dictionary entry, including data structures, files, charts, or narratives. ASCII file links with the data dictionary are possible, easing the documentation efforts. The analysis features, coupled with the reports which can be produced from the Data Dictionary module, allow analysts to check the consistency of diagrams, inputs, outputs, and relationships early in the design process, thereby avoiding costly design errors.

VISIBLE ANALYST provides analysts with a powerful tool for monitoring and controlling complex systems. In addition, for projects such as this where multiple analysts are used, changes can be audited and tracked, thereby avoiding the mishaps which result from communication errors.

3.2 *PROJECT MANAGEMENT TOOLS*

MICROSOFT PROJECT will be used as the Project Management tool, to track all deliverables, due dates, and resource requirements. It will be maintained by CRC Systems, and will be used by OSW. Weekly presentations of progress toward deliverables will occur at the weekly progress meetings.

SECTION 4

DOCUMENTATION REQUIREMENTS

4.1 *GENERAL*

Two types of documentation will be produced during this project:

- o Documentation to comply with OSWER Life Cycle Management Guidelines, and
- o Project Documents as the working documentation for the software development.

The working documentation will be combined to provide the System Decision Paper (SDP) documents required for presentation to the Configuration Management Board.

Outlines of the major elements of the documentation are presented in the following sections.

4.2 *COMPLIANCE WITH OFFICE OF SOLID WASTE LIFE CYCLE MANAGEMENT GUIDELINES*

The project will comply with the Life Cycle Management Guidelines of the Office of Solid Waste and Emergency Response. The contents of documents for each phase of the Life Cycle are summarized in the following sections.

4.2.1 *PHASE 1- SYSTEM INITIATION*

- o Mission Element Needs Statement (MENS)

4.2.2 *PHASE 2- CONCEPT DEVELOPMENT (SDP1)*

- o Proposed project plan
- o System requirements documentation
- o Feasibility and economic analysis

4.2.3 *PHASE 3- DEFINITION AND DESIGN (SDP2)*

- o Configuration Management Plan
- o Test plans, technical and user documentation, and training plan
- o Documentation of structured walk throughs of the system (Physical data base design, detailed system design)
- o System design documentation

4.2.4 *PHASE 4- SYSTEM DEVELOPMENT (SDP3)*

- o Program coding
- o Unit and Integration Testing Results
- o Certification that the system meets user needs
- o Certification that the system meets the needs identified in the MENS
- o Training Materials

4.2.5 *PHASE 5- OPERATIONS AND MAINTENANCE (SDP4)*

- o Certification that the system continues to meet needs
- o System Audit and Review

4.3 *PROJECT DOCUMENTS*

The following documents are required for the development team to complete this project, following a structured design approach. The documents are sub-divided into two areas: Life Cycle Management and Appendix documents.

4.3.1 *LIFE CYCLE DOCUMENTS*

4.3.1.1 *Feasibility Paper*

The Feasibility Paper will include the project overview and will identify all assumptions and constraints. Information about State/Regional hardware/software capabilities will be addressed at this time. Analysis of the potential volume of utilization and the potential funding sources will be included in the paper. An understanding of the data volume anticipated (state by state) and potential user access methods/resource requirements will be included, as well as staffing information, system development, operation, maintenance cost and time. The paper will present conclusions and offer recommendations based upon the analysis.

4.3.1.2 *Requirements Definition*

The Requirements Definition will present the project background followed by an overview of all required components. The following components will be addressed in detail:

- o Data Entry Components
- o Quality Assurance Components
- o Summary Report Components
- o National Database Components

The Requirements Definition will include a detailed description of the scope of the project.

4.3.1.3 *Documentation Standards*

The documentation standards will include a list of all documents to be developed in support of this project. A description of general and specific standards will be included with a document delivery schedule.

4.3.1.4 *Architectural Design*

The Architectural Design will describe the hardware and software configuration to be used for this project, including alternatives which may be possible.

4.3.1.5 *System Specifications Document*

The System Specification document will describe in detail the conceptual and detailed design. It will include consistency factors, error checking design, the system data flow, and the data element dictionary.

4.3.1.6 *Test and Acceptance Plan*

The Test and Acceptance plan developed for this project will describe the scope of testing and provide the minimum acceptable levels of performance. It will include a detailed description of the testing process and system error reporting. A timetable/schedule for testing phases is required for each portion of the development. A process describing acceptance, error notification and notification of corrections will be included.

4.3.1.7 *Change Control Management Document*

The Change Control Management document will provide guidelines and procedures for requests for changes to be submitted to the Configuration Management Review Board. Copies of OSWER AIS Configuration Change Request Forms and instructions will also be included.

4.3.1.8 *User Manual*

The User Manual will include a brief system overview with goals and objectives. The manual will provide examples of all menus, screens, and outputs. User instructions will be presented in a clean and concise manner. A glossary of terminology and error messages will be included.

4.3.1.9 *Maintenance Manual*

The Maintenance Manual will provide a technical description of the system and will contain pseudo code as well as all coding, system flow charts, file structure, edits, and field definitions. System requirements (hardware/software) and installation instructions must be addressed.

4.3.1.10 *Training Manual*

The Training Manual will, at a minimum, include all menu, screen, and output examples with clear descriptions of the relationships. Lessons and instructions demonstrating the system will be included, for both the initial training sessions and for self-training by those who do not attend the initial training.

4.3.2 *APPENDIX DOCUMENTS*

4.3.2.1 *Project Notebook*

The Project Notebook will contain all copies of communications and meeting notes pertaining to this project. It will identify in detail all resource allocations required for project completion. Any problems/issues and their corresponding resolutions will be described and tracked in an organized manner for reference.

4.3.2.2 *Project Plan*

The Project Plan will describe the goals and objectives to be accomplished by this project. It will include a timeline and schedule, identify deliverables, and document assignment of project responsibilities.

SECTION 5

SCHEDULE AND MILESTONES

	<u>TASK</u>	<u>START DATE</u>	<u>COMPLETION DATE</u>
1.	Prepare Project Plan	6/02/87	6/15/87
2.	1st Draft of Forms	6/22/87	6/22/87
3.	Submit MENS to Steering Committee	7/02/87	7/02/87
4.	Submit Issue Paper #1 to NGA	7/02/87	7/22/87
5.	2nd Draft of Forms	7/01/87	7/22/87
6.	Feasibility Study	6/24/87	7/31/87
7.	Configuration Management Plan	8/03/87	8/03/87
8.	System Architecture	7/23/87	8/14/87
9.	Data Entry System Specs	7/22/87	8/18/87
10.	Data Entry Walkthru	8/18/87	8/18/87
11.	NGA Evaluation of Forms	8/19/87	8/20/87
12.	Requirements Definition	7/13/87	8/24/87
13.	Submit SDP1 to Steering Committee		8/24/87
14.	Develop Test Data	7/27/87	8/28/87

15.	Forms Final	8/21/87	9/30/87
16.	Data Entry Development of Test Plan	8/31/87	9/30/87
17.	Data Entry Coding & Unit Testing	8/19/87	9/30/87
18.	Revise SDP1	8/25/87	10/06/87
19.	Submit SDP2 to Steering Committee for Data Entry		10/07/87
20.	Data Entry 1st Pass Testing	10/01/87	10/28/87
21.	QA System Specification	10/01/87	11/11/87
22.	Data Entry 1st Pass Revisions	10/29/87	11/11/87
23.	Submit SDP2 to Steering Committee for QA		11/11/87
24.	QA Walkthru requirements	11/11/87	11/11/87
25.	Data Entry 2nd Pass Testing	11/12/87	11/18/87
26.	Data Entry 2nd Pass Revisions	11/19/87	11/25/87
27.	QA Development Test plan	11/12/87	11/25/87
28.	Summary System Specification	11/12/87	11/25/87
29.	Summary Walkthru requirements	11/30/87	12/02/87

30.	Data Entry 3rd Pass Testing	11/30/87	12/04/87
31.	Submit SDP2 to Steering Committee for Summary Reporting		12/09/87
32.	QA Coding & Unit Testing	11/12/87	12/11/87
33.	Data Entry 3rd Pass Revisions	12/07/87	12/11/87
34.	Data Entry Walkthru 2	12/11/87	12/11/87
35.	Data Entry Integration	12/14/87	12/16/87
36.	Summary Development Test Plan	11/30/87	12/18/87
37.	Data Entry Integration Testing	12/17/87	12/23/87
38.	Data Entry Finalize	12/24/87	1/08/88
39.	QA 1st Pass Testing	12/14/87	1/12/88
40.	Summary Report System Coding & Unit Testing	12/14/87	1/12/88
41.	Submit SDP3 to Steering Committee for Data Entry		1/15/88
42.	Data Entry Release	1/15/88	1/15/88
43.	QA 1st Pass Revisions	1/13/88	1/26/88
44.	QA 2nd Pass Testing	1/27/88	2/02/88

45.	Data Entry Training (East- West-Midwest)	1/25/88	2/09/88
46.	1st Pass Testing of Summary Reporting	1/13/88	2/09/88
47.	National Data Base Design and Concept Paper	1/13/88	2/09/88
48.	QA 2nd Pass Revisions	2/03/88	2/09/88
49.	QA 3rd Pass Testing	2/10/88	2/16/88
50.	Summary 1st Pass Revisions	2/10/88	2/23/88
51.	QA 3rd Pass Revisions	2/17/88	2/23/88
52.	Summary 2nd Pass Testing	2/24/88	3/01/88
53.	QA Walkthru 2	2/24/88	3/02/88
54.	Summary 2nd Pass Revisions	3/02/88	3/08/88
55.	Summary 3rd Pass Testing	3/09/88	3/15/88
56.	Summary 3rd Pass Revisions	3/16/88	3/22/88
57.	Summary Walkthru 2	3/23/88	3/25/88
58.	QA Integration	3/03/88	4/06/88
59.	Summary Integration	4/07/88	4/13/88