FINAL REPORT

RCRA TECHNICAL DATA COLLECTION AND TECHNICAL COMPLIANCE COST DEVELOPMENT

PRA

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Prepared for:

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RCRA TECHNICAL DATA COLLECTION AND TECHNICAL COMPLIANCE COST DEVELOPMENT

INTRODUCTION AND BACKGROUND

The Resource Conservation and Recovery Act of 1976 (RCRA) is the first comprehensive Federal legislation dealing with solid and hazardous waste. RCRA was enacted to achieve the two basic objectives of protecting the public health and environment and conserving natural resources. Subtitle C of RCRA mandates that the Environmental Protection Agency (EPA) promulgate regulations governing the generation, storage, transportation, treatment, and disposal of hazardous wastes, as well as the definition, identification, and listing of such wastes. EPA has proposed Subtitle C regulations that establish the mechanism for "cradle-to-grave" hazardous waste management by providing for:

- the identification and listing of hazardous wastes according to specific criteria;
- standards for the operation and closing of hazardous waste treatment, storage, and disposal facilities (including insurance and financial requirements);
- permits for treatment, storage, and disposal facilities;
- a manifest system to monitor the movement of the waste from the generator to ultimate disposal; and
- notification requirements for hazardous waste generators, transporters, and treatment, storage, and disposal facilities.

The RCRA Subtitle C regulations were first proposed on December 18, 1978; the first phase of the regulations to be promulgated was published in the Federal Register on May 19, 1980. These promulgated regulations, called the Interim Status Standards (ISS), consist primarily of non-technical requirements for such items as manifests, security, recordkeeping/reporting, notification, permits, and monitoring and testing. The technical requirements in the ISS are primarily ones for closure, run-on/run-off control, and fence/controlled access. All off-site (commercial) disposal is also considered to be technical in nature.

Accompanying the Interim Status Standards was a Preliminary Final Economic Impact Analysis that was based on a January 1980 draft of the ISS. This report is being finalized at the present time. As part of this economic impact analysis, several

industries for which is appeared there would be a high potential for adverse economic impact were studied in considerable detail. The industries (called the "high-impact" industries) were Textiles, Leather Tanning and Finishing, Non-ferrous Metal Smelting and Refining, Organic Chemicals, Inorganic Chemicals, Uranium and Other Mining, and Electroplating.

EPA decided to study these industries by using Effluent Guidelines contractors to collect data on each industry and to determine the economic impacts associated with compliance with the ISS. Those Effluent Guidelines contractors that had prepared or were preparing Development Documents for the industries in question performed the data collection; they were known in the context of this study as Technical Contractors. The Effluent Guidelines contractors who had been or were in the process of preparing Economic Impact Analysis documents were called the Economic Contractors; they determined the economic impacts of the ISS on industry. The work done by these Technical and Economic Contractors was coordinated and used by a Technical Coordinator and an Economic Coordinator to develop technical and non-technical costs respectively, and to further assess the economic impact of the proposed regulations. Pope-Reid Associates, Inc. (PRA), as the Technical Coordinator, received all data collected by the Technical Contractors; reviewed the data; determined the technical requirements for compliance; developed unit technical costs of compliance with the ISS; and assigned the technical requirements to model plants in the high-impact industries. This was done for each of the high-impact industries except Electroplating. For this industry, PRA managed the data collection and review; the remaining work was done by the Economic Contractor. The cost and technical requirement data prepared by PRA were sent to Arthur D. Little, Inc. (ADL), the Economic Coordinator, who was responsible for the assignment of technical costs to the appropriate technical requirements; the preparation and assignment of non-technical costs; and the generation of data for use by the Economic Contractors in determining economic impacts.

The purpose of PRA's role of Technical Coordinator was to collect and review data, develop technical costs, and apply technical requirements and costs to plants in selected industries. The work discussed in this report is that done by PRA with respect to the Interim Status Standards as proposed in January 1980 and promulgated on May 19, 1980.

APPLICATION OF TECHNICAL COSTS TO MODEL PLANTS

Model Plant Development

Data Collection

The data collection effort was initiated by acquainting each Technical Contractor with the scope of the study and data needs at an orientation meeting. Data collection forms and model plant data transmittal forms were provided to each contractor.

The Technical Contractors were given the opportunity to revise their data collection forms to make them relate more specifically to the individual industries being studied. Using the revised data collection forms, the Technical Contractors surveyed the industries to obtain information on hazardous waste generation and management. During the data collection process, frequent contact was maintained with all Technical Contractors, and meetings were held with them as needed to discuss progress and find solutions to any problems they were encountering.

Model Plants

In conjunction with the Economic Contractors, the Technical Contractors developed model plants to represent groups of plants in each industry. A model plant is a hypothetical plant that is used to represent a group of plants with common characteristics in an industry. Model plants are used to generate technical costs information for a group of facilities that differ slightly in size, process, or configuration. The plant-specific data collected by the Technical Contractors were aggregated, along with any other available information, to form model plant data in each industry.

Data Review

Both plant-specific and model plant data were sent to PRA by the Technical Contractors on the agreed-upon data forms. At PRA, the data forms were checked for completeness and consistency; any questions that arose during this data check were referred to the appropriate Technical Contractor for resolution. PRA also compared the model plant data to information available from earlier studies, and differences were explained by the Technical Contractors when possible.

Some difficulties did arise in the areas of data review and quality control. The response to the plant-specific surveys for some industries or industry segments was very poor, making it difficult for the Technical Contractors to generate model plant data. Where there was adequate industry response, there still may have been data lacking because the industry respondent had no information with which to answer some of the questions on the survey form. There were also problems with comparing the model plant data on waste generation rates and waste amounts to data from earlier studies because the underlying assumptions in the earlier studies were not always clearly delineated. However, in view of the amount of data available on hazardous waste generation and management before this data collection effort, it becomes evident that the existing data base was considerably expanded. In fact, the data base developed for this study is very likely the best currently available for the high-impact industries.

Approach

The generalized approach to this study, once the model plant data had been received and reviewed by PRA, can be described in five steps:

1. Determine which wastes are to be considered hazardous and calculate the amount of each waste generated in metric tons per year per plant (MT/yr-plt) for each model plant;

2. Determine, based on the Interim Status Standards, which treatment/disposal technologies comply with the ISS and what ISS technical requirements apply to each technology;

3. Develop a unit cost or costs of compliance with the ISS for each technical requirement;

4. For each model plant and waste stream, select the appropriate treatment/disposal technology(ies), how many plants represented by the model use each technology, and what combinations of technologies (for more than one waste stream) go together; and

5. Using the unit technical costs developed in Step 3, calculate the technical cost of compliance with the ISS for each plant represented by the model.

The Step 1 determination of which waste streams would be considered hazardous was made by the Technical Contractors and PRA, in conjunction with EPA personnel. The amount of waste was either given as model plant data by the Technical Contractor or calculated by PRA from other types of model plant data (e.g., waste

generation rate and production). The methodology for completing Steps 2 through 4 is described in later sections. Step 5 was not done by PRA; all necessary model plant data, cost equations, and technology and technical requirement assignments (from Steps 1 through 4) were provided to Arthur D. Little, Inc. and the actual technical costs of compliance are being calculated at ADL.

Technology Selection and Application of Technical Requirements and Costs

The underlying assumption in the selection of the hazardous waste management technologies to be assigned to plants represented by a model plant was that a generator would continue, during the period of interim status, to use the same waste management practice(s) currently being employed. This assumption was set forth by Office of Analysis and Evaluation (OAE) personnel as being representative of reality in that interim status is a period during which existing facilities that meet certain criteria will be regarded by EPA as being under permit while the permit is being processed. The only exception to this assumption would occur if the waste management practice in question was definitely out of compliance with the Interim Status Standards, such as disposal of free liquids in an unlined landfill or landfilling of drummed waste. PRA assessed each waste management practice described in the model plant forms, and those that could not be brought into compliance with the ISS regulations were eliminated. New, RCRA-compliant waste management technologies were substituted to handle the waste streams thus affected. Each potentially RCRA-compliant waste management option shown to be used as current industry practice on the model plant forms was assigned a number for future reference (see Appendix A for this list).

PRA found four principal sets of technical requirements that could be assigned to waste treatment/disposal technologies in use by plants in a model to bring these technologies into technical compliance with the ISS. They were requirements for closure, run-on/run-off control, fence and controlled access, and operating and maintenance costs (for sludge dewatering). In addition, off-site (commercial) treatment/disposal was considered to be technical. Not all requirements apply to all treatment/disposal technologies. Some technologies had no technical requirements; however, there may be non-technical requirements that will apply. A summary of which technical requirements apply to each treatment/disposal technology is shown in Table 1. For ISS compliance costs to be determined, both technical costs (discussed in this report) and non-technical costs (developed by ADL) must be included.

TABLE 1. Application of Technical Requirements to Waste Treatment/Disposal Options

Waste Treatment/Disposal		Technical Requirements					
Code Number	Technology	None (00)	Closure (01)	Run-on/off Control (02)	Fence - as needed (03)	Off-site only (04)	On-site O&M (05)
01	On-site sanitary landfill		X	X	X		
02	Off-site sanitary landfill					X	
03	On-site open dump		X	X	X		
04	On-site stockpile		X(1)	X	X		
05	On-site disposal surface impoundment		X		X		
06	Plant does not generate hazardous waste	X					
07	On-site land treatment		X				
08	Off-site land treatment					X	
09	On-site incineration (no scrubber)		X				
10	Off-site incineration (no scrubber)					X	
11	Waste sent to POTW					X	
12	Waste sold as soil conditioner					X	
13	Off-site secure landfill					X	
14	On-site secure landfill		X	X	X		
15	On-site incineration (with scrubber)		X				
16	Off-site incineration (with scrubber)					X	
17	Waste sent to solvent recovery					X	
18	On-site tailings pond		X		X		
19	On-site treatment/storage surface impoundment		X		X		
20	Sludge dewatering						X
21	Recycled on-site	X					
22	Ocean disposal	X					
23	Underground injection	X					
24	Hydrolyzed	X					
25	Burned as fuel	X					
26	Steam stripped	X					
27	Reprocessed/recycled off-site					X	

(1) If the pile is managed as a landfill

A discussion of each of these technical requirements, including off-site treatment/disposal and on-site technologies that have no technical requirements, follows.

No Technical Requirements

For certain treatment/disposal technologies there are no technical requirements. However, there will most likely be non-technical requirements associated with these technologies if they are used for the management of hazardous waste. Most of these technologies - recycling, hydrolyzing, burning as fuel, underground injection, and steam stripping, for example - are on-site processes. Another disposal technology - ocean disposal - is covered by different regulations, making technical requirements under RCRA superfluous. Finally, there are no technical requirements for individual plants that do not generate hazardous wastes, even though other plants represented by the same model may generate such wastes.

Closure

Closure requirements under the ISS apply to five types of on-site facilities: incinerators, landfills (both secure and sanitary), land treatment, surface impoundments (disposal and treatment/storage), and tailings ponds. The closure requirements for incinerators (both with and without scrubber) were determined by Arthur D. Little, Inc. Assumptions regarding the distribution of plants using various closure options are based on recommendations from EPA's Office of Solid Waste (OSW).

The following sections - Landfills, Surface Impoundments, and Land Treatment Facilities - describe the technical assumptions and specifications used in the development of closure costs associated with the Interim Status Standards. The design parameters for each of these disposal alternatives were specified by OSW staff prior to the preparation of working designs and any technical costs. Details of the technical cost development for each disposal option are provided in Appendix B.

Landfills. All on-site sanitary and secure landfills have applicable costs for closure. There are two closure cost equations for landfills, one that incorporates naturally-occurring clay in the final cover and one that incorporates a membrane in the cover. The cost equations for landfill closure are:

$$Y\ (\$1000) = 0.174\ (X^{0.575}) \quad \text{(clay cover)} \qquad (1)$$

$$Y\ (\$1000) = 0.283\ (X^{0.597}) \quad \text{(membrane cover)} \qquad (2)$$

where: Y = cost of closure in thousands of dollars;

X = waste amount in MT/yr

The preceding equations were developed by determining the technical costs associated with the closure of landfills under the proposed ISS. A range of landfill capacities was considered in developing the final cover specifications and costs. The following annual capacities and design depths were used in this analysis:

Annual Capacity		Design Depth (meters)
(metric tons)	(cubic meters)	
1,000	883	2
10,000	8,333	4
25,000	20,833	5
50,000	41,667	6
100,000	83,333	8

A conversion factor of 1.2 metric tons waste/cubic meter waste was used to determine the volume requirements of each landfill cell designed. It was assumed in the landfill design that 70% of the available landfill cell capacity would be used for the disposal of waste, while the remaining volume of 30% would be needed for daily and final cover materials.

At the time of closure, the landfill cell is assumed to be filled with waste and daily cover (soil) to its design depth, and the surface graded to a 5% slope. Consequently, the surface of the cell would be suitably graded and compacted prior to actual cover construction and application.

As mentioned before, landfill closure is accomplished using a final cover which either incorporates on-site clay material or a synthetic membrane. In this

analysis, it has been assumed that 50% of the landfills will close using the clay design and 50% will use a membrane cover. This assumption was recommended by OSW personnel, who used it in their closure scenario. Both cover designs possess a one-foot-thick base of on-site compacted soil, which serves as a stabilizing base for the application of the clay or membrane cover.

Naturally-occurring, on-site clay soil is applied and compacted to a depth of one foot. In this design, the clay soil is assumed to exist on the facility site and is excavated, placed, and compacted on the landfill cell. A two-foot cover of on-site soil is then applied and compacted over the clay soil layer.

The use of a synthetic membrane in the cover requires the placement of a six-inch layer of fine sand on the soil base, and an additional six-inch layer of sand on top of the membrane liner. The membrane, which consists of 20 mil PVC fabric, is thus "sandwiched" between these two buffer layers of sand. The bottom layer of sand prevents any punctures or tears in the liner and also acts as a drainage layer for water which may pool on the liner surface. A two-foot cover of on-site soil is placed and compacted over the upper sand layer.

Both landfill cover designs, clay and membrane, incorporate a perimeter trench for the collection and disposal of water passing through the upper soil layer. This ditch consists of a vitrified clay pipe which is situated directly above either the clay or membrane liner. Any water standing on the liner is drained from the cover via this system. In addition, the upper soil layer is revegetated in both designs.

Engineering and contingency fees, each 10% of the material and labor costs, were included in both closure cost estimates. Equations (1) and (2) were developed by expressing annual waste capacity (in metric tons) with total capital dollars expended in the year closure occurs. All costs are reported in 1st Quarter 1980 dollars.

Surface Impoundments. The two costs for closure of surface impoundments are similar to those for landfills in that one incorporates clay and the other a membrane in the cover. The costs apply to both treatment/storage and disposal surface impoundments and to tailings ponds (a type of disposal impoundment). The assumed

distribution (from OSW's closure scenario) regarding the types of closure cover is 75% using clay and 25% using membrane. Because tailings ponds are generally very large and closure costs would consequently be quite high, the use of a cost ceiling has been considered. The figure at which this ceiling would be set is as yet undecided. The two closure costs are:

$$Y\ (\$1000) = 60.48\ (X^{0.982}) \qquad \text{(clay cover)} \qquad (3)$$

$$Y\ (\$1000) = 101.01\ (X^{0.947}) \qquad \text{(membrane cover)} \qquad (4)$$

where: Y = cost of closure in thousands of dollars;
X = area of surface impoundment in acres.

When there is more than one surface impoundment per plant, it is intended that the closure costs be calculated for each impoundment separately and then added together.

Cost equations (3) and (4) were developed by determining the technical costs associated with the closure of surface impoundments under the proposed ISS. As with landfills, a range of surface impoundment sizes was considered in preparing the final cover specifications and costs. The following surface impoundment capacities, specified as surface area, and operating depths were used in the analysis:

Surface Area (acres)	Operating Depth (meters)
0.25	2
1.00	2
2.50	3
5.00	3
10.00	4
25.00	4

The operating depth of a surface impoundment is the depth at which the water level remains during normal operating conditions. It is at this level that the capacity, or operating surface area (in acres), of the impoundment is determined. Above the normal water level is one meter of freeboard to prevent wastewater from escaping the impoundment during adverse operating conditions, plant emergencies, or storm events.

At the time of closure, the surface impoundment is assumed to be filled with stable, workable sludge to 50% of its original design volume. The impoundment's dikes (sides) must then be plowed into the impoundment and graded to a 3% slope before the actual cover construction can begin.

The final cover for a surface impoundment also incorporates either a clay liner or synthetic membrane liner, as it did in the closure designs for landfills. There are no differences in the cover design specifications between landfills and surface impoundments that elect to close using a clay liner in the final cover. The same is also true between landfills and surface impoundments that choose a synthetic membrane as their final cover. Quantities of cover material, of course, do vary between landfills and surface impoundments due to differences in size and construction techniques. This results in the variation between the cost equations that represent each facility's closure costs.

Engineering and contingency fees, each 10% of the material and labor costs, were also included in both closure cost estimates. Equations (3) and (4) were developed by expressing operating surface area (in acres) with total capital dollars expended. All costs are reported in 1st Quarter 1980 dollars.

Land Treatment Facilities. The two closure costs associated with on-site land treatment facilities are:

$$Y (\$) = 2.50 X \quad (5)$$

$$Y (\$) = 81.25 X \quad (6)$$

Where: Y = cost of closure in dollars;
X = waste amount in MT/yr.

The cost given in Equation (5) is the one that applies to most of the land treatment facilities; this represents a revegetation cost. Equation (6) gives the closure cost for those facilities that, becuase of contaminated soil, must remove the top eight inches of soil from the land treatment facility and dispose of the soil as a hazardous waste. OSW staff recommended that PRA assume that 10% of the land treatment facilities will need to close in this manner.

To determine the technical costs associated with the closure of land treatment facilities, it was necessary to select a waste application rate, on an acre basis, that would be typical of land treatment disposal. Based on background data and

recommendations from EPA's Office of Solid Waste, an application rate of 800 metric tons/acre/year was selected.

In those facilities which contain contaminated soil (an assumed 10% of the facilities), the contaminated material must be excavated, transported, and disposed of as a hazardous waste. The cost for transportation is $12.50/MT, and the disposal cost is $30.50/MT. Once the soil has been removed, the site is graded and revegetated. An engineering fee of 7% and a contingency of 10% was added to the cost of performing this closure procedure.

As specified by OSW staff, the upper eight inches of soil would be removed from a contaminated facility. The total cost to remove and dispose of the waste and re-landscape the facility is estimated to be $65,000/acre. At the application rate of 800 MT/acre, the resulting cost is $81.25/MT.

In those facilities which do not contain any contaminated soil at the time of closure (90% of the cases), revegetation of the site is the only technical cost requirement. At $2000/acre for revegetation, and the same application rate, the cost for these facilities is $2.50/MT.

Other Technical Requirements and Costs

Additional technical requirements and costs are incurred by specific disposal facilities as a result of the proposed ISS. The following two requirements - run-off/run-on control and fence/controlled access - were examined by ADL staff, compliance designs prepared, and cost estimates developed. The two sections below describe these technical requirements and the cost equations submitted by ADL for our review.

Run-On/Run-Off Control. There is a requirement for run-on/run-off control technology for on-site secure and sanitary landfills and land treatment facilities. Included as landfills are open dumps and waste piles. Little data have been collected thus far on the percent of facilities with run-on/run-off control. Scenarios developed by OSW assumed that all land treatment facilities have run-on/run-off control technology in place and that no landfills or waste piles have it. Because no hard data were available, OSW told PRA to use these assumptions. No other types of facilities are required to have run-on/run-off control. The equation for calculating the cost of run-on/run-off control is:

$$Y\ (\$) = 3{,}100 + 304.3\ (X^{0.3255}) \qquad (7)$$

where: Y = cost of run-on/run-off control in dollars;
X = waste amount in MT/yr.

Fence/Controlled Access. The need for a fence and controlled access is included in the RCRA regulations under the broader heading of "Security". The fence is the only part of the security requirement that is considered technical, so the fence, although it is a technical requirement, is considered to be part of the non-technical security requirements in the development of costs. The existence of a fence at a facility is part of the technical description, so PRA did the assignment (as needed) of the fence requirement to a waste treatment/disposal technology. A hazardous waste treatment/disposal facility is considered to be fenced if it is part of a larger plant area that is fenced. A fence and controlled access is required for incinerators, secure and sanitary landfills (including waste piles and open dumps), land treatment facilities, and surface impoundments (including tailings ponds). It has been assumed that all incinerators and land treatment facilities have a fence and controlled access or the equivalent. Data on the present use of fences for on-site landfills and surface impoundments by various industries were obtained from industry sources or the judgment of people familiar with the industry. If there was more than one surface impoundment at a plant, the fence requirement was applied to each impoundment separately for the purpose of calculating costs. The need for a fence and controlled access did not occur very frequently, except in the Leather Tanning and Nonferrous industries. Therefore, when a fence was required for more than one technology used by a model plant, an effort was made to apply all technologies having fence requirements to a single group of plants represented by the model. The cost equations for a fence and controlled access for landfills and surface impoundments are:

$$Y\ (\$) = 325 + 540.9\ (X^{0.3255}) \quad \text{(landfill)} \qquad (8)$$

$$Y\ (\$) = 325 + 10{,}018.1\ (Z^{0.5}) \quad \text{(surface impoundment)} \qquad (9)$$

where: Y = cost of fence and controlled access in dollars;
X = waste amount in MT/yr;
Z = surface area of impoundment in acres.

Operating and Maintenance

One operating and maintenance requirement for RCRA compliance has been included

in this study - for sludge dewatering. This was considered to be an incremental O & M requirement to improve the performance of existing equipment. The percent solids for each waste stream was included as part of each set of data for a model plant. The baseline situation in this study, given by OAE personnel, was with BAT or PSES in place, including any sludge dewatering to meet these regulations. Sludge dewatering would still be required under RCRA if, with BAT or PSES dewatering in place, the sludge contained free liquids. This was assumed to be the case for the high-impact industries in this study if a biological sludge contained less than 20% solids or an inorganic sludge contained less than 40% solids. Different cut-off points may be selected for other industries, depending on the nature of the sludge; the assignment of technical requirements would remain the same. Although it is not the case that BAT and PSES are currently in place in the high-impact industries, the technologies used and sludge amounts generated under BAT/PSES could be quite accurately estimated because the Effluent Guidelines contractors doing the BAT/PSES studies were the Technical Contractors who collected RCRA data.

The general guidelines used in this study for RCRA-compliant disposal of sludge allow wet (underwatered) sludge to be disposed in: on-site land treatment facilities; on-site disposal surface impoundments; on-site secure landfills that are lined and have a leachate collection/removal system; and off-site secure landfills (liner and leachate collection/removal system assumed). Disposal of wet sludge in any type of facility would also be permissible if, when the sludge is combined with other wastes for disposal in the same facility, the total waste disposed is non-flowing. The off-site disposal of wet sludge may be prohibitively expensive due to the high cost of transportation and disposing a large volume of waste that is primarily water. Under the assumptions used in this study, however, off-site secure landfill disposal of wet sludge is in compliance with the ISS.

The cost for sludge dewatering is considered to be an incremental cost to improve the performance of dewatering equipment that would be present with BAT/PSES technology in place. It is applied as a constant cost per metric ton of wet or dewatered sludge. This cost was developed by Arthur D. Little, Inc.

Off-Site Disposal

The off-site (commercial) disposal of hazardous waste is considered to be technical in nature, although it is not a technical requirement. In the application of costs,

off-site disposal is treated as a technical cost; it includes both the costs to dispose at the facility and transportation. The principal assumption made concerning off-site facilities was that off-site secure landfills are lined and have leachate collection and removal systems. All off-site disposal costs were developed by ADL personnel. These costs must be included, along with the other technical costs and the non-technical costs, in any estimate of the cost of compliance with the ISS.

Closure Time Estimates

The proposed Interim Status Standards specify that all closure activities must be completed in accordance with an approved closure plan within six months of receiving the final volume of wastes. The feasibility of this six-month allowance for the closure of facilities under the proposed ISS regulations was investiated for the Office of Solid Waste. The study focused on developing the time estimates for the closure of surface impoundments and landfills in accordance with the requirements of the full status standards proposed in September 1979. The closure of containers, tanks, and incinerators should, under normal operating conditions, not require longer than six months to complete. Landfills and surface impoundments, however, will require time extensions in the closure plan for a number of circumstances. The results of the analysis have been included in this report, and can be found in Appendix C.

Technical Design Variations - Landfills

In an effort to determine whether there is any existing bias in the unit costs of landfills based on their size, two new landfill capacities were designed and their costs estimated. These designs were prepared in compliance with the September 4, 1979 draft of the RCRA regulations and represent probable extremes in landfill capacity.

Cost estimates were developed for landfills with operating depths of two and eight meters and with volumes of 200 MT/year and 500,000 MT/year, respectively. Each design was for an on-site facility. From the costs reported in Table 2, and represented graphically in Figure 1, it appears that the unit cost for large facilities approaches a minimum cost of approximately $25.00/MT. This is probably

a function of the operating depth of the landfill cell. At a depth of six meters and greater (up to 8 meters) landfills of large capacities can be constructed using less land than similar landfills with shallower depths. Hence, this will tend to reduce the facility costs as costs for larger capacities are developed.

TABLE 2: SECURE LANDFILL DISPOSAL COSTS

SECURE LANDFILL: SUBURBAN LOCATION

CAPACITY (MT/YR)	ON-SITE COST ($/MT)	OFF-SITE COST ($/MT)
200	350	---- *
1,200	148	319
7,200	64	88
24,000	41	50
60,000	----*	36
500,000	25	---- *

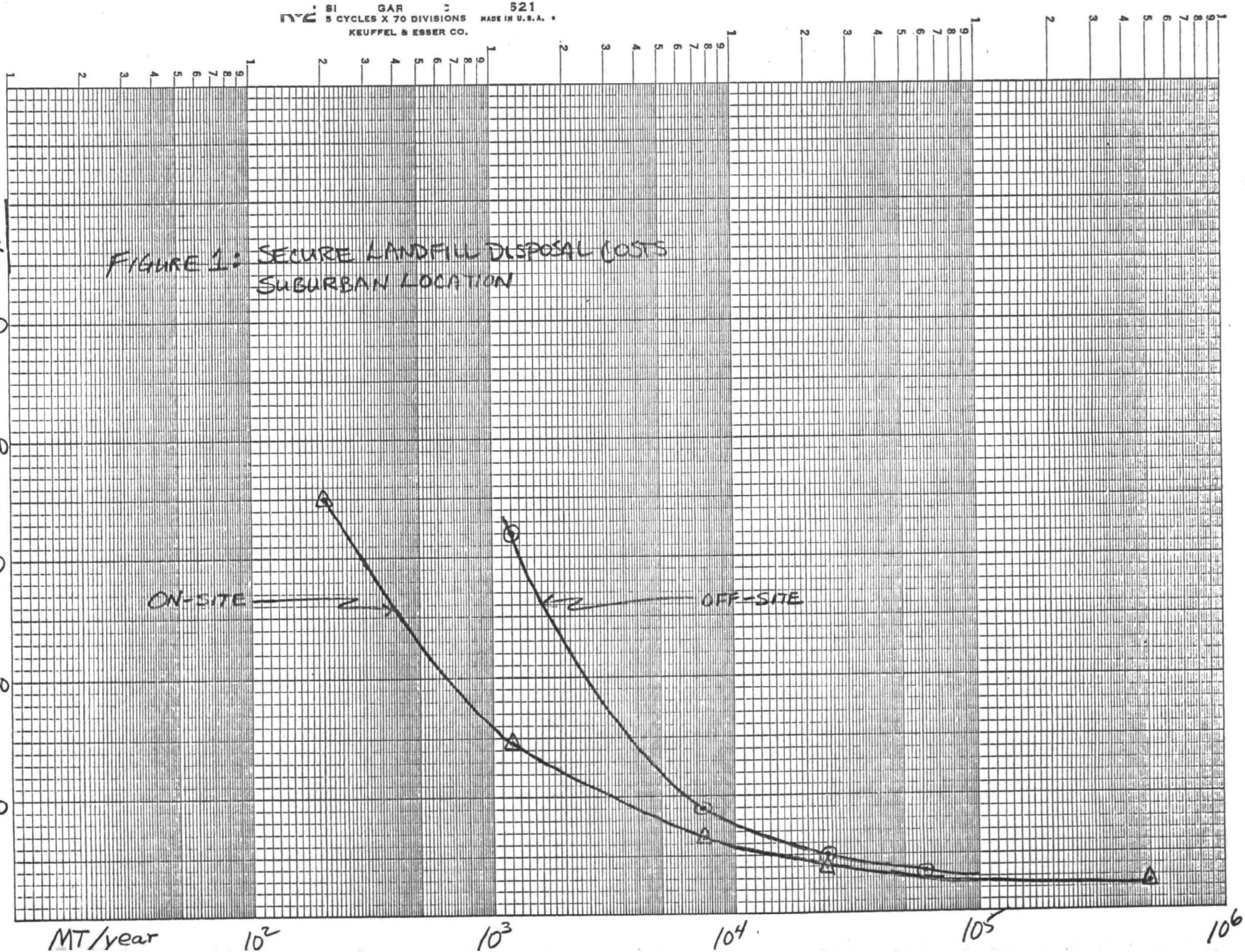
*Costs were not developed for these cases because they were not part of the original secure landfill cost development. The costs that were developed for these sizes were done later at the request of EPA.

In considering the very small landfills (e.g., less than 1000 MT/yr) it is difficult to draw conclusive results from the data. At the 200 MT/yr capacity, the maximum operating depth appears to be two meters. At depths greater than two meters, the size of the cell would be prohibitively small (in order to maintain this capacity). Although the capital cost for the 200 MT/yr facility is relatively small, the unit costs are considerable due to its limited capacity. The data may also be misleading in that at the 1200 MT/yr facility, the operating depth is six meters. It is difficult to compare these cost estimates with those developed at 200 MT/yr with its shallow depth of two meters.

Waste Containerization

PRA conducted a telephone survey of facilities that currently accept hazardous

SI GAR 521
5 CYCLES X 70 DIVISIONS MADE IN U.S.A.
KEUFFEL & ESSER CO.



wastes to determine the costs for disposing drummed and bulk wastes. Nine state pollution control agencies were contacted to obtain the names of approved facilities that accept hazardous wastes for disposal. Eighteen disposal facilities were contacted and the facility operators were asked about the prices charged for waste disposal (excluding transportation). Facilities in various parts of the United States were contacted in order to get data on the range of costs incurred by plants in all geographical areas.

The responses PRA received varied from unwillingness to participate in the survey to giving us the requested price information. Some facility operators did not want to give out information over the telephone; some felt that their disposal prices were so variable (based on the waste and its constituents) that they could not provide data that were meaningful. Six facilities provided information; this is summarized in Table 3.

TABLE 3: SUMMARY OF DATA COLLECTED ON WASTE DISPOSAL COSTS

		Disposal Costs - $/MT (Excluding Transportation)		
Facility	State	Drummed Waste	Bulk Waste	Comments
1	KS	Liquid: $26.40-42.00 Solid: $48.00-64.00	$27.00-32.00 (sludge)	Price reflects waste constituents and what must be done to the waste prior to disposal
2	MO	Solid: $72.00-80.00	$35.00-43.00 (sludge)	Operator feels that prices will probably double when RCRA Subtitle C regulations are implemented.
3	CA	$60.00	Liquid: $12.60 Solid: $43.50-65.00	
4	CA	Liquid: $11.60-16.80 Solid: $70.00-180.00		
5	NY	$74.00	$66.00 (sludge)	
6	NY	Solid: $96.00-320.00	$66.00-88.00 (sludge)	Sludge disposal cost depends on amount of pre-disposal treatment needed.

As is evident from the data in Table 3, hazardous waste disposal prices are extremely variable. Although no substantial conclusions can be drawn from this rather limited data base, Table 3 does give an indication of current disposal prices at secure landfills.

Another aspect of this study of waste containerization was the determination of which wastes generated by the high-impact industries would likely be containerized by a plant in compliance with the RCRA regulations. Any of the high-impact industry wastes considered to be potentially hazardous could be containerized for disposal. However, large amounts of nonflowing waste (such as sludge) would most likely be disposed in bulk. Unless they are generated in very large amounts (making transportation by tank truck cost-effective), liquid wastes would probably be containerized for disposal.

Under the Interim Status Standards promulgated on May 19, 1980, however, drums (empty or full) may not be disposed in any type of landfill. This is to prevent the eventual corrosion of the drums that may result in slumping and disturbance of the final cover. Thus, although small amounts of solid waste and most liquid wastes may still be containerized for transportation to an off-site disposal facility, they must be disposed in bulk form. Bulk liquid waste may be landfilled if the landfill has a liner that is chemically and physically resistant to the liquid, and if the landfill also has a functioning leachate collection and removal system capable of handling all leachate produced.

Treatment/Disposal Technology Assignment

The assignment of treatment/disposal technologies that would be in compliance with the ISS to plants in (or represented by) a model plant (Step 4) was done on an industry-specific basis for six of the high-impact industries. As mentioned earlier, the underlying assumption in this assignment procedure was that a generator would continue to use the same waste management practice(s) under the Interim Status Standards as are currently being used, unless practice(s) would definitely be out of compliance with the ISS regulations. To generalize the procedure, the percentage of plants using a given waste management practice was taken from the model plant data form and was applied to the number of plants in that model. Thus, each set of plants represented by a model was indicative of the variety of current practice waste management technologies that was described on the model plant data form.

For the purpose of technology assignment, surface impoundments were separated into two types - disposal and treatment/storage. Disposal impoundments included tailings ponds, sludge lagoons, and other surface impoundments in which the solid wastes would likely remain at closure. Treatment/storage surface impoundments are those facilities used primarily for the treatment and/or storage of wastewater; if the water in these impoundments contains priority pollutants, the impoundments were included in the RCRA costing. Such impoundments included biological wastewater treatment lagoons, holding ponds, and polishing ponds. The underlying assumption concerning treatment/storage impoundments was that the solid wastes in them would be dredged at regular intervals (for proper operation under BPT or BAT - not a RCRA-induced cost) and that the dredged sludge would be disposed on-or off-site with any other sludge in a RCRA-compliant facility (the sludge disposal was a RCRA-induced cost).

The method used for integrating treatment/storage surface impoundments into the model plants and combining them with disposal technologies varied from industry to industry. It was done in as plant-specific a way as possible, based on available data and the Technical Contractors' knowledge of the industries.

Upon completion of the assignment of waste management technologies and treatment/storage surface impoundments to model plants, the applicable technical requirements (from Table 1) were listed for each technology. This information was summarized on RCRA Waste Management Summary sheets; these were sent, along with equations for the technical costs developed by PRA, to Arthur D. Little, Inc. for the calculation of the technical and non-technical costs. A copy of each of these waste management summary sheets can be found in Appendix D.

The following sections describe, by industry, the method and assumptions underlying the assignment of waste disposal technologies and treatment/storage surface impoundments.

Inorganic Chemicals

Determination of current practice and the assignment of waste management technologies to model plants was done by PRA on a plant-specific basis for the Titanium Dioxide and Sodium Dichromate subcategories. This was possible because there were relatively few plants in each model and enough plant-specific survey forms were available for use in characterizing current practice. In the Chlor-Alkalai and

and Chrome Pigments subcategories the model plant data were used to establish current practice; additional information was obtained from the plant-specific surveys when possible. Because both the plant-specific and model plant data for the Chlor-Alkalai subcategory were very limited, it was necessary for PRA to make some assumptions concerning which waste management technologies were generally used together. In making these assumptions, a consistent method was selected and used for the two segments of this subcategory. In this industry, 10% of the plants were indicated on the model plant forms as needing a fence and controlled access.

Sludge dewatering was included for all subcategories except Chlorine-Mercury Cell Process and Chrome Pigments. The latter subcategory produces a wastewater treatment sludge that is 35% solids; the Technical Contractor felt that the sludge would be non-flowing at that solids content. The criteria used to determine the need for sludge dewatering were those described earlier in the section entitled "Operating and Maintenance".

The data used to describe surface impoundments in terms of surface area, number of plants with impoundments, and number of impoundments per plant were obtained from the Technical Contractor. In most cases, it was assumed that if a generator was using surface impoundments for disposal of most or all of the waste, all surface impoundments at that plant were disposal impoundments. Any exceptions to this were made in cases where there was either a large number of surface impoundments per plant or a small portion of the waste was going to a disposal impoundment. Integration of treatment/storage surface impoundments with other disposal technologies was done by assigning each disposal technology a plant with treatment/storage impoundments until all plants having surface impoundments had been accounted for. This was facilitated by the fact that all Titanium Dioxide and Chrome Pigments plants have surface impoundments and that the impoundments in the Sodium Dichromate subcategory could be assigned on a plant-specific basis.

Leather Tanning and Finishing

The assignment of waste management technologies to model plants in the Leather Tanning industry was done by the Technical Contractor and provided to PRA. When more than one waste stream was described as being sent to the same type of disposal facility, it was assumed that the wastes were disposed together. Information

on facilities needing a fence and controlled access was also provided on a model plant basis by the Technical Contractor. Criteria used to determine the need for sludge dewatering (from 4% solids to 30% solids) were those described earlier in the "Operating and Maintenance" section. The integration of treatment/storage surface impoundments into the model plants was done on a plant-specific basis, based on the Technical Contractor's knowledge of the industry.

Metals Mining

This industry group originally included uranium mines as well as the metals mines. No RCRA-related work was done on model plants for uranium mines, however, because the uranium mining waste is covered under other regulations than RCRA.

The only waste in the Metals Mining industry considered potentially hazardous under the Interim Status Standards was tailings, which are disposed entirely in on-site tailings ponds. Tailings ponds were considered to be a type of disposal surface impoundment, with all appropriate technical requirements for this type of facility applying. The need for a fence was indicated in data provided by the Technical Contractor. There were no treatment/storage surface impoundments in the industry that qualified for coverage under RCRA.

Nonferrous Metal Smelting and Refining

The assignment of waste management technologies to model plants was based on the information in the model plant data form and some additional information from the Technical Contractor. Most of the wastes considered to be potentially hazardous under the ISS are those that are open-dumped on-site or sent to off-site sanitary landfills. The disposal of wastes in stockpiles (as indicated on the model plant forms) is primarily done with slag-type wastes, which are not listed by EPA as potentially hazardous. The use of off-site disposal facilities by primary metals plants was based on the 20% use of off-site facilities indicated on the model plant forms. The model plant forms also indicated that 14% of the secondary metals plants use on-site disposal; this was expressed in the technology assignment procedure as one of the disposal methods for sludge from plants in the Secondary Lead with Battery Cracking subcategory. This distribution of off- and on-site disposal in primary and secondary metals plants was described by the Technical Contractor as the one most reflective of current industry practice. The need for a fence and controlled access was included in the data on the model plant forms.

All of the surface impoundments used in the Nonferrous Smelting and Refining industry that would potentially be affected by RCRA are treatment/storage surface impoundments. The number of plants with impoundments and the number of impoundments per plant were taken directly from data provided by the Technical Contractor. The plants with surface impoundments were integrated with the disposal technologies by first assigning surface impoundments to the plants using on-site disposal technologies. This was assumed to be closest to industry practice because the number of plants with treatment/storage surface impoundments was very close to the number of plants located in rural areas, where land for on-site disposal and impoundments would be available. Any remaining plants with surface impoundments were then assigned to those using off-site disposal technologies.

Organic Chemicals

The assignment of waste management technologies and treatment/storage surface impoundments was done using the data on the model plant forms and supplementary waste management technology and surface impoundment data provided by the Technical Contractor. No disposal surface impoundments are in use by the segments of the industry that were studied.

Textiles

Current practice in the Textiles industry was not described on a model plant basis by the Technical Contractor because there were not sufficient data. Wastewater treatment sludge disposal was described for direct and indirect dischargers, and information on disposal practices for solvents was taken from the plant-specific survey forms. Approximately 15% of the plants responding to the Technical Contractor's survey indicated that they generated solvents; this percentage was applied to the plants in each model. It was also assumed that solvents and sludge were generated independently of each other, and that sludge from the Wool Scouring, Nonwoven, and Felted Fabric subcategories was not hazardous. The plants in each model were assigned disposal technologies in proportion to the overall use of the technologies in the industry. All solvent wastes were assigned to off-site secure landfills, because none of the sanitary landfills described in the model plant forms was lined. Some adjustments to the number of plants in a model using a given disposal technology were made to accomodate disposal sur-

face impoundments when data from the Technical Contractor indicated that they are used. Criteria used to determine the need for sludge dewatering (from 2.5% solids to 20% solids) are those given in the earlier section on operating and maintenance requirements.

The integration of plants with treatment/storage surface impoundments with the disposal technology assignment was a two-step process; the data on number of plants in a subcategory and number of impoundments per plant were provided by the Technical Contractor. The first step was to assign to a plant currently using a disposal impoundment the appropriate number of treatment/storage impoundments to make up the full complement of surface impoundments per plant for a given subcategory. The second step was to assign a full complement of treatment/disposal surface impoundments to each of the remaining groups of plants within the model having a distinct waste management technology (or technologies) starting with the group with the greatest number of plants in it to the one with the least. This was repeated until all complements of treatment/storage surface impoundments had been allocated. It was assumed that those subcategories in which the sludge was not hazardous did not have treatment/storage surface impoundments that needed to be regulated under RCRA.

LIMITS TO THE ANALYSIS

The primary purpose of this study was to provide technical cost and technology assignment data to Arthur D. Little, Inc. for use in an Economic Impact Assessment of the ISS regulations. In addition, several brief, related studies (e.g., closure time estimates, landfill design variations, waste containerization) were undertaken at EPA request. This report, therefore, describes what was done by PRA in the context of the entire EIA project. The study was limited to some extent by both time and data constraints, and some overall assumptions had to be made that may not have been entirely reflective of reality. A summary of the major limitations and assumptions follows:

- The assumption that a facility will continue its current disposal practice under the ISS may not be entirely accurate, in that some facilities may incur a substantial increase in disposal cost if current practice is maintained. A least-cost method could not be used, however, because total ISS compliance costs were not available in time to use them in the waste management technology assignment decisions.

- The baseline situation with regard to sludge amounts and characteristics was assumed to be with BAT and PSES in place; although it is recognized that this is not the case for all plants.

- For some high-impact industries or industry segments, the response to the surveys was very poor; this resulted in difficulties for the Technical Contractor when model plant data were developed.

- Some of the information needed for this study was unavailable because the facility owner/operator did not have the information that was requested. Testing sludges for their potentially hazardous constituents, for example, has been done by very few sludge generators. Generation rates for many wastes were based on limited and highly variable data.

APPENDICES

Appendix A: Code Sheets for Technical Requirements and Treatment/Disposal Options

Appendix B: Details of Technical Cost Development

Appendix C: Time Estimates for the Closure of Landfills and Surface Impoundments

Appendix D: RCRA Waste Management Summary Sheets

APPENDIX A

TECHNICAL REQUIREMENT CODES - ISS

00 - No Technical requirements

01 - Closure (on-site facilities) applies to:

- incinerators
- landfills
- land treatment
- surface impoundments
- tailings ponds

02 - Run-off/run-on control (on-site facilities) applies to:

- landfills

03 - Fence (on-site facilities) applies, as needed, to:

- incinerators
- landfills
- surface impoundments
- tailings ponds

04 - Applicable off-site costs

05 - Applicable on-site O&M cost applies to:

- dewatering of sludge

DISPOSAL OPTION CODES - CURRENT PRACTICE (ISS)

01 - On-site sanitary landfill

02 - Off-site sanitary landfill

03 - On-site open dump (treat as sanitary landfill)

04 - On-site stockpile (treat as sanitary landfill)

05 - On-site disposal surface impoundment

06 - Plant does not generate hazardous waste

07 - On-site land treatment

08 - Off-site land treatment

09 - On-site incineration (no scrubber)

10 - Off-site incineration (no scrubber)

11 - Waste sent to POTW (off-site)

12 - Waste sold as soil conditioner (off-site)

13 - Off-site secure landfill

14 - On-site secure landfill

15 - On-site incineration (with scrubber)

16 - Off-site incineration (with scrubber)

17 - Waste sent to solvent recovery (off-site)

18 - On-site tailings pond

19 - On-site treatment/storage surface impoundment

20 - Sludge dewatering (on-site O&M cost)

21 - Recycled on-site

22 - Ocean disposal

23 - Underground injection

24 - Hydrolyzed

25 - Burned as fuel

26 - Steam stripped

27 - Reprocessed or recycled off-site

28 - Waste sold as by-product

29 - Sold to renderer

APPENDIX B

DETAILS OF TECHNICAL COST DEVELOPMENT

I. LANDFILL DESIGN

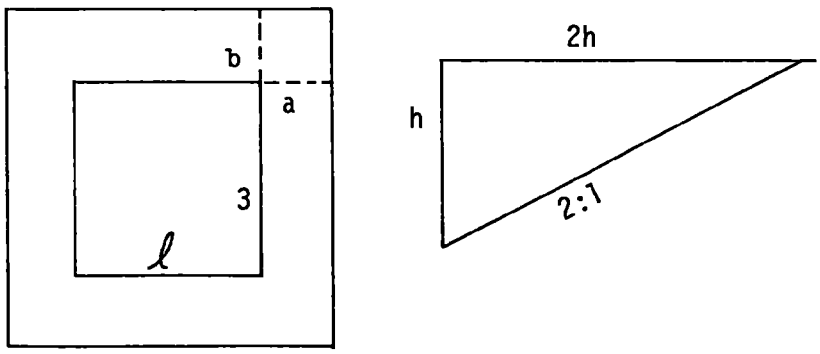
A. Range of Operating Sizes and Depths

Annual Capacity		Operating Depth
Metric Tons	Cubic Meters	Meters
1,000	833	2
10,000	8,333	4
25,000	20,833	5
50,000	41,667	6
100,000	83,333	8

B. Design Assumptions

1. 1.2 metric tons of waste per cubic meter (m^3) volume of waste
2. side slopes are 2:1 (run: rise)
3. bottom dimensions are square
4. existing bottom and side liner thickness is one meter
5. landfill capacity designed for 70% waste volume and 30% cover materials
6. final cover dimensions allow for cover over cell and liner sides
7. all soil and clay soil materials for clay cover are obtained on-site
8. sand needed for synthetic membrane cover is obtianed off-site
9. each landfill cell has been filled with waste and daily cover and then graded to a slope of 5% before final cover application
10. engineering fee of 10% includes permit application, design, and certification fees

C. Dimensional Calculations



1. Assumptions: a=b, 2h=a=b, and w=l

   a = b = corner dimension
   w = bottom width
   l = bottom length
   h = operating height

2. Volume = $(h \cdot w \cdot a) + (h \cdot l \cdot b) + (h \cdot w \cdot l) + 4/3\ (h \cdot a \cdot b) = 2(h \cdot w \cdot a) + (h \cdot w^2) + 4/3\ (h \cdot a^2)$

3. Top cover dimension: $w + (2 \cdot 2h)$ and $l + (2 \cdot 2h)$

4. Examples: h=2m Therefore, 2h=a=b=4m
   w=21m
   l=21m

- Volume = $2\ (2 \cdot 21 \cdot 4) + (2 \cdot 21^2) + 4/3\ (2 \cdot 4^2) = 1261 m^3$

Top cover dimension: h = 2m + 1m (existing liner) = 3m
Therefore, 2h=a=b=6m

- Top cover dimension = 21 + (2·6) and 21 + (2·6) = 33m by 33m

D. Costs: Landfill Design #1 (Clay)

Component	Sizes in Thousand MT's 1	10	25	50	100
1. Stabilizing base of soil	408	1,683	3,105	4,959	7,562
- cut, spread, and compact @ $3.00/$m^3$	1,224	5,049	9,315	14,877	22,686
2. Compacted clay liner	408	1,683	3,105	4,959	7,562
- excavate, spread, and compact @ $3.50/$m^3$	1,428	5,891	10,868	17,357	26,467
3. Soil cover	817	3,367	6,211	9,919	15,123
- cut, spread, and compact @ $3.00/$m^3$	2,451	10,101	18,633	29,757	45,369
4. Perimeter collection ditch	137	273	369	465	573
- trench and pipe @ $18.00/m	2,466	4,914	6,642	8,370	10,314
5. Revegetation @ $1000/acre	0.269	1.109	2.046	3.267	4.981
	269	1,109	2,046	3,267	4,981
6. Engineering @ 10%	784	2,706	4,750	7,363	10,982
7. Sub-total	$8,622	$29,770	$52,254	$80,991	$120,799
8. Contingency @ 10%	862	2,977	5,225	8,099	12,080
9. TOTAL	$9,484	$32,747	$57,479	$89,090	$132,879
($1,000)	(9.5)	(32.7)	(57.5)	(89.1)	(132.9)

E. Costs: Landfill Design #2 (Membrane)

Component	Sizes in Thousand MT's 1	10	25	50	100
1. Stabilizing base of soil	408	1,683	3,105	4,959	7,562
- cut, spread, and compact @ $3.00/$m^3$	1,224	5,049	9,315	14,877	22,686
2. Buffer layers of sand	359	1,481	2,733	4,364	6,654
- purchase and spread @ $6.25/$m^3$	2,244	9,256	17,081	27,275	41,588
3. Synthetic membrane liner	1,225	4,761	8,649	13,689	20,736
- purchase and install @ $5.00/$m^2$	6,125	23,805	43,245	68,445	103,680
4. Soil cover	817	3,367	6,211	9,919	15,123
- cut, spread, and compact @ $3.00/$m^3$	2,451	10,101	18,633	29,757	45,369
5. Perimeter collection ditch	137	273	369	465	573
- trench and pipe @ $18.00/m	2,466	4,914	6,642	8,370	10,314
6. Revegetation @ $1000/acre	0.269	1.109	2.046	3.267	4.981
	269	1,109	2,046	3,267	4,981
7. Engineering @ 10%	1,478	5,423	9,696	15,199	22,862
8. Sub-Total	$16,257	$59,657	$106,658	$167,190	$251,480
9. Contingency @ 10%	1,626	5,966	10,666	16,719	25,148
10. TOTAL	$17,883	$65,623	$117,324	$183,909	$276,628
($1,000)	(17.9)	(65.6)	(117.3)	(183.9)	(276.6)

II. SURFACE IMPOUNDMENT DESIGN

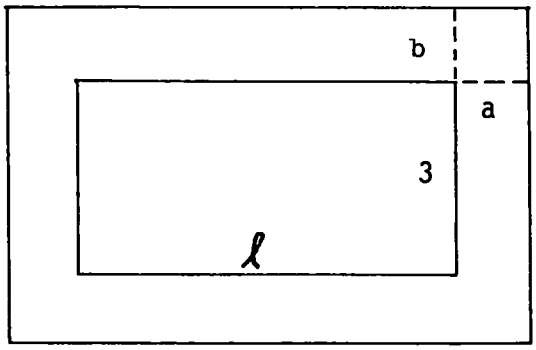
A. Range of Operating Sizes and Depths

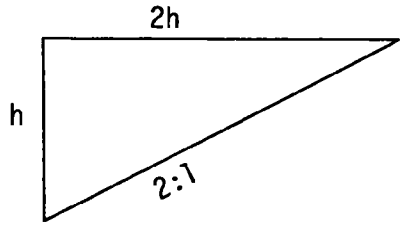
Treatment/Storage Capacity Surface Area (acres)	Operating Depth Meters
0.25	2
1.00	2
2.50	3
5.00	3
10.00	4
25.00	4

B. Design Assumptions

1. side slopes are 2:1 (run:rise)
2. bottom length dimension is twice bottom width dimension
3. existing bottom and side liner thickness is one meter
4. final cover dimensions allow for cover over impoundment and liner sides
5. all soil and clay soil materials for clay cover are obtained on-site
6. sand needed for synthetic membrane cover is obtained off-site
7. one meter freeboard is maintained above operating water level
8. after impoundment is drained, there remains stable, workable sludge at 50% of the original design volume of the impoundment
9. the impoundment's dikes are cut and placed into the impoundment and then graded to a slope of 3% before final cover application
10. engineering fee of 10% includes permit application, design, and certification fees

C. Dimensional Calculations





1. Assumptions: a=b, 2h=a=b, and 2w=l

   a = b = corner dimension
   w = bottom width
   l = bottom length
   h = operating height

2. Volume = $(h \cdot w \cdot a) + (h \cdot l \cdot b) + (h \cdot w \cdot l) + 4/3\ (h \cdot a \cdot b)$

3. Top cover dimension = $w + (2 \cdot 2h)$ and $l + (2 \cdot 2h)$

PAGE NOT

AVAILABLE

DIGITALLY

4. Examples: h=2m Therefore, 2h=a=b=4m
w=17m
l=34m

- Volume = $(2 \cdot 17 \cdot 4) + (2 \cdot 34 \cdot 4) + (2 \cdot 17 \cdot 34) + 4/3\ (2 \cdot 4 \cdot 4) = 1607m^3$

Top cover dimension: h = 2m + 1m (freeboard) + 1m (existing liner) = 4m
Therefore, 2h=a=b=8m

- Top cover dimension: 17+(2·8) and 34 + (2·8) = 33m by 50m

D. Costs: Surface Impoundment Design #1 (Clay)

Component	Operating Area (Acres) 0.25	1.00	2.50	5.00	10.00	25.00
1. Fill and slope requirements	2,078	9,442	30,607	66,281	169,623	497,634
- cut and fill @ $1.50/m^3	3,117	14,163	45,911	99,422	254,435	746,451
2. Stabilizing base of soil	619	2,016	4,544	8,568	16,624	39,994
- cut, spread, and compact @ $3.00/m^3	1,857	6,048	13,632	25,704	49,872	119,982
3. compacted clay liner	619	2,016	4,544	8,568	16,624	39,994
- excavate, spread, and compact @ $3.50/m^3	2,167	7,056	15,904	29,988	58,184	139,979
4. Soil cover	1,238	4,032	9,089	17,136	33,248	79,988
- cut, spread, and compact @ $3.00/m^3	3,714	12,096	27,267	51,408	99,744	239,964
5. Perimeter collection ditch	171	309	463	637	887	1,379
- trench and pipe @ $18.00/m	3,078	5,562	8,334	11,466	15,966	24,822
6. Revegetation @ $1000/acre	0.408	1.328	3.102	5.644	10.95	26.344
	408	1,328	3,102	5,644	10,950	26,344
7. Engineering @ 10%	1,434	4,625	11,415	22,363	48,915	129,754
8. Sub-total	$15,775	$50,878	$125,565	$245,995	$538,066	$1,427,296
9. Contingency @ 10%	1,578	5,088	12,557	24,600	53,807	142,730
10. TOTAL	$17,353	$55,966	$138,122	$270,595	$591,873	$1,570,026
($1000)	(17.4)	(56.0)	(138.1)	(270.6)	(591.9)	(1570.0)

E. Costs: Surface Impoundment Design #2 (Membrane)

Component	Operating Area (Acres) 0.25	1.00	2.50	5.00	10.00	25.00
1. Fill and slope requirements	2,078	9,442	30,607	66,281	169,623	497,634
- cut and fill @ $1.50/m^3	3,117	14,163	45,911	99,422	254,435	746,451
2. Stabilizing base of soil	619	2,016	4,544	8,568	16,624	39,994
- cut, spread, and compact @ $3.00/m^3	1,857	6,048	13,632	25,704	49,872	119,982
3. Buffer layers of sand	545	1,774	3,999	7,540	14,629	35,195
- purchase and spread @ $6.25/m^3	3,406	11,088	24,994	47,125	91,431	219,969
4. Synthetic membrane liner	1,820	5,684	12,580	23,484	45,216	108,028
- purchase and install @ $5.00/m^2	9,100	28,420	62,900	117,420	226,080	540,140
5. Soil cover	1,238	4,032	9,089	17,136	33,248	79,988
- cut, spread, and compact @ $3.00/m^3	3,714	12,096	27,267	51,408	99,744	239,964
6. Perimeter collection ditch	171	309	463	637	887	1,379
- trench and pipe @ $18.00/m	3,078	5,562	8,334	11,466	15,966	24,822
7. Revegetation @ $1000/acre	0.408	1.328	3.102	5.644	10.95	26.344
	408	1,328	3,102	5,644	10,950	26,344
8. Engineering @ 10%	2,468	7,871	18,614	35,819	74,848	191,767
9. Sub-total	$27,148	$86,576	$204,754	$394,008	$823,326	$2,109,439
10. Contingency @ 10%	2,715	8,658	20,475	39,401	82,333	210,944
11. TOTAL	$29,863	$95,234	$225,229	$433,409	$905,659	$2,320,383
($1000)	(29.9)	(95.2)	(225.2)	(433.4)	(905.7)	(2320.4)

APPENDIX C

DRAFT REPORT

A DEVELOPMENT OF TIME ESTIMATES FOR THE CLOSURE OF LANDFILLS AND SURFACE IMPOUNDMENTS

Submitted to:

The Environmental Protection Agency
Office of Solid Waste

Prepared by:

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Introduction

The proposed Interim Status Standards (ISS) specify under Subpart G (Closure and Post-Closure) and Section 265.113, that closure activities must be completed in accordance with an approved closure plan and within six months of receiving the final volume of wastes. Further, the Regional Administrator may accept a longer closure period if the Owner/Operator can demonstrate that the required or planned closure activities will, of necessity, take longer than six months to complete and that all steps have been taken to eliminate any substantial threat to human health and the environment from the unclosed but inactive facility.

The feasibility of this six month allowance for the closure of facilities under the proposed ISS regulations was investigated for the Hazardous and Industrial Waste Management Division of the Office of Solid Waste. The study focused on developing time estimates for the closure of surface impoundments and landfills in accordance with the requirements of the full status standards proposed in September 1979.

The closure of landfill facilities consists primarily of the placement of a final cover on each landfill cell, the specifications of which are described within the landfill section of the September regulations. A landfill cover is also employed for surface impoundments that elect to close as landfills (i.e., accumulated residues remain in the impoundment and are not removed and disposed of off the property site). The cost of closure of surface impoundments by drying and removal of residual waste is prohibitively high, due to the transportation and disposal costs attributed to waste disposal at a permitted hazardous waste facility. This would most likely preclude the selection of this closure option by nearly all surface impoundments, particularly those in excess of one-half acre. For this reason, a detailed time estimate was not undertaken. The time requirement for this closure option, however, would not exceed the time estimates to be discussed later for surface impoundment closure.

Components of the Closure Procedure

The closure of landfill and surface impoundment facilities entails a procedure that is not limited to the construction of a final cover. A description of this procedure and its components are to be identified in the closure plan each facility must prepare. The major components of the closure activity that were considered in this investigation are listed below

Landfills:

1. Disposal of remaining inventory
2. Decontamination of facility equipment (trucks, tractors, pumps, storage areas, dewatering equipment, etc.)
3. Inspection of facility before closure construction begins - i.e.; liners, collection systems, fences, dikes, etc.
4. Installation and revegetation of cover
5. Professional engineer's certification

Surface Impoundments:

1. Drainage of remaining liquid wastes
2. Decontamination of facility equipment (piping systems, conveyors, mechanical sludge removing equipment, aerators, etc.)
3. Inspection of facility before closure construction begins
4. Sludge stabilization and recontour to grade
5. Installation and revegetation of cover
6. Professional engineer's certification

Potential Contingencies:

Certification failure, excess inventory, unusual decontamination, necessary ground water remedial action, monitoring well failure, etc.

The closure plan should not only describe how and when the technical requirements of facility closure will be met, but should also address the disposal of remaining inventory, the decontamination of facility equipment, and the provisions for certifi-

cation. The regulations require that within 90 days of receiving the final volume of wastes, the owner/operator must treat and/or remove all wastes in storage or in process from the site, or dispose of them on-site, in accordance with the closure plan. Since it is common practice in the industry to accumulate quantities of waste before permanently disposing of them, it was assumed that an operator would have two weeks (10 days) of inventory at the time of closure which would have to be disposed on- or off-site.

When the closure activities have been completed, all facility equipment must be properly disposed of or decontaminated by removal of all hazardous waste and residues. According to a draft report prepared by International Research and Technology Corporation (IR&T) entitled: An Analysis of Methods for Ensuring Continuity of Operation for Hazardous Waste Disposal Sites, their sources indicate that this portion of the regulations provides additional environmental protection, as long as a site has been operated in an environmentally safe manner. At closure, an operator would be required either to bury any contaminated equipment or clean it with a decontaminating solution, which would be available as part of his normal operating materials. In some instances, hazardous materials could be scraped off equipment and other surfaces and then be disposed of. Provided a site has been maintained properly during its operation, an estimate of two days has been allocated for this activity.

The regulations also specify that a registered professional engineer must certify that a site has been closed in accordance with the specifications in the closure plan. An engineer must inspect the closure activities while the work is being performed to measure the compaction of earth material, insure that proper soil is used, and in general, monitor the closure activities. The amount of time required for certification depends on the size of the area to be closed, the length of time it takes to complete closure, and site-specific conditions. For this study, it was assumed that two inspections per month (for the duration that closure construction

occurs) would be required. The two day inspection would also be a minimum for all sites, regardless of their size or construction time requirements.

A thorough inspection of the facility should be conducted before construction begins on the final cover. This inspection, which is estimated to take approximately one day, would check for any deterioration in the liner system, dike erosion, inoperative monitoring wells, failure in collection or run-off systems, loss of vegetative cover, etc. Necessary corrective action could then be assessed and scheduled in the closure procedure for that specific site. Various remedial activities for potential contingencies that may become necessary during the closure period will be discussed under closure contingencies.

Final Cover

The design of the final cover that is used on landfills and surface impoundments consists of two layers of earth material and a synthetic membrane. The upper level is an earth fill and topsoil layer approximately 45 cm (18 inches) in total depth and is capable of supporting vegetation. The topsoil is approximately 9 inches deep. The middle layer consists of coarse sand, approximately 15 cm (6 in.) thick, which promotes drainage sufficient to prevent percolating water from the upper level from standing upon the lower layer. This sand layer is connected to perimeter conduits to drain water away from the cell and into a collecting wet well. The lower, or bottom layer, consists of a 20 mil PVC synthetic membrane liner to eliminate the percolation of water into the landfill cell or surface impoundment. The final grade of this cover is 5 percent. The soil layer is fertilized and seeded to promote a vegetative cover that reduces surface erosion.

Landfill Closure

Four different landfill cell capacities, each with different operating depths, were designed to determine the time requirements for their closure. These annual capacities and depths, as listed below, are representative of the wide range in land-

fill sizes throughout industry and permitted commercial facilities.

Annual Disposal (Metric Tons)	Operating Depth (Meters)
600	Two
9,000	Four
45,000	Six
90,000	Eight

After the disposal of the final inventory, the landfill cell is assumed to have reached its design capacity and is leveled and compacted to grade before the final cover phase begins. Although the construction of the final cover can begin at this point, the synthetic membrane liner (lower layer) is not installed until a 5% grade has been achieved with earth fill material. This earth material, as well as the soil layers in the actual cover, were assumed to be available on-site. The coarse sand material is obtained from an off-site source, is assumed to be bought, loaded and hauled two miles to the site.

The time estimates and equipment requirements for a given task (eg: compacted backfill, 6" to 12" lifts, with a sheepsfoot roller) were obtained from R.S. Means Co., Inc., Building Construction Cost Data 1979, incorporating daily output and crew needs. Equipment assignments were made on the basis of the volume of work to be performed. Each task was identified and assigned an appropriate daily output based on equipment availability, site size, and the efficient use of crew and equipment. For instance, when fill material is dumped and spread by a dozer, it must be compacted to the proper density and thickness. This represents a dual task; the utilization of a dozer for spreading and some form of compaction equipment. Various combinations of equipment are employed to complete these two tasks at approximately the same time for each landfill capacity. Consequently, as material is dumped and spread, it is soon followed by compaction equipment (either towed or self-powered) so that this, and any other

assignment that involved dual tasks, could be completed as each respective task is finished. The maximum difference in time allowed between individual tasks was two days, and the tasks which required the longest time to complete determined the total time for that work assignment. The construction components that require this type of simultaneous activity are as follows: fill and compaction for slope development, coarse sand placement and compaction for middle (drainage) layer, and fill and compaction of soil (upper) layer. In addition, during the placement of the drainage layer, the perimeter conduits to collect and drain run-off water from the site are installed. Although no trench construction is necessary, one day is allowed for surface preparation by the installation crew.

The time estimates developed for the installation of the synthetic membrane liner were based upon information supplied by liner manufacturers and installers. An estimate of 1.5 acres of membrane installed per 8 man crew per day was used in this study. This base figure was adjusted to employ a 4-man crew on the 600 MT landfill, but the 1.5 acres/day estimate was never exceeded on larger cells. A two-day site preparation for all cell capacities was added to allow for the construction of shallow trenches used for anchoring the membrane.

Time Estimates for Landfill Cell Closure

The following table lists the time estimates, in days, to perform each closure activity for the landfill cell capacities in question. The time allotted for certification equals the number of estimated days divided by 22 work days per month, times two inspections per month.

Surface Impoundment Closure

Four different surface impoundment capacities, each at a constant operating depth of three meters (10 feet), were designed to determine the time requirements for their closure. The sizes, which are 100,000 gallons, 1,000,000 gallons, 5,000,000

	Closure Activity	Closure Time Estimates (Days) for Annual Landfill Cell Capacities (Metric Tons) of:			
		600	9,000	45,000	90,000
1.	Disposal of remaining inventory	10.0	10.0	10.0	10.0
2.	Facility inspection	1.0	1.0	1.0	1.0
3.	Level and compact to grade	1.0	2.0	3.5	5.0
4.	Spread and compact fill for slope	1.0	6.0	14.5	17.5
5.	Install synthetic membrane liner	2.5	3.0	4.5	5.5
6.	Spread and compact sand layer and install run-off conduits	2.0	3.0	4.0	5.0
7.	Spread and compact fill for soil layer	0.5	1.5	4.0	6.0
8.	Replace top-soil layer	1.0	1.5	4.0	6.0
9.	Revegetation	1.5	4.0	8.0	9.5
10.	Decontaminate facility equipment	2.0	2.0	2.0	2.0
11.	Subtotal_1	22.5	34.0	55.5	67.5
12.	Contingency at 25%	5.5	8.5	14.0	17.0
13.	Subtotal_2	28.0	42.5	69.5	84.5
14.	Certification	2.5	4.0	6.5	8.0
15.	TOTAL DAYS	30.5	46.5	76.0	92.5
16.	Months: $\left(\frac{\text{Total Days}}{\text{22 work days/month}}\right)$	1.4	2.1	3.5	4.2

gallons and 10,000,000 gallons, represent a range of typical capacities throughout industry which would be faced with closure requirements under RCRA's ISS Regulations.

The actual closure activities that are relevant to surface impoundments are essentially the same asthose described for landfills. The construction of the landfill cover for the surface impoundment follows the same design parameters and regulatory requirements that were described previously. The major differences occur with the preparation of the impoundment for the final cover application. The treatment of the inspection, decontamination, and certification components is identical to that done for landfill closure.

Before any cover construction can begin, the influent to the impoundment must be terminated, and the impoundment must be drained of all surface water. The drainage of these liquid (free-flowing) wastes is accomplished first through the impoundment's common outfall. It was assumed that one-half of the retained water volume in the impoundment is drained via this outfall. The wastewater that remains is then removed with portable pumps and pumped to an operative segment of the treatment system for further treatment and disposal. The total estimated time required for drainage varied from one and one-half to four days, depending on the impoundment size.

Once all the standing water has been removed from the impoundment, a sludge/solids blanket remains. Based upon calculations to determine the accumulation rate of solid material in the impoundment, it was assumed that at closure time approximately 60 percent of the impoundment's capacity remained usable. The other 40 percent would be filled with a sludge of 5 percent solids. Before the application of the final cover could proceed, however, the sludge must be allowed to dry to about a 20 percent solids content.

Allowing the sludge to air dry to this solids content would be feasible, but to estimate the amount of time required for drying is quite difficult. The operation of sludge drying beds often produces a cake of 40 to 45 percent solids within six weeks. On the other hand, sludge lagoons are capable of generating 30 percent solids, but usually require one to three years to accomplish this result. Since the impoundment's design and pre-closure condition are more similar to those of sludge lagoons, rather than sludge drying beds, it was believed that one year should be allowed for drying this material to a solids content of 20 percent. It would then be feasible for construction equipment to begin the other preparatory steps necessary before the actual cover is applied.

The one year drying time allowance is a recommendation, however, and any time extension should remain at the discretion of the Regional Administrator. This provision allows for other site specific conditions to be considered in the closure process to assure that all steps have been taken to eliminate any substantial threat to human health and the environment from the inactive facility.

After the sludge has been sufficiently dried, gravel fill is added for further stabilization and the total mass is compacted to attain structural integrity. An amount of gravel equivalent to approximately 50 percent of the estimated sludge volume present is added and compacted in the impoundment. This is followed by soil fill, which is dumped, spread, compacted, and graded level to the surrounding ground surface. Both the gravel and soil fill components involve dual tasks of spreading and compaction, which are accomplished simultaneously. Once the impoundment is brought to ground level, the final cover can then be applied. The designs and procedures remain the same as described for the closure of landfill cells (e.g., the preparation time estimate for liner and run-off conduit installation is two days and one day, respectively).

Time Estimates for Surface Impoundment Closure

The following table presents the time estimates to perform each closure activity on the surface impoundments being investigated. An allowance of one calendar year for drying the sludge layer was then added to each closure total reported. It should also be recounted that the one year allowance is only an estimate. It is possible that this period could be exceeded under certain conditions or impoundment sizes. Obviously, this issue is dependent on site-specific characteristics and therefore any extensions in the closure time period should still remain at the discretion of the Regional Administrator.

Potential Contingencies

As with any construction project, allowance must be made for potential problems that may delay the construction schedule. These occurrences may be attributed to a number of factors, the most common being: materials, equipment, and labor shortages, unanticipated site conditions, adverse climate, and poor construction practices. Contingencies that are probable during the closure procedure include: failure of a portion of cover to meet the certification standards, replanting of vegetation, excess inventory, unusual decontamination requirements, additional pumping and leachate treatment capacity, necessary ground water remedial action, ground water monitoring well failure, and liner failure.

Many of these potential contingencies were discussed and assigned a relative frequency of occurrence in IR&T's draft report. This information was reviewed and considered in the formulation of a contingency time estimate. As can be seen in the two tables, a 25 percent contingency was allowed in the time estimates. It is believed that this allowance would be sufficient to meet normal construction delays due to climatic conditions and any shortages that are encountered. Ideally, each phase of the construction process should be scheduled sequentially, complementing and building upon the work that has already been completed. Unfortunately, construction projects are seldom accomplished with perfect efficiency, and the contingency

Closure Activity	Closure Time Estimates (Days) for Surface Impoundment Capacities (Gallons) of:			
	100,000	1,000,000	5,000,000	10,000,000
1. Drainage of impoundment	1.5	2.0	2.5	4.0
2. Facility inspection	1.0	1.0	1.0	1.0
3. Spread and compact gravel fill	0.5	3.5	9.5	12.5
4. Spread and compact soil fill	1.5	5.0	10.5	13.0
5. Grade to level with ground surface	0.5	0.5	1.0	1.0
6. Spread and compact fill for slope	0.5	3.0	10.5	17.5
7. Install synthetic membrane liner	2.5	3.0	3.5	5.0
8. Spread and compact sand layer and install run-off conduits	2.0	2.5	4.0	4.5
9. Spread and compact fill for soil layer	0.5	1.0	3.0	5.0
10. Replace top-soil layer	0.5	1.0	3.0	4.0
11. Revegetation	1.0	3.0	7.5	10.0
12. Decontaminate facility equipment	2.0	2.0	2.0	2.0
13. $Subtotal_1$	14.0	27.5	58.0	79.5
14. Contingency at 25%	3.5	7.0	14.5	20.0
15. $Subtotal_2$	17.5	34.5	72.5	99.5
16. Certification	2.0	3.5	6.5	9.0
17. TOTAL DAYS	19.5	38.0	79.0	108.5
18. Months	0.9	1.7	3.6	4.9
19. Plus One Calendar Year - Months	12.9	13.7	15.6	16.9

provides some adjustment for actual experience and circumstance. It is also probable that this addition would cover such closure contingencies as certification failure, replanting of vegetation, and further decontamination. The time allotted for contingencies, however, should not be viewed as a predictable or maximum level. It is likely that contingencies such as excessive inventory, additional leachate removal capability, ground water remedial requirements, and liner failures could require time expenditures of up to 6 months to rectify (particularly if more than one contingency occurred). The selection of 25 percent represents a reasonable estimate given the number of potential contingencies that can occur, and the efforts necessary to correct them.

Results and Conclusions

The closure of individual landfill cells, based upon the capacities examined, expresses a range from one and one-half to four and one-half months before all closure activities have been completed and the cell is secured. Closing the largest cell (90,000 MT) is estimated to require 4.2 months. Although this is well within the six month time period given in the regulations, if two or more cells at this same operating capacity closed simultaneously, this estimate would easily exceed 4.2 months, and probably require longer than six months to finish. Commercial landfill facilities typically operate more than one landfill cell at a time, allowing for proper waste segregation by chemical type or disposal practice (i.e. sludges, drums, etc.). If closure of two or more cells fell at approximately the same time (or if the entire site required closure) any difficulties encountered in the availability or allocation of equipment and manpower would severely hinder a completion schedule within the six-month period. To avoid this potential problem in large facilities, the owner/operator should specify in his closure plan a schedule which would prevent this from occurring.

The closure of surface impoundments follows approximately the same range in months for work required as for landfills. The smallest surface impoundment, 100,000 gallons, requires about one month for cover construction. The largest impoundment, 10,000,000 gallons, will take approximately 5 months for cover application. Although it appears that all sizes would be able to complete the construction phase within a six-month time period, an allowance for sludge drying must be factored into the time estimate. Before cover construction can begin, a period of one calendar year is recommended for impoundment drying and preparation. Consequently, this amount of time has been added to each estimate developed. Because each capacity now exceeds the time allotted in the regulations, permission to conduct the closure procedure in this manner would now reside with the Regional Administrator.

APPENDIX D

RCRA Waste Management Summary Sheets

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INORGANIC CHEMICALS

RCRA WASTE MANAGEMENT SUMMARY

6/11/80
Date 6/16/80

Industry INORGANIC CHEMICALS

Model Chrome Pigment - Size 1

Number of Plants 3

Production 1600 ton/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/ SI (acres)
1. WW sludge	472	3	A-14, 19	A-01, 02	3	1	0.067
2. misc. solids	2						

6/11/80

RCRA WASTE MANAGEMENT SUMMARY

Date 6/16/80

Industry INORGANIC CHEMICALS

Model Chrome Pigments - Size 2

Number of Plants 3

Production 4400 tons/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/ SI (acres)
1. ww. sludge	1298	3	A-14, 19	A-01, 02	3	1	0.067
2. misc. solids	3						

RCRA WASTE MANAGEMENT SUMMARY

6/11/80
Date 6/16/80

Industry INORGANIC CHEMICALS

Model Chromic Pigments - Size 3

Number of Plants 2

Production 66000 tons/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/ SI (acres)
1. WW sludge	1948	2	A-14, 19	A-01, 02	2	1	0.067
2. Misc. solids	8						

RCRA WASTE MANAGEMENT SUMMARY

6/11/80
Date 6/16/80

Industry INORGANIC CHEMICALS

Model Chrome Pigments - Size 4

Number of Plants 2

Production 19,800 tons/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/ SI (acres)
1. WW sludge	5893	2	A-14, 19	A-01, 02	2	1	0.067
2. misc. solids	24						

RCRA WASTE MANAGEMENT SUMMARY

6/11/80
Date 6/18/80

Industry INORGANIC CHEMICALS

Model Titanium Dioxide-Chloride Process-Size 1

Number of Plants 3

Production 18,500 tons/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/SI (acres)
1. spent ore 2. WW Sludge	24,878 2937	1	A-13 (waste 1) 14,20 (waste 2) 19	A-04,01,02, 05	1	3	0.5
Same as above, except sludge	6713	1	B-13, 19	B-04,01	1	3	0.5
same as above, except sludge	2937	1	C-14, 19, 20 (waste 2)	C-01,02, 05	1	3	0.5

6/11/80

RCRA WASTE MANAGEMENT SUMMARY

Date 6/18/80

Industry INORGANIC CHEMICALS

Model Titanium Dioxide - Chloride Process - Sheet 2

Number of Plants 2

Production 28,000 tons/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/ SI (acres)
1. spent ore 2. ww. sludge	37,654 10,161	1	A-05 (waste 1) (0.5 ac) 13 (waste 2) 19	A-04, 01	1	2	0.5
same as above, except sludge	4445	1	B-05 (waste 1) (0.5 ac) 20, 01 (waste 2) 19	B-01, 02, 05	1	2	0.5

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6/11/80

RCRA WASTE MANAGEMENT SUMMARY

Date 6/16/80

Industry INORGANIC CHEMICALS

Model Titanium Dioxide - Chloride Process - Size 3

Number of Plants 1

Production 50,000 tons/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/SI (acres)
1. spent ore	67,239	1	A-05, 19 (0.5 ac)	A-01	1	2	0.5
2. WW sludge	18,144						

RCRA WASTE MANAGEMENT SUMMARY

6/11/80
Date 6/16/80

Industry INORGANIC CHEMICALS

Number of Plants 3

Model Titanium Dioxide - Chloride Process, Using Ilmenite Ore - Size 4

Production 173,600 tons/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/SI (acres)
1. spent ore	75,493	3	A-14, 19	A-01, 02	3	4	0.6875
2. ww sludge	23,592						
3. misc. sludges	429						

RCRA WASTE MANAGEMENT SUMMARY

6/11/80
Date 6/18/80

Industry INORGANIC CHEMICALS

Model Titanium Dioxide - Sulfate Process - S-2-1

Number of Plants 2

Production 35,000 tons/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/SI (acres)
1. spent ore	444,071	2	A-01 (wastes 1,2)	A-01, 02, 05	2	3	2.666
2. ww sludge	43,659		20 (waste 2)				
3. misc. sludges	1746		21 (waste 3)				
			19				

RCRA WASTE MANAGEMENT SUMMARY

6/11/80
Date 6/18/80

Industry INORGANIC CHEMICALS

Model Titanium Dioxide - Sulfate Process - Size 2

Number of Plants 1

Production 32,500 tons/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/ SI (acres)
1. spent ore	666,017	1	A-05 (waste 1) (2-2.666 ac each)	A-01, 02, 05	1	3	2.666
2. ww sludge	65,488		01, 20 (waste 2)				
3. misc. sludges	2620		21 (waste 3)				
			19				

RCRA WASTE MANAGEMENT SUMMARY

6/11/80
Date 6/18/80

Industry INORGANIC CHEMICALS

Model Titanium Dioxide - Sulfate Process - Size 3

Number of Plants 1

Production 80,000 tons/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/ SI (acres)
1. spent ore	1,040,396	1	A-22 (waste 1)	A-01, 02, 05	1	5	2.666
2. ww sludge	102,286		20,01 (waste 2)				
3. misc. sludges	4091		21 (waste 3)				
			19				

RCRA WASTE MANAGEMENT SUMMARY

6/11/80
Date 6/16/80

Industry INORGANIC CHEMICALS

Model Sodium Dichromate - Size 1

Number of Plants 1

Production 22,000 tons/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/SI (acres)
1. spent ore 2. ww sludge	49,397 1996	1	A-03, 19 (2-12.77 ac each)	A-01	1	4	12.77

RCRA WASTE MANAGEMENT SUMMARY

6/11/80
Date 6/16/80

Industry INORGANIC CHEMICALS

Model Sodium Dichromate - Size 2

Number of Plants 1

Production 35,000 tons/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/SI (acres)
spent ore	123,492	1	A-13, 19	A-04, 01	1	3	11.2

RCRA WASTE MANAGEMENT SUMMARY

6/11/80
Date 6/16/80

Industry INORGANIC CHEMICALS

Model Sodium Dichromate - Size 3

Number of Plants 1

Production 77,000 tons/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/ SI (acres)
WW Sludge	6983	1	A-05, 19 (6.5 ac)	A-01	1	1	6.5

RCRA WASTE MANAGEMENT SUMMARY

Date 6/11/80 6/16/80

Industry INORGANIC CHEMICALS

Model Chlorine-Diaphragm Cell Process. Size 1

Number of Plants 12

Production 21,000 tons/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/ SI (acres)
1. brine mud 2. cell waste	1822 15	1	A-05 (waste 1) (2-6.255 ac each) 02 (waste 2)	A-04, 01	1		
same as above	same as above	1	B-05 (waste 1) (2-6.255 ac each) 13 (waste 2)	B-04, 01	1		
"	"	1	C-05 (waste 1) (2-6.255 ac each) 14 (waste 2)	C-01, 02	1		
"	"	1	D-14 (waste 1) 02 (waste 2)	D-04, 01, 02	1		
"	"	2	E-14 (waste 1) 02 (waste 2) 19	E-04, 01, 02	2	2	6.255
"	"	3	F-14 (waste 1) 13 (waste 2) 19	F-04, 01, 02, 03 -04, 01, 02	1 2	2	6.255
"	"	1	G-14	G-01, 02	1		
"	"	2	H-14, 19	H-01, 02	2	2	6.255

RCRA WASTE MANAGEMENT SUMMARY

6/11/80
Date 6/16/80

Industry INORGANIC CHEMICALS

Model Chlorine-Diaphragm Cell Process-Size 2

Number of Plants 17

Production 105,000 tons/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/SI (acres)
1. brine mud 2. cell waste	9109 74	1	A-05 (waste 1), (2-6.255 ac each) 02 (waste 2)	A-04,01	1		
same as above	same as above	1	B-05 (waste 1) (2-6.255 ac each) 13 (waste 2)	B-04,01	1		
"	"	1	C-05 (waste 1), (2-6.255 ac each) 14 (waste 2)	C-01,02	1		
"	"	1	D-13,19	D-04,01	1	2	6.255
"	"	2	E-14 (waste 1) 02 (waste 2)	E-04,01,02	2		
"	"	3	F-14 (waste 1) 02 (waste 2) 19	F-04,01,02	3	2	6.255
"	"	1	G-14 (waste 1) 13 (waste 2)	G-04,01,02	1		
"	"	3	H-14 (waste 1) 13 (waste 2) 19	H-04,01,02	3	2	6.255
"	"	3	I-14,19	I-01,02 -01,02,03	2 1	2	6.255
"	"	1	J-23 (waste 1) 14 (waste 2) 19	J-01,02	1	2	6.255

RCRA WASTE MANAGEMENT SUMMARY

6/11/80
Date 6/16/80

Industry INORGANIC CHEMICALS

Model Chlorine - Diaphragm Cell Process - Size 3

Number of Plants 11

Production 211,000 tons/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/SI (acres)
1. brine mud 2. cell waste	18,304 148	1	A-03 (waste 1) (2-6.255 ac each) 02 (waste 2)	A-04,01	1		
same as above	same as above	2	B-03 (waste 1) (2-6.255 ac each) 13 (waste 2)	B-04,01	2		
"	"	1	C-14 (waste 1) 02 (waste 2)	C-04,01,02	1		
"	"	2	D-14 (waste 1) 02 (waste 2) 19	D-04,01,02 -04,01,02,03	1 1	2	6.255
"	"	2	E-14 (waste 1) 13 (waste 2) 19	E-04,01,02	2	2	6.255
"	"	1	F-14	F-01,02	1		
"	"	2	G-14, 19	G-01, 02	2	2	6.255

RCRA WASTE MANAGEMENT SUMMARY

6/11/80
Date 6/18/80

Industry INORGANIC CHEMICALS

Model Chlorine - Mercury Cell Process - Size 1

Number of Plants 11

Production 21,000 tons/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/ SI (acres)
1. brine mud 2. Hg-bearing sludge 3. misc. sludges	1041 53 794	1	A - 14 (wastes 1,2) 13 (waste 3) 19	A - 04, 01, 02	1	2	6.255
same as above	same as above	1	B - 14 (wastes 1,3) 13 (waste 2) 19	B - 04, 01, 02	1	2	6.255
"	"	1	C - 13, 19	C - 04, 01	1	2	6.255
"	"	2	D - 14	D - 01, 02	2		
"	"	4	E - 05 (2 - 6.255 ac each)	E - 01	4		
"	"	1	F - 13 (waste 1) 05 (wastes 2, 3) (6.255 ac) 19	F - 04, 01, 03 (only for disp. S1)	1	1	6.255
same as above, except misc. sludges	40	1	G - 13 (waste 1) 14 (waste 2) 14, 20 (waste 3) 19	G - 04, 01, 05		2	6.255

RCRA WASTE MANAGEMENT SUMMARY

6/11/80
Date 6/18/80

Industry INORGANIC CHEMICALS

Model Chlorine-Mercury Cell Process-Size 2

Number of Plants 14

Production 105,500 tons/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/ SI (acres)
1. brine mud 2. Hg-bearing sludge 3. misc. sludges	5228 266 3991	1	A-14 (wastes 1,2) 13 (waste 3) 19	A-04, 01, 02	1	2	6.255
same as above	same as above	1	B-13 (wastes 1,2) 05 (waste 3) (6.255 ac) 19	B-04, 01, 02	1	1	6.255
"	"	1	C-14 (wastes 1,3) 13 (waste 2) 19	C-04, 01, 02	1	2	6.255
"	"	1	D-13, 19	D-04, 01	1	2	6.255
"	"	2	E-14	E-01, 02	2		
"	"	1	F-14, 19	F-01, 02, 03	1	2	6.255
"	"	5	G-05 (5-6.255 ac each)	G-01, 03 -01	1 4		
same as above, except misc. sludges	200	2	H-13 (waste 1) 14 (waste 2) 14, 20 (waste 3) 19	H-04, 01, 02, 05	2	2	6.255

RCRA WASTE MANAGEMENT SUMMARY

6/11/80
Date 6/18/80

Industry INORGANIC CHEMICALS

Model Chlorine - Mercury Cell Process - Site 3

Number of Plants 2

Production 210,500 tons/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/SI (acres)
1. brine mud 2. Hg-bearing sludge 3. misc. sludges	10,431 531 7963	1	A-05 (2-6.255 ac each)	A-01	1		
same as above, except misc. sludges	398	1	B-13 (waste 1) 14 (waste 2) 14,20 (waste 3) 19	B-01,05	1	2	6.255

LEATHER TANNING AND FINISHING

RCRA WASTE MANAGEMENT SUMMARY

Date 7/21/80

Industry LEATHER TANNING

Model Chrome Tan, Pulp Hair - XS

Number of Plants 6

Production 1002 MT/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/ SI (acres)
1. trimmings/shavings	100	6	A-02	A-04	6		
2. screenings	25						
3. sludge	542						
4. buffing dust	1.1						
5. waste finishes	40						

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6/11/80

RCRA WASTE MANAGEMENT SUMMARY

Date 7/31/80

Industry LEATHER TANNING

Model Chrome Tan, Pulp Hair-S

Number of Plants 92

Production 2347 MT/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/ SI (acres)
1. trimmings/shavings 2. screenings 3. sludge 4. buffing dust 5. waste finishes	254 64 1376 3.6 102	15	A-02	A-04	15		
same as above	same as above	1	B-02, 19	B-04, 01, 03	1	1	3.0
"	"	4	C-01 (wastes 1-4) 02 (wastes 5)	C-01, 02, 04 -01, 02, 03, 04	1 3		
same as above, except sludge	10,320	2	D-07 (wastes 1-4) 10 (wastes 5)	D-01, 04	2		

RCRA WASTE MANAGEMENT SUMMARY

Date 7/31/80

Industry LEATHER TANNING

Model Chrome Tan, Pulp Hair - M

Number of Plants 15

Production 5732 MT/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/ SI (acres)
1. trimmings/shavings 2. screenings 3. sludge 4. buffing dust 5. waste finishes	573 143 3095 7.2 229	8	A-02	A-04	8		
same as above	same as above	1	B-02, 19	B-01, 04, 03	1	2	1-3.7 1-0.79
"	"	3	C-01 (wastes 1-4) 02 (waste 5)	C-01, 02, 03, 04 -01, 02, 04	2 1		
same as above, except sludge	23,213	1	D-02 (wastes 1, 2, 4, 5) 05 (waste 3) (0.6 ac)	D-01, 04, 03	1	5	3-2.8 1-3.1 1-0.3
same as above	same as above	1	E-07 (waste 1-4) 10 (waste 5)	E-01, 04	1		
"	"	1	F-07 (wastes 1-4) 02 (waste 5)	F-01, 04			

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RCRA WASTE MANAGEMENT SUMMARY

Date 7/31/80

Industry LEATHER TANNING

Model Chrome Tan, Pulp Hair - L

Number of Plants 12

Production 10,826 MT/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/ SI (acres)
1. trimmings/shavings 2. screenings 3. sludge 4. buffing dust 5. waste finishes	1083 271 5846 13.6 433	7	A-02	A-04	7		
same as above	same as above	1	B-02, 19	B-04, 01, 03	1	6	2 - 0.2 2 - 0.1 2 - 0.76
"	"	1	C-01 (wastes 1-4) 02 (wastes) 19	C-01, 02, 03, 04	1	3	1 - 5.0 1 - 0.25 1 - 1.5
"	"	1	D-01 (wastes 1-4) 02 (wastes)	D-01, 02, 04	1		
same as above, except sludge	7046	1	E-01 (wastes 1-4) 02 (wastes)	E-01, 02, 03, 04	1		
same as above, except sludge	43,845	1	F-07 (wastes 1-4) 10 (wastes)	F-01, 04	1		

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RCRA WASTE MANAGEMENT SUMMARY

Date 7/31/80

Industry LEATHER TANNING

Model Chrome Tan, Pulp Hair - XL

Number of Plants 6

Production 30,952 MT/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/ SI (acres)
1. trimmings/shavings 2. screenings 3. sludge 4. buffing dust 5. waste finishes	3096 773 16,714 370 1238	4	A-02	A-04	4		
same as above	same as above	1	B-01 (wastes 1-4) 02 (waste 5)	B-04, 01, 02, 03	1		
same as above, except sludge	25,355	1	C-07 (wastes 1-4) 10 (waste 5)	C-04, 01	1		

RCRA WASTE MANAGEMENT SUMMARY

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6/11/80
Date 7/31/80

Industry LEATHER TANNING

Model Chrome Tan, Save Hair - S

Number of Plants 4

Production 2359 MT/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/ SI (acres)
1. trimmings/shavings 2. screenings 3. sludge 4. buffing dust 5. waste finishes	236 59 1321 3.0 94	3	A-02	A-04	3		
same as above	same as above	1	B-01 (wastes 1-4) 02 (waste 5) 19	B-04, 01, 02, 03	1	4	2-0.75 2-0.5

RCRA WASTE MANAGEMENT SUMMARY

DRA
6/11/80
Date 7/31/80

Industry LEATHER TANNING

Model Chrome Tan, Save Hair - L

Number of Plants 3

Production 10,024 MT/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/ SI (acres)
1. trimmings/shavings 2. screenings 3. sludge 4. buffing dust 5. waste finishes	1003 251 5614 12.6 401	1	A-02	A-04	1		
same as above	same as above	1	B-02, 19	B-04, 01, 03	1	2	1-0.4 1-0.25
"	"	1	C-01 (wastes 1-4) 02 (wastes)	C-04, 01, 03	1		

RCRA WASTE MANAGEMENT SUMMARY

Date 7/31/80

Industry LEATHER TANNING

Model Nonchrome Tan-S

Number of Plants 6

Production 955 MT/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/ SI (acres)
1. screenings 2. sludge	23 344	2	A-02	A-04	2		
same as above, except sludge	2580	1	B-01 (waste 1) 03 (waste 2) (0.33 ac)	B-01, 02, 03 (for landfill only)	1		
same as above	same as above	1	C-02 (waste 1) 03 (waste 2) (0.33 ac) 19	C-04, 01, 03	1	2	0.3
none	—	2	D-06	D-00	2		

RCRA WASTE MANAGEMENT SUMMARY

Date 7/31/80

Industry LEATHER TANNING

Model Nonchrome Tan - M

Number of Plants 5

Production 4776 MT/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/ SI (acres)
1. screenings 2. sludge	120 1719	2	A-02	A-04	2		
same as above, except sludge	12,893	1	B-01 (waste1) 05 (waste2) (0.5 ac) 19	B-01, 02, 03	1	2	1-7.0 1-14.0
same as above	same as above	1	C-02 (waste1) 05 (waste2) (0.5 ac)	C-04, 01, 03	1		
none	—	1	D-06	D-00	1		

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RCRA WASTE MANAGEMENT SUMMARY

Date 7/31/80

Industry LEATHER TANNING

Model Nonchrome Tan - L

Number of Plants 4

Production 14,011 MT/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/ SI (acres)
1. screenings 2. sludge	349 5042	1	A-02	A-04	1		
same as above, except sludge	37,813	1	B-02 (waste 1) 05 (waste 2) (2@0.75 ac each) 19	B-04, 01, 03	1	3	1-0.5 1-0.6 1-0.9
same as above, except sludge	6042	1	C-02 (waste 1) 01 (waste 2) 19	C-04, 01, 02, 03	1	2	1-3.5 1-1.0
same as above, except sludge	37,832	1	D-01 (waste 1) 05 (waste 2) (0.8 ac) 19	B-01, 02, 03	1	3	1-5.0 1-4.0 1-1.0

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RCRA WASTE MANAGEMENT SUMMARY

Date 7/31/80

Industry LEATHER TANNING

Model Retan/Sides-S

Number of Plants 9

Production 2612 MT/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/SI (acres)
1. trimmings/shavings 2. screenings 3. sludge 4. buffing dust 5. waste finishes	340 2 392 6.8 7	7	A-02	A-04	7		
same as above	same as above	1	B-02, 19	B-04, 01, 03	1	2	1-0.75 1-0.5
"	"	1	C-02, 19	C-04, 01, 03	1	5	0.33

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RCRA WASTE MANAGEMENT SUMMARY

Date 7/31/80

Industry LEATHER TANNING

Model Retan/Sides-L

Number of Plants 7

Production 14,365 MT/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/ SI (acres)
1. trimmings/shavings 2. screenings 3. sludge 4. buffing dust 5. waste finishes	1867 13 2154 37.2 43	6	A-02	A-04	6		
same as above	same as above	1	B-02 (wastes 1-4) 17 (waste 5)	B-04	1		

RCRA WASTE MANAGEMENT SUMMARY

Date 7/31/80

Industry LEATHER TANNING

Model Retan/Splits-S

Number of Plants 9

Production 2547 MT/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/ SI (acres)
1. trimmings/shavings	331	8	A-02	A-04	8		
2. screenings	2						
3. sludge	382						
4. buffing dust	19.3						
5. waste finishes	7						
same as above	same as above	1	B-02 (wastes 1-4) 10 (waste 5)	B-04	1		

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RCRA WASTE MANAGEMENT SUMMARY

Date 7/31/80

Industry LEATHER TANNING

Model Retan/Splits - L

Number of Plants 5

Production 7854 MT/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/SI (acres)
1. trimmings/shavings 2. screenings 3. sludge 4. buffing dust 5. waste finishes	1021 8 1178 59.4 23	2	A-02	A-04	2		
same as above	same as above	1	B-02 (wastes 1-4) 10 (waste 5)	B-04	1		
"	"	2	C-02 (wastes 1-4) 17 (waste 5)	C-04	2		

RCRA WASTE MANAGEMENT SUMMARY

6/11/80
Date 7/31/80

Industry LEATHER TANNING

Model No Beamhouse - S

Number of Plants 7

Production 183 MT/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/ SI (acres)
1. trimmings/shavings 2. screenings 3. sludge 4. buffing dust 5. waste finishes	27 2 55 0.4 1	5	A-02	A-04	5		
same as above	same as above	1	B-01 (wastes 1-4) 02 (waste 5)	B-01, 02, 03, 04	1		
same as above, except sludge	413	1	C-01 (wastes 1,2,4) 02 (waste 5) 05 (waste 3) (0.25 ac)	C-01, 02, 03, 04	1		

RCRA WASTE MANAGEMENT SUMMARY

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6/11/80
Date 7/31/80

Industry LEATHER TANNING

Model No Beamhouse - M

Number of Plants 7

Production 543 MT/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/ SI (acres)
1. trimmings/shavings 2. screenings 3. sludge 4. buffing dust 5. waste finishes	81 3 163 1.2 2	5	A-02	A-04	5		
same as above	same as above	1	B-02 (wastes 1,2,4,5) 01 (waste 3)	B-01, 02, 04	1		
same as above, except sludge	1223	1	C-01 (wastes 1,2,4) 02 (waste 5) 05 (waste 3) (0.25 ac)	C-01, 02, 03, 04	1		

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RCRA WASTE MANAGEMENT SUMMARY

Date 7/31/80

Industry LEATHER TANNING

Model No Beamhouse-L

Number of Plants 10

Production 18216 MT/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/SI (acres)
1. trimmings/shavings 2. screenings 3. sludge 4. buffing dust 5. waste finishes	274 18 548 4.6 6	7	A-02	A-04	7		
same as above	same as above	1	B-02 (wastes 1,2,4,5) 01 (waste 3)	B-01, 02, 03, 04	1		
"	"	1	C-01 (wastes 1-4) 02 (waste 5)	C-01, 02, 03, 04	1		
same as above, except sludge	4110	1	D-01 (wastes 1,2,4) 02 (waste 5) 05 (waste 3) (0.25 ac)	D-01, 02, 03, 04	1		

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RCRA WASTE MANAGEMENT SUMMARY

Date 7/31/90

Industry LEATHER TANNING

Model Thru-the-Blue-S

Number of Plants 8

Production 3868 MT/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/ SI (acres)
1. trimmings/shavings 2. screenings 3. sludge	193 77 1547	5	A-02	A-04	5		
same as above	same as above	1	B-29 (wastes 1) 02 (wastes 2,3) 19	B-04, 01, 03	1	3	1-1.6 1-0.5 1-3.0
"	"	1	C-02 (wastes 1,2) 01 (waste 3)	C-04, 01, 02	1		
"	"	1	D-01	D-01, 02	1		

RCRA WASTE MANAGEMENT SUMMARY

6/11/80
Date 7/31/80

Industry LEATHER TANNING

Model Hyde-Hide-Blue — L

Number of Plants 5

Production 25,633 MT/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/ SI (acres)
1. trimmings/shavings 2. sawdust 3. sludge	1281 513 10,253	2	A-01	A-01, 02	2		
same as above	same as above	3	B-02	B-04	3		

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RCRA WASTE MANAGEMENT SUMMARY

6/11/80
Date 7/31/80

Industry LEATHER TANNING

Model Shearlings-S

Number of Plants 4

Production 1144 MT/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/SI (acres)
1. Scrapings 2. Sludge 3. buffing dust	69 183 44.4	3	A-02	A-04	3		
same as above	same as above	1	B-01, 19	B-01, 02, 03	1	4	1-0.1 1-0.25 2-0.5

RCRA WASTE MANAGEMENT SUMMARY

Date 7/31/80

Industry LEATHER TANNING

Model Shearlines - L

Number of Plants 4

Production 3184 MT/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/ SI (acres)
1. Screenings	191	4	A-02	A-04	4		
2. Sludge	509						
3. buffing dust	122.7						

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RCRA WASTE MANAGEMENT SUMMARY

Date 8/1/80

Industry LEATHER TANNING

Model Pigskins-M

Number of Plants 2

Production 7719 MT/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/SI (acres)
1. trimmings/shavings	2722	1	A-28(waste1)	A-04	1		
2. screenings & sludge	9072		02(wastes 2,3)				
3. buffing dust	45.4						
1. trimmings/shavings	1089	1	B-29(waste1)	B-04,01,	1	4	0.5
2. screenings & sludge	3478		02(wastes 2,3)	03			
3. buffing dust	9.1		19				

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RCRA WASTE MANAGEMENT SUMMARY

Date 7/31/80

Industry LEATHER TANNING

Model Finishers - S.

Number of Plants 50

Production 1190 MT/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/ SI (acres)
waste finishes	4	45	A-02	A-04	45		
Same as above	same as above	5	B-10	B-04	5		

RCRA WASTE MANAGEMENT SUMMARY

Date 7/31/80

Industry LEATHER TANNING

Model Finishers - L

Number of Plants 35

Production 3401 MT/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/ SI (acres)
waste finishes	10	32	A-02	A-04	32		
same as above	same as above	3	B-10	B-04	3		

METALS MINING

RCRA WASTE MANAGEMENT SUMMARY

6/11/80
Date 8/1/80

Industry METALS MINING

Model Copper - 2.5 X10^6 MT/yr - Surface

Number of Plants 8

Production 2.5 X10^6 MT/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/ SI (acres)
mill tailings	9,800,000	8	A-18 (2 @ 150 ac each)	A-01, 03	8		

RCRA WASTE MANAGEMENT SUMMARY

6/11/80
Date 8/1/80

Industry METALS MINING

Model Copper - 6.7 X 10^6 MT/yr - Underground

Number of Plants 3

Production 6.7 X 10^6 MT/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/ SI (acres)
mill tailings	23,880,000	3	A-18 (2@ 400 ac each)	A-01, 03	3		

RCRA WASTE MANAGEMENT SUMMARY

Date 8/1/80

Industry METALS MINING

Model Copper - 6.7×10^6 MT/yr - Surface

Number of Plants 10

Production 6.7×10^6 MT/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/ SI (acres)
Mill tailings	96,240,000	10	A-1.8 (2@ 400 ac each)	A-01,03	9		
				-01	1		

RCRA WASTE MANAGEMENT SUMMARY

Date 7/30/80

Industry METALS MINING

Model Copper - 22 X10^6 MT/yr - Underground

Number of Plants 1

Production 22 X10^6 MT/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/ SI (acres)
mill tailings	44,478,000	1	A-18 (5 @ 440 ac each)	A-01,03	1		

RCRA WASTE MANAGEMENT SUMMARY

Date 8/1/80 (8/11/80)

Industry METALS MINING

Model Copper - 22 X10^6 MT/yr - Surface

Number of Plants 4

Production 22 X10^6 MT/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/SI (acres)
mill tailings	63,500,000	4	A-18 (3 @ 735 ac each)	A-01,03	4		

RCRA WASTE MANAGEMENT SUMMARY

Date 7/30/80

Industry METALS MINING

Model Gold - 1×10^5 MT/yr - Underground

Number of Plants 4

Production 1×10^5 MT/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/ SI (acres)
mill tailings	250,000	4	A-18 (1@40 ac)	A-01,03	2		
				-01	2		

RCRA WASTE MANAGEMENT SUMMARY

Date 7/30/80

Industry METALS MINING

Model Gold - 1×10^5 MT/yr - Surface

Number of Plants 5

Production 1×10^5 MT/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/ SI (acres)
mill tailings	247,500	5	A-18 (1@40 ac)	A-01,03	3		
				-01	2		

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6/11/80

RCRA WASTE MANAGEMENT SUMMARY

Date 7/30/80

Industry METALS MINING

Model Gold - 1.5×10^6 MT/yr - Surface

Number of Plants 1

Production 1.5×10^6 MT/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/SI (acres)
mill tailings	3,700,000	1	A-18 (1 @ 100 ac)	A-01	1		

RCRA WASTE MANAGEMENT SUMMARY

DRA
0/11/80
Date 7/30/80

Industry METALS MINING

Model Gold- 2.6 X10^6 MT/yr - Underground

Number of Plants 1

Production 2.6 X10^6 MT/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/ SI (acres)
mill tailings	6,500,000	1	A-18 (1 @ 125ac)	A-01,03 (fence needed for 1/2 of area only)	1		

RCRA WASTE MANAGEMENT SUMMARY

A
6/11/80
Date 7/30/80

Industry METALS MINING

Model Iron - 2.5×10^6 MT/yr - Underground

Number of Plants 4

Production 2.5×10^6 MT/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/ SI (acres)
mill tailings	3,171,000	4	A-18 (1 @ 300 ac)	A-01,03	4		

7A
6/11/80

RCRA WASTE MANAGEMENT SUMMARY

Date 7/30/80

Industry METALS MINING

Model Iron - 2.5×10^6 MT/yr - Surface

Number of Plants 10

Production 2.5×10^6 MT/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/ SI (acres)
mill tailings	3,343,000	10	A-18 (1 @300 ac)	A-01,03	10		

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6/11/80

RCRA WASTE MANAGEMENT SUMMARY

Date 8/1/80

Industry METALS MINING

Model Iron - 10×10^6 MT/yr - Surface

Number of Plants 5

Production 10×10^6 MT/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/ SI (acres)
mill tailings	15,600,000	5	A-18 (2@350 ac each)	A-01,03	4		
				-01	1		

RRA
6/11/80

RCRA WASTE MANAGEMENT SUMMARY

Date 8/1/80

Industry METALS MINING

Model Iron - 21×10^6 MT/yr - Surface

Number of Plants 6

Production 21×10^6 MT/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/SI (acres)
mill tailings	24,573,000	6	A-18 (2@850 ac each)	A-01,03	5		
				-01	1		

RCRA
8/11/80

RCRA WASTE MANAGEMENT SUMMARY

Date 7/30/80

Industry METALS MINING

Model Lead - 1.2 X10^5 MT/yr - Underground

Number of Plants 2

Production 1.2 X10^5 MT/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/ SI (acres)
mill tailings	432,000	2	A-18 (1@100 ac)	A-01,03	2		

-7A
6/11/80

RCRA WASTE MANAGEMENT SUMMARY

Date 7/30/80

Industry METALS MINING

Model Lead - 1.2 X10^6 MT/yr - Underground

Number of Plants 7

Production 1.2 X10^6 MT/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/SI (acres)
mill tailings	4,320,000	7	A-18 (1@100 ac)	A-01, 03	7		

RCRA WASTE MANAGEMENT SUMMARY

Date 7/30/80

Industry METALS MINING

Model Lead/Zinc - 4.8X10^5 MT/yr - Underground

Number of Plants 6

Production 4.8 X10^5 MT/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/ SI (acres)
mill tailings	1,752,000	6	A-18 (1@64 ac)	A-01,03	6		

RCRA WASTE MANAGEMENT SUMMARY

DRA
6/11/80
Date 7/30/80

Industry METALS MINING

Model Mercury - 1.8×10^5 MT/yr - Surface

Number of Plants 1

Production 1.8×10^5 MT/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/ SI (acres)
mill tailings		1	A-18 (1 @ 100 ac)	A-01,03	1		

RCRA
6/11/80

RCRA WASTE MANAGEMENT SUMMARY

Date 7/30/80

Industry METALS MINING

Model Molybdenum - 4×10^6 MT/yr - Surface

Number of Plants 1

Production 4×10^6 MT/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/ SI (acres)
mill tailings	16,000,000	1	A-18 (1@600 ac)	A-01,03	1		

RA
6/11/80

RCRA WASTE MANAGEMENT SUMMARY

Date 8/1/80

Industry METALS MINING

Model Molybdenum - 11 X 10^6 MT/yr - Underground

Number of Plants 2

Production 11 X 10^6 MT/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/ SI (acres)
mill tailings	44,000,000	2	A-18 (2@ 800ac each)	A-01, 03	2		

RCRA WASTE MANAGEMENT SUMMARY

Date 6/11/80

Industry METALS MINING

Model Silver - 5×10^4 MT/yr - Underground

Number of Plants 6

Production 5×10^4 MT/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/SI (acres)
mill tailings	125,000	6	A-18 (1@30 ac)	A-01,03	3		
				-01	3		

RCRA
6/11/80

RCRA WASTE MANAGEMENT SUMMARY

Date 7/30/80

Industry METALS MINING

Model Silver - 3×10^5 MT/yr - Underground

Number of Plants 3

Production 3×10^5 MT/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/ SI (acres)
mill tailings	730,000	3	A-18 (1 @ 100 ac)	A-01,03	2		
				-01	1		

A
6/11/80

RCRA WASTE MANAGEMENT SUMMARY

Date 7/30/80

Industry METALS MINING

Model Silver - 6×10^5 MT/yr - Surface

Number of Plants 1

Production 6×10^5 MT/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/SI (acres)
mill tailings	1,714,000	1	A-18 (1@123 ac)	A-01	1		

RCRA
6/11/80

RCRA WASTE MANAGEMENT SUMMARY

Date 7/30/80

Industry METALS MINING

Model Zinc - 2.5×10^5 MT/yr - Underground

Number of Plants 8

Production 2.5×10^5 MT/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/ SI (acres)
mill tailings	920,000	8	A-18 (1 @ 100 ac)	A-01, 03	8		

EPA
6/11/80

RCRA WASTE MANAGEMENT SUMMARY

Date 7/30/80

Industry METALS MINING

Model Zinc - 6×10^5 MT/yr - Underground

Number of Plants 6

Production 6×10^5 MT/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/ SI (acres)
mill tailings	2,220,000	6	A-18 (1@123 ac)	A-01, 03	6		

NONFERROUS METAL SMELTING AND REFINING

RA
6/11/80

RCRA WASTE MANAGEMENT SUMMARY

Date 6/17/80

Industry NONFERROUS

Model 1° Aluminum - With Cryolite Recovery

Number of Plants 5

Production 178,174 tons/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/ SI (acres)
1. Sludge 2. potliners	4799 13,719	1	A-02 (waste 1) 21 (waste 2)	A-04	1		
same as above	same as above	4	B-03 (waste 1) 21 (waste 2) 19	B-01, 02, 03	4	3	9.73

RCRA
6/11/80

RCRA WASTE MANAGEMENT SUMMARY

Date 6/17/80

Industry NONFERROUS

Model 1° Aluminum-Cathode Shippers

Number of Plants 8

Production 169,785 tons/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/SI (acres)
1. sludge 2. potliners	554 6452	1	A-02 (waste 1) 27 (waste 2)	A-04	1		
same as above	same as above	1	B-02 (waste 1) 27 (waste 2) 19	B-04, 01, 03	1	2	9.73
"	"	6	C-03 (waste 1) 27 (waste 2) 19	C-04, 01, 02, 03	6	2	9.73

RA
6/11/80

RCRA WASTE MANAGEMENT SUMMARY

Date 6/17/80

Industry NONFERROUS

Model 1°Aluminum - Dry Air Pollution Control

Number of Plants 9

Production 142,017 tons/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/ SI (acres)
1. sludge 2. potliners	3205 4900	1	A-02	A-04	1		
same as above	same as above	1	B-02, 19	B-04, 01, 03	1	3	9.73
"	"	7	C-03(waste1) 03(waste2) 19	C-01, 02, 03	7	3	9.73

RA
6/11/80

RCRA WASTE MANAGEMENT SUMMARY

Date 6/17/80

Industry NONFERROUS

Model 1° Aluminum - Wet Air Pollution Control

Number of Plants 8

Production 146,340 tons/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/SI (acres)
1. Sludge 2. potliners	25,363 3536	2	A-02	A-04	2		
same as above	same as above	2	B-03(waste1) 03(waste2)	B-01,02,03	2		
"	"	4	C-03(waste1) 03(waste2) 19	C-01,02,03	4	2	9.73

RA
6/11/80

RCRA WASTE MANAGEMENT SUMMARY

Date 6/17/80

Industry NONFERROUS

Model 1° Copper - Smelters & Smelter/Refiners

Number of Plants 13

Production 92,395 tons/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/SI (acres)
1. electrolytic residues	168	3	A-02	A-04	3		
2. ww sludge (incl. acid plant sludge)	8.4						
same as above	same as above	10	B-03, 19	B-01, 02, 03	10	1	8.17

RA
6/11/80

RCRA WASTE MANAGEMENT SUMMARY

Date 6/17/80

Industry NONFERROUS

Model 1° Copper - Electric Furnace - L

Number of Plants 2

Production 139,200 tons/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/SI (acres)
sludge	11	1	A-02	A-04	1		
same as above	same as above	1	B-03	B-01, 02, 03	1		

RCRA
6/11/80

RCRA WASTE MANAGEMENT SUMMARY

Date 6/17/80

Industry NONFERROUS

Model 1° Copper - Electric Furnace - S

Number of Plants 1

Production 13,050 tons/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/ SI (acres)
sludge	1	1	A-03	A-01, 02, 03	1		

RA
6/11/80

RCRA WASTE MANAGEMENT SUMMARY

Date 6/17/80

Industry NONFERROUS

Model 1° Copper - Refiners

Number of Plants 5

Production 227,243 tons/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/SI (acres)
1. electrolytic residues 2. sludge	412 12	1	A-02	A-04	1		
same as above	same as above	3	B-03	B-01, 02, 03	3		
"	"	1	C-03, 19	C-01, 02, 03	1	1	8.17

RA
6/11/80

RCRA WASTE MANAGEMENT SUMMARY

Date 6/17/80

Industry NONFERROUS

Model 1° Lead - Missouri Ores

Number of Plants 3

Production 139,575 tons/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/SI (acres)
1. sludge	1293	1	A-02 (wastes 1,2)	A-04, 01, 03	1	2	3.27
2. lagoon dredgings from smelter	3618		21 (waste 3)				
3. sinter scrubber sludge	3437		19				
same as above	same as above	2	B-03 (wastes 1,2)	B-01, 02, 03	2	2	3.27
			21 (waste 3)				
			19				

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RCRA
6/11/80

RCRA WASTE MANAGEMENT SUMMARY

Date 6/17/80

Industry NONFERROUS

Model 1° Lead - Non-Missouri Ores

Number of Plants 3

Production 71,177 tons/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/SI (acres)
1. sludge 2. lagoon dredgings from smelter 3. Sinter scrubber sludge	660 1845 1753	1	A-02 (wastes 1,2) 21 (waste 3) 19	A-04, 01, 03	1	2	3.27
same as above	same as above	2	B-03 (wastes 1,2) 21 (waste 3) 19	B-01, 02, 03	2	2	3.27

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6/11/80

RCRA WASTE MANAGEMENT SUMMARY

Date 6/17/80

Industry NONFERROUS

Model 1° Mercury

Number of Plants 1

Production 950 tons/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/ SI (acres)
none	—	1	A-06	A-00	1		

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6/11/80

RCRA WASTE MANAGEMENT SUMMARY

Date 6/17/80

Industry NONFERROUS

Model 1° Tungsten (APT Production)

Number of Plants 4

Production 4,018,830 lb/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/ SI (acres)
none	—	4	A-06	A-00	4		

RCRA
6/11/80

RCRA WASTE MANAGEMENT SUMMARY

Date 6/17/80

Industry NONFERROUS

Model 1° Zinc - Electrolytic

Number of Plants 4

Production 65,567 tons/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/SI (acres)
1. leaching residue filter cake	28,730	1	A-02	A-04	1		
2. sludge (incl. acid plant sludge, anode slimes)	3701						
3. Cd plant residue	119						
same as above	same as above	1	B-03	B-01,02,03	1		
"	"	2	C-03,19	C-01,02,03	2	1	11.5

RA
6/11/80

RCRA WASTE MANAGEMENT SUMMARY

Date 6/17/80

Industry NONFERROUS

Model 1° Zinc - Pyrolytic

Number of Plants 2

Production 92,865 tons/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/SI (acres)
sludge (incl. Cd plant residue, acid plant sludge)	6412	2	A-03, 19	A-01, 02, 03	2	1	11.5

A
6/11/80

RCRA WASTE MANAGEMENT SUMMARY

Date 6/17/80

Industry NONFERROUS

Model 2° Aluminum - Dross Processing - 1

Number of Plants 8

Production 26,892. tons/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/ SI (acres)
none	—	8	A-06	A-00	8		

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6/11/80

RCRA WASTE MANAGEMENT SUMMARY

Date 6/17/80

Industry NONFERROUS

Model 2° Aluminum - Dross Processing - S

Number of Plants 3

Production 4825 tons/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/ SI (acres)
none	—	3	A-06	A-00	3		

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6/11/80

RCRA WASTE MANAGEMENT SUMMARY

Date 6/17/80

Industry NONFERROUS

Model 2° Aluminum - Non-Dross Processing - XL

Number of Plants 20

Production 40,630 tons/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/ SI (acres)
none	—	20	A-06	A-00	20		

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6/11/80

RCRA WASTE MANAGEMENT SUMMARY

Date 6/17/80

Industry NONFERROUS

Model 2° Aluminum-Non-Dross Processing-L

Number of Plants 19

Production 17,065 tons/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/SI (acres)
None	—	19	A-06	A-00	19		

RCRA WASTE MANAGEMENT SUMMARY

6/11/80
Date 6/17/80

Industry NONFERROUS

Model 2° Aluminum - Non-Dross Processing - M

Number of Plants 17

Production 9735 tons/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/SI (acres)
none	—	17	A-.06	A-00	17		

RCRA WASTE MANAGEMENT SUMMARY

6/11/80
Date 6/17/80

Industry NONFERROUS

Model 2° Aluminum - Non-Dross Processing - S

Number of Plants 22

Production 4680 tons/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/ SI (acres)
none	—	22	A-06	A-00	22		

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6/11/80

RCRA WASTE MANAGEMENT SUMMARY

Date 6/17/80

Industry NONFERROUS

Model 2° Copper - Blast Furnaces - L

Number of Plants 4

Production 64,514 tons/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/SI (acres)
sludge (incl. blast furnace scrubber sludge)	147	2	A-02	A-04	2		
same as above	same as above	2	B-02, 19	B-04, 01, 03	2	1	0.20

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6/11/80

RCRA WASTE MANAGEMENT SUMMARY

Date 6/17/80

Industry NONFERROUS

Model 2° Copper - Blast Furnaces - S

Number of Plants 2

Production 9334 tons/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/ SI (acres)
sludge (incl. blast furnace scrubber sludge)	21	1	A-02	A-04	1		
same as above	same as above	1	B-02, 19	B-04, 01, 03	1	1	0.20

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6/11/80

RCRA WASTE MANAGEMENT SUMMARY

Date 6/17/80

Industry NONFERROUS

Model 2° Copper - Brass & Bronze Ingot - L

Number of Plants 1

Production ≤3,267 tons/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/ SI (acres)
none	—	1	A-06	A-00	1		

RCRA
6/11/80
Date 6/17/80

RCRA WASTE MANAGEMENT SUMMARY

Industry NONFERROUS

Model 2° Copper - Brass & Bronze Ingot - M

Number of Plants 5

Production 5910 tons/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/ SI (acres)
none	—	5	A-06	A-00	5		

RCRA
6/11/80

RCRA WASTE MANAGEMENT SUMMARY

Date 6/17/80

Industry NONFERROUS

Model 2° Copper - Brass & Bronze Ingot - S

Number of Plants 5

Production 1240 tons/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/SI (acres)
none	—	5	A-06	A-00	5		

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6/11/80

RCRA WASTE MANAGEMENT SUMMARY

Date 10/17/80

Industry NONFERROUS

Model 2° Copper - Other - XL

Number of Plants 5

Production 32,480 tons/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/ SI (acres)
none	—	5	A-06	A-00	5		

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6/11/80

RCRA WASTE MANAGEMENT SUMMARY

Date 6/17/80

Industry NONFERROUS

Model 2° Copper - Other - L

Number of Plants 3

Production 10,394 tons/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/ SI (acres)
none	—	3	A-06	A-00	3		

RCRA WASTE MANAGEMENT SUMMARY

6/11/80
Date 6/17/80

Industry NONFERROUS

Model 2° Copper - Other - M

Number of Plants 2

Production 6334 tons/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/ SI (acres)
none	—	2	A-06	A-00	2		

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6/11/80

RCRA WASTE MANAGEMENT SUMMARY

Date 6/17/80

Industry NONFERROUS

Model 2° Copper - Other - S

Number of Plants 4

Production 747 tons/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/ SI (acres)
none	—	4	A-06	A-00	4		

RCRA WASTE MANAGEMENT SUMMARY

6/11/80
Date 6/17/80

Industry NONFERROUS

Model 2° Lead - Battery Cracking - XL

Number of Plants 4

Production 47,614 tons/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/SI (acres)
1. sludge 2. emission control dust/sludge	1543 6190	1	A-03 (waste 1) 21 (waste 2)	A-01, 02, 03	1		
same as above	same as above	2	B-03 (waste 1) 21 (waste 2) 19	B-01, 02, 03	2	1	0.16
"	"	1	C-02 (waste 1) 21 (waste 2)	C-04	1		

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6/11/80

RCRA WASTE MANAGEMENT SUMMARY

Date 6/17/80

Industry NONFERROUS

Model 2° Lead - Battery Cracking - L

Number of Plants 11

Production 24,148 tons/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/ SI (acres)
1. sludge 2. emission control dust/sludge	782 3139	4	A-03(waste 1) 21(waste 2)	A-01,02,03	4		
same as above	same as above	4	B-03 (waste 1) 21(waste 2) 19	B-01,02,03	4	1	0.16
"	"	3	C-02 (waste 1) 21(waste 2)	C-04	3		

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RCRA WASTE MANAGEMENT SUMMARY

Date 6/17/80

Industry NONFERROUS

Model 2° Lead - Battery Cracking - M

Number of Plants 13

Production 10,051 MT/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/ SI (acres)
1. sludge 2. emission control dust/sludge	326 1307	3	A-03 (waste 1) 21 (waste 2)	A-01, 02, 03	3		
same as above	same as above	5	B-03 (waste 1) 21 (waste 2) 19	B-01, 02, 03	5	1	0.16
"	"	4	C-02 (waste 1) 21 (waste 2)	C-04	4		
same as above, plus 3. battery acid	1111	1	D-03 (waste 1) 21 (waste 2) 07 (waste 3)	D-01, 02, 03	1		

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6/11/80

RCRA WASTE MANAGEMENT SUMMARY

Date 6/17/80

Industry NONFERROUS

Model 2° Lead - Battery Cracking - S

Number of Plants 2

Production 5191 tons/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/SI (acres)
1. sludge	168	1	A-03 (waste1) 21 (waste2)	A-01, 02, 03	1	1	0.16
2. emission control dust/sludge	675		19				
same as above	same as above	1	B-02 (waste1) 21 (waste2)	B-04	1		

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6/11/80

RCRA WASTE MANAGEMENT SUMMARY

Date 6/17/80

Industry NONFERROUS

Model 2° Lead - No Battery Cracking - XL

Number of Plants 1

Production 53,700 tons/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/SI (acres)
leaching acid	12,983	1	A-07	A-01	1		

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6/11/80

RCRA WASTE MANAGEMENT SUMMARY

Date 6/17/80

Industry NONFERROUS

Model 2° Lead - No Battery Cracking - L

Number of Plants 6

Production 13,134 tons/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/ SI (acres)
none	—	6	A-06	A-00	6		

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RCRA WASTE MANAGEMENT SUMMARY

Date 6/17/80

Industry NONFERROUS

Model 2° Lead - No Battery Cracking - M

Number of Plants 9

Production 7283 tons/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/ SI (acres)
none	—	9	A-06	A-00	9		

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6/11/80

RCRA WASTE MANAGEMENT SUMMARY

Date 6/17/80

Industry NONFERROUS

Model 2° Lead - No Battery Cracking - S

Number of Plants 18

Production 1007 tons/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/ SI (acres)
none	—	18	A-06	A-00	18		

ORGANIC CHEMICALS

RCRA WASTE MANAGEMENT SUMMARY

6/11/80
Date 6/11c/80

Industry ORGANIC CHEMICALS

Model Acrylonitrile - Plant A - Worst Case Scenario - Uses Surface Impoundments

Number of Plants 2

Production 47,729 MT/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/ SI (acres)
1. heavy ends	300	2	A-09 (wastes 1-3)	A-04,01	2	2.6	0.9
2. crude aceto	3000						
3. HCN	15,000		13 (waste 4)				
4. sludge	65		23 (wastes 5,6)				
5. quench column	443,200						
6. aceto stripper	443,200		19				

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RCRA WASTE MANAGEMENT SUMMARY

Date 6/16/80

Industry ORGANIC CHEMICALS

Model Acrylonitrile - Plant B - Incinerates Quench Stream

Number of Plants 1

Production 88,200 MT/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/ SI (acres)
1. quench tower bottom	18,500	1	A-09 (wastes 1-3)	A-01	1		
2. heavy ends	176		24,11 (waste 4)				
3. acetonitrile	43,200						
4. aceto stripper	200,200						

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6/11/80

RCRA WASTE MANAGEMENT SUMMARY

Date 6/16/80

Industry ORGANIC CHEMICALS

Model Acrylonitrile - Expected Case Scenario

Number of Plants 3

Production 147,727 MT/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/ SI (acres)
1. heavy ends	300	3	A-09 (waste 1)	A-04, 01	3	2.6	0.9
2. sludge	65		13 (waste 2)				
3. quench column	443,200		23 (wastes 3, 4)				
4. aceto stripper	443,200		19				

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6/11/80

RCRA WASTE MANAGEMENT SUMMARY

Date 6/26/80

Industry ORGANIC CHEMICALS

Model Chloro./Perch.-Methanol Hydrochlorination & Waste C_1-C_3 Chlorocarbon Process

Number of Plants 4

Production 116,000 MT/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/ SI (acres)
1. heavy ends 2. sludge 3. spent caustic	3080 800 2200	2	A-15 (waste 1) 13 (waste 2) 26 (waste 3) 19	A-04,01	2	3.1	2.4
same as above	same as above	2	B-13 (wastes 1,2) 19	B-04,01	2	3.1	2.4

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6/11/80

RCRA WASTE MANAGEMENT SUMMARY

Date 6/16/80

Industry ORGANIC CHEMICALS

Model Methyl Chloride/Methyl Hydrochlorination - 50MM lb
Methyl Chloride Plant-Methanol Hydrochlorination

Number of Plants 6

Production 24,000 MT/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/SI (acres)
1. sludge	170	6	A-13 (waste 1)	A-04, 01	6	3.1	2.4
2. weak acid	6240		23 (waste 4)				
3. spent caustic	700						
4. spent catalyst	5		19				

RCRA WASTE MANAGEMENT SUMMARY

6/11/80
Date 6/26/80

Industry ORGANIC CHEMICALS

Model Perchloroethylene / Carbon Tetrachloride from Waste Chloro carbons

Number of Plants 2

Production 117,000 MT/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/ SI (acres)
1. heavy ends	8300	2	A-13	A-04	2		
2. sludge	800						

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RCRA WASTE MANAGEMENT SUMMARY

Date 6/26/80

Industry ORGANIC CHEMICALS

Model Perchloroethylene from EDC

Number of Plants 4

Production 48,680 MT/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/ SI (acres)
1. heavy ends 2. sludge 3. aqueous waste	4748 340 40,580	2	A-13 (waste 1) 13 (waste 2) 26 (waste 3) 19	A-04, 01	2	3.1	2.4
same as above	same as above	2	B-13 (wastes 1, 2) 26 (waste 3) 19	B-04, 01	2	3.1	2.4

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6/11/80

RCRA WASTE MANAGEMENT SUMMARY

Date 6/26/80

Industry ORGANIC CHEMICALS

Model Chloromethanes - Other

Number of Plants 3

Production 53,600 MT/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/ SI (acres)
1. heavy ends 2. sludge 3. spent catalyst 4. caustic	1450 3-75 11 1550	3	A - F; (wastes 1,3) 14 (waste 2) 19	A-01,02	3	3.1	2.4
same as above	same as above	2	B - 13 (wastes 1,2,3) 19	B-04,01	2	3.1	2.4

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RCRA WASTE MANAGEMENT SUMMARY

Date 6/26/80

Industry ORGANIC CHEMICALS

Model Large EDC/VCM Plants - Expected Model A

Number of Plants 9

Production 362,000 MT/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/SI (acres)
1. solid filter wastes 2. VCM leaves 3. sludge 4. caustic 5. quench 6. water scrubber	796 10,770 2334 68,237 56,363 398,200	5	A-13 (wastes 1,2) 14 (waste 3) 26 (wastes 4-6) 19	A-01,02	5	3.1	2.4
same as above	same as above	4	B-14 (wastes 1-3) 26 (wastes 4-6) 19	B-01,02	4	3.1	2.4

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RCRA WASTE MANAGEMENT SUMMARY

Date 6/26/80

Industry ORGANIC CHEMICALS

Model Small EDC/VCM Plants - Model I3

Number of Plants 6

Production 96,000 MT/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/ SI (acres)
1. Solid filter wastes	211	3	A-15 (wastes 1-3)	A-01, 02	3	3.1	2.4
2. EDC heavies	864		14 (waste 4)				
3. VCM heavies	2856		26 (wastes 5-7)				
4. Sludge	672						
5. caustic	18,100		19				
6. quench	14,950						
7. water scrubber	105,600						
same as above	same as above	3	B-14 (wastes 1-4)	B-01, 02	3	3.1	2.4
			19				

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RCRA WASTE MANAGEMENT SUMMARY

Date 6/26/80

Industry ORGANIC CHEMICALS

Model Small EDC Plants - Model C

Number of Plants 5

Production 82,000 MT/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/SI (acres)
1. solid filter wastes 2. EDC heavies 3. sludge 4. caustic 5. quench 6. water scrubber	30 450 350 9425 7785 55,000	4	A-15 (wastes 1, 2) 14 (waste 3) 19	A-01, 02	4	3.1	2.4
same as above	same as above	1	B-14 (wastes 1-3) 26 (wastes 4-6) 19	B-01, 02	1	3.1	2.4

TEXTILES

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RCRA WASTE MANAGEMENT SUMMARY

Date 7/18/80

Industry TEXTILES

Model Wool Scouring - S - Direct

Number of Plants 2

Production 5800 Klb/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/ SI (acres)
none	—	2	A-06	A-00	2		

RCRA WASTE MANAGEMENT SUMMARY

RA
6/11/80
Date 7/18/80

Industry TEXTILES

Model Wool Scouring - M - Direct

Number of Plants 3

Production 14,700 Klb/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/SI (acres)
none	—	2	A-06	A-00	2		
solvents	13.1	1	B-13	B-04	1		

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RCRA WASTE MANAGEMENT SUMMARY

Date 7/18/80

Industry TEXTILES

Model Wool Scouring - h - Direct

Number of Plants 2

Production 35,700 KLb/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/ SI (acres)
None	—	2	A-06	A-00	2		

RCRA WASTE MANAGEMENT SUMMARY

RCRA
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Date 7/18/80

Industry TEXTILES

Model Wool Finishing - S - Direct

Number of Plants 8

Production 3500 klb/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/ SI (acres)
1. sludge 2. solvents	206.4 3.1	1	A-02(waste 1) 13(waste 2)	A-04	1		
sludge	206.4	1	B-01, 19	B-01, 02	1	2	0.37
same as above	same as above	2	C-02	C-04	2		
sludge	1651.2	1	D-07, 19	D-01	1	2	0.37
same as above	same as above	1	E-07	E-01	1		
"	"	2	F-05, 19 (0.37 ac)	F-01	2	1	0.37

RCRA
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RCRA WASTE MANAGEMENT SUMMARY

Date 7/28/80

Industry TEXTILES

Model Wool Finishing - M - Direct

Number of Plants 1

Production 9400 Klb/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/ SI (acres)
sludge	4434.4	1	A-05, 19 (0.92 ac)	A-01	1	1	0.92

RCRA WASTE MANAGEMENT SUMMARY

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Date 7/28/80

Industry TEXTILES

Model Wool Finishing - b - Direct

Number of Plants 2

Production 18,700 Klb/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/ SI (acres)
sludge	1102.7	1	A-02	A-04	1		
sludge	8821.6	1	B-05,19 (1.84 ac)	B-01	1	1	1.84

RCRA WASTE MANAGEMENT SUMMARY

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Date 7/28/80

Industry TEXTILES

Model Woven - Simple - S - Direct

Number of Plants 22

Production 2400 klb/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/ SI (acres)
1. sludge 2. solvents	59.9 2.1	1	A-02 (waste 1) 13 (waste 2) 19	A-04	1	2	0.07
same as above	same as above	1	B-01 (waste 1) 13 (waste 2) 19	B-04, 01, 03	1	2	0.07
same as above, except sludge	479.2	1	C-07 (waste 1) 13 (waste 2) 19	C-04, 01	1	2	0.07
sludge	59.9	1	D-08, 19	D-01, 04	1	2	0.07
same as above	same as above	1	E-09, 19	E-01	1	2	0.07
"	"	2	F-01	F-01, 02	2		
"	"	1	G-02, 19	G-04, 01	1	2	0.07
"	"	8	H-02	H-04	8		
sludge	479.2	2	I-05, 19 (0.07 ac)	I-01	2	1	0.07
same as above	same as above	1	J-07, 19	J-01	1	2	0.07
"	"	3	K-07	K-01	3		

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RCRA WASTE MANAGEMENT SUMMARY

Date 7/28/80

Industry TEXTILES

Model (Woven-Simple-M-Direct

Number of Plants 13

Production 12,823 klb/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/SI (acres)
1. sludge 2. solvents	319.9 11.4	1	A-02 (waste 1) 13 (waste 2) 19	A-04,01	1	2	0.37
same as above, except sludge	2559.2	1	B-07 (waste 1) 13 (waste 2) 19	B-04,01, 03	1	2	0.37
sludge	319.9	1	C-08, 19	C-04,01	1	2	0.37
same as above	same as above	1	D-11, 19	D-04,01	1	2	0.37
"	"	1	E-01, 19	E-01,02	1	2	0.37
"	"	1	F-01	F-01,02	1		
"	"	5	G-02	G-04	5		
sludge	2559.2	1	H-05, 19 (0.37 ac)	H-01	1	1	0.37
same as above	same as above	1	I-07	I-01	1		

RCRA
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RCRA WASTE MANAGEMENT SUMMARY

Date 7/28/80

Industry TEXTILES

Model Woven - Simple - L - Direct

Number of Plants 9

Production 34,244 Klb/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/ SI (acres)
1. sludge 2. solvents	854.3 30.5	1	A-02 (waste1) 13 (waste2) 19	A-04, 01	1	2	0.92
sludge	854.3	1	B-01, 19	B-01, 02	1	2	0.92
same as above	same as above	1	C-12	C-04	1		
"	"	3	D-02	D-04	3		
sludge	6834.4	1	E-05, 19 (0.92 ac)	E-01	1	1	0.92
same as above	same as above	1	F-07	F-01	1		
"	"	1	G-07, 19	G-01	1	2	0.92

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RCRA WASTE MANAGEMENT SUMMARY

Date 7/28/80

Industry TEXTILES

Model Woven - Complex - S - Direct

Number of Plants 5

Production 9500 Klb/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/ SI (acres)
1. sludge 2. solvents	3447.2 8.5	1	A - 05 (waste1) (0.37 ac) 13 (waste2) 19	A - 01, 04	1	1	0.37
sludge	3447.2	2	B - 05, 19	B - 01 - 01, 03 (for 19 only)	1 1	1	0.37
same as above	same as above	1	C - 07, 19	C - 01	1	2	0.37
sludge	430.9	1	D - 02, 19	D - 04, 01	1	2	0.37

RCRA WASTE MANAGEMENT SUMMARY

Date 1/20/80

Industry TEXTILES

Model Woven-Complex-M-Direct

Number of Plants 8

Production 52,800 Klb/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/SI (acres)
1. sludge 2. solvents	19,160.0 47.0	1	A-05 (waste 1) (1.84 ac) 13 (waste 2) 19	A-01, 04	1	1	1.84
sludge	19,160.0	1	B-07, 19	B-01	1	2	1.84
same as above	same as above	4	C-05, 19	C-01 -01, 03	3 1	1	1.84
sludge	2395.0	1	D-02	D-04	1		
same as above	same as above	1	E-02, 19	E-04, 01	1	2	1.84

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RCRA WASTE MANAGEMENT SUMMARY

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Industry TEXTILES

Model Woven - Complex - L - Direct

Number of Plants 1

Production 89,200 Klb/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/ SI (acres)
sludge	32,368.8	1	A-03 (3.08 ac) 19	A-01	1	1	3.08

RCRA WASTE MANAGEMENT SUMMARY

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Industry TEXTILES

Model Woven - Desizing - S - Direct

Number of Plants 12

Production 9600 Klb/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/ SI (acres)
1. sludge 2. solvents	783.8 8.3	1	A-02 (waste1) 13 (waste2) 19	A-04,01	1	3	0.37
same as above, except sludge	6270.4	1	B-07 (waste1) 13 (waste2 19	B-01,04	1	3	0.37
sludge	6270.4	1	C-07, 19	C-01	1	3	0.37
sludge	783.8	2	D-01, 19	D-01,02	2	3	0.37
same as above	same as above	2	E-02	E-04	2		
"	"	3	F-02, 19	F-04,01,03 -04,01	1 2	3	0.37
"	"	1	G-08, 19	G-04,01	1	3	0.37
"	"	1	H-09, 19	H-01	1	3	0.37

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RCRA WASTE MANAGEMENT SUMMARY

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Industry TEXTILES

Model Woven-Desizing-M-Direct

Number of Plants 13

Production 24,869 Klb/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/SI (acres)
1. sludge 2. solvents	2030.5 22.1	1	A-02 (waste 1) 13 (waste 2) 19	A-04,01	1	3	0.92
same as above, except sludge	16,244.0	1	B-07 (waste 1) 13 (waste 2) 19	B-01,04	1	3	0.92
sludge	2030.5	2	C-01,19	C-01,02	2	3	0.92
same as above	same as above	2	D-02	D-04	2		
"	"	4	E-02,19	E-04,01 -04,01,03	3 1	3	0.92
"	"	1	F-08,19	F-04,01	1	3	0.92
sludge	16,244.0	2	G-07,19	G-01	2	3	0.92

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RCRA WASTE MANAGEMENT SUMMARY

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Industry TEXTILES

Model Woven-Desizing-L-Direct

Number of Plants 12

Production 82,783 klb/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/SI (acres)
1. sludge 2. solvents	6759.0 73.7	1	A-02(waste 1) 13(waste 2) 19	A-04,01	1	3	3.08
same as above, except sludge	54,072.0	1	B-07(waste 1) 13(waste 2) 19	B-01, 04	1	3	3.08
Sludge	6759.0	2	C-01, 19	C-01, 02	2	3	3.08
same as above	same as above	2	D-02	D-04	2		
"	"	3	E-02, 19	E-04, 01, 03 -04, 01	1 2	3	3.08
"	"	1	F-08, 19	F-04, 01	1	3	3.08
"	"	1	G-11, 19	G-04, 01	1	3	3.08
Sludge	54,072.0	1	H-07, 19	H-01	1	3	3.08

RCRA WASTE MANAGEMENT SUMMARY

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Industry TEXTILES

Model Knit - Simple - S - Direct

Number of Plants 15

Production 3500 Klb/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/SI (acres)
1. sludge 2. solvents	89.8 2.9	1	A-02 (waste 1) 13 (waste 2) 19	A-04, 01	1	3	0.15
same as above, except sludge	718.4	1	B-05 (waste 1) (0.15 ac) 13 (waste 2) 19	B-01, 04	1	2	0.15
sludge	89.8	1	C-01, 19	C-01, 02	1	3	0.15
same as above	same as above	4	D-02	D-04	4		
"	"	1	E-08, 19	E-04, 01	1	3	0.15
"	"	1	F-12	F-04	1		
sludge	718.4	4	G-05, 19 (0.15 ac)	G-01 -01, 03	3 1	2	0.15
same as above	same as above	1	H-07	H-01	1		
"	"	1	I-07, 19	I-01	1	3	0.15

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RCRA WASTE MANAGEMENT SUMMARY

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Industry TEXTILES

Model Knit-Simple-M-Direct

Number of Plants 13

Production 14,575 Klb/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/SI (acres)
1. sludge 2. solvents	396.7 13.0	1	A-02 (waste 1) 13 (waste 2) 19	A-04, 01	1	3	0.62
same as above, except sludge	3173.6	1	B-05 (waste 1) (0.62 ac) 13 (waste 2) 19	B-01, 04	1	2	0.62
sludge	396.7	1	C-01, 19	C-01, 02	1	3	0.62
same as above	same as above	1	D-09	D-01	1		
"	"	1	E-11	E-04	1		
"	"	2	F-02	F-04	2		
sludge	3173.6	4	G-05, 19 (0.62 ac)	G-01 -01, 03	3 1	2	0.62
same as above	same as above	1	H-07	H-01	1		
"	"	1	I-07, 19	I-01	1	3	0.62

RCRA WASTE MANAGEMENT SUMMARY

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Industry TEXTILES

Model Knit-Simple-1-Direct

Number of Plants 3

Production 70,900 Klb/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/SI (acres)
1. sludge 2. solvents	1929.6 63.1	1	A-02 (waste1) 13 (waste2) 19	A-04,01	1	3	3.08
sludge	15,436.8	1	B-05,19 (3.08 ac)	B-01	1	2	3.08
same as above	same as above	1	C-07	C-01	1		

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RCRA WASTE MANAGEMENT SUMMARY

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Industry TEXTILES

Model Knit - Complex - S - Direct

Number of Plants 17

Production 3543 Klb/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/ SI (acres)
1. sludge 2. solvents	88.4 3.2	1	A-02 (waste 1) 13 (waste 2) 19	A-04, 01, 03	1	2	0.15
sludge	88.4	1	B-01, 19	B-01, 02	1	2	0.15
same as above	same as above	1	C-02	C-04	1		
"	"	1	D-12	D-04	1		
sludge	707.2	2	E-03, 19 (0.15 ac)	E-01	2	1	0.15
same as above	same as above	1	F-07, 19	F-01	1	2	0.15

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RCRA WASTE MANAGEMENT SUMMARY

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Industry TEXTILES

Model Knit - Complex - M - Direct

Number of Plants 7

Production 8700 klb/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/ SI (acres)
1. sludge 2. solvents	217.0 7.7	1	A-02 (waste 1) 13 (waste 2) 19	A-04, 01, 03	1	2	0.37
sludge	217.0	1	B-01, 19	B-01, 02	1	2	0.37
same as above	same as above	1	C-02	C-04	1		
"	"	1	D-02, 19	D-04, 01	1	2	0.37
sludge	1736.0	1	E-07	E-01	1		
same as above	same as above	1	F-07, 19	F-01	1	2	0.37
"	"	1	G-03, 19 (0.37 ac)	G-01	1	1	0.37

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Industry TEXTILES

Model Knit-Complex-L-Direct

Number of Plants 4

Production 14,000 klb/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/SI (acres)
1. sludge 2. solvents	349.3 12.5	1	A-02 (waste 1) 13 (waste 2) 19	A-04, 01	1	2	0.62
sludge	349.3	1	B-02	B-04	1		
sludge	2794.4	1	C-05, 19 (0.62 ac)	C-01	1	1	0.62
same as above	same as above	1	D-07, 19	D-01	1	2	0.62

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Industry TEXTILES

Model Knit - Hosiery - S - Direct

Number of Plants 8

Production 1188 KLB/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/ SI (acres)
1. sludge 2. solvents	32.3 1.1	1	A-02 (waste 1) 13 (waste 2) 19		1	1	0.03
sludge	32.3	1	B-01, 19		1	1	0.03
same as above	same as above	1	C-09		1		
"	"	3	D-02		3		
sludge	258.4	1	E-07		1		
same as above	same as above	1	F-07, 19		1	1	0.03

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Industry TEXTILES

Model Knit - Hosiery - M - Direct

Number of Plants 1

Production 2400 Klb/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/ SI (acres)
sludge	65.3	1	A-02	A-04	1		

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RCRA WASTE MANAGEMENT SUMMARY

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Industry TEXTILES

Model Carpet - S - Direct

Number of Plants 8

Production 6700 Klb/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/ SI (acres)
1. sludge 2. solvents	182.3 6.0	1	A - 02 (waste 1) 13 (waste 2) 19	A-04, 01	1	2	0.15
sludge	182.3	1	B-01, 19	B-01, 02	1	2	0.15
same as above	same as above	2	C-02	C-04	2		
"	"	1	D-09, 19	D-01	1	2	0.15
"	"	1	E-02, 19	E-04, 01, 03	1	2	0.15
sludge	1458.4	2	F-07, 19	F-01	2	2	0.15

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Industry TEXTILES

Model Carpet-M-Direct

Number of Plants 3

Production 20,100 Klb/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/SI (acres)
1. Sludge 2. Solvents	547.0 17.9	1	A-02 (waste 1) 13 (waste 2) 19	A-04, 01	1	2	0.37
Sludge	547.0	1	B-02	B-04	1		
Sludge	4376.0	1	C-07, 19	C-01	1	2	0.37

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RCRA WASTE MANAGEMENT SUMMARY

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Industry TEXTILES

Model Carpet - L - Direct

Number of Plants 2

Production 37,000 Klb/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/SI (acres)
sludge	1551.3	1	A-02, 19	A-04, 01	1	2	0.92
sludge	12,410.4	1	B-07, 19	B-01	1	2	0.92

RCRA WASTE MANAGEMENT SUMMARY

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Industry TEXTILES

Model Stock : Yarn - S - Direct

Number of Plants 21

Production 4529 Klb/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/SI (acres)
1. sludge 2. solvents	61.6 4.0	1	A-09 (waste 1) 13 (waste 2) 19	A-04,01	1	2	0.15
same as above	same as above	1	B-01 (waste 1) 13 (waste 2) 19	B-01,02,04	1	2	0.15
same as above, except sludge	492.8	1	C-07 (waste 1) 13 (waste 2) 19	C-04,01	1	2	0.15
sludge	61.6	2	D-01, 19	D-01,02,03 -01,02	1 1	2	0.15
same as above	same as above	6	E-02	E-04	6		
"	"	4	F-02, 19	F-04,01,03 -04,01	1 3	2	0.15
"	"	1	G-08, 19	G-04,01	1	2	0.15
"	"	1	H-12, 19	H-04,01	1	2	0.15
sludge	492.8	4	I-07, 19	I-01	4	2	0.15

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RCRA WASTE MANAGEMENT SUMMARY

Date 7/29/80

Industry TEXTILES

Model Stock : Yarn - M - Direct

Number of Plants 6

Production 10,650 Klb/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/ SI (acres)
1. sludge 2. solvents	144.9 9.5	1	A-02 (waste 1) 13 (waste 2) 19	A-04, 01	1	2	0.37
sludge	144.9	1	B-01, 19	B-01, 02	1	2	0.37
same as above	same as above	1	C-02	C-04	1		
"	"	1	D-02, 19	D-04, 01	1	2	0.37
sludge	1159.2	1	E-07	E-01	1		
same as above	same as above	1	F-07, 19	F-01	1	2	0.37

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Industry TEXTILES

Model Stock & Yarn - L - Direct

Number of Plants 6

Production 18,033 Klb/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/SI (acres)
1. sludge 2. solvents	245.4 16.0	1	A-02 (waste 1) 13 (waste 2) 19	A-04, 01	1	2	0.62
sludge	245.4	1	B-01, 19	B-01, 02	1	2	0.62
same as above	same as above	1	C-02	C-04	1		
"	"	1	D-02, 19	D-04, 01	1	2	0.62
sludge	1963.2	1	E-07	E-01	1		
same as above	same as above	1	F-07, 19	F-01	1	2	0.62

RCRA WASTE MANAGEMENT SUMMARY

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Industry TEXTILES

Model Stock & Yarn - XL - Direct

Number of Plants 6

Production 27,500 klb/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/SI (acres)
1. sludge 2. solvents	374.2 24.5	1	A-02 (waste1) 13 (waste2) 19	A-04, 01	1	2	0.92
sludge	374.2	1	B-01, 19	B-01, 02	1	2	0.92
same as above	same as above	1	C-02	C-04	1		
"	"	1	D-02, 19	D-04, 01	1	2	0.92
sludge	2993.6	1	E-07	E-01	1		
same as above	same as above	1	F-07, 19	F-01	1	2	0.92

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Industry TEXTILES

Model Nonwoven - S - Direct

Number of Plants 10

Production 4600 Klb/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/ SI (acres)
solvents	4.1	2	A-13	A-04	2		
none	—	8	B-06	B-00	8		

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RCRA WASTE MANAGEMENT SUMMARY

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Industry TEXTILES

Model Nonwoven - M - Direct

Number of Plants 2

Production 11,000 Klb/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/SI (acres)
NONE	—	2	A-06	A-00	2		

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RCRA WASTE MANAGEMENT SUMMARY

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Industry TEXTILES

Model Felted Fabric - S - Direct

Number of Plants 4

Production 400 klb/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/SI (acres)
solvents	0.4	1	A-13	A-04	1		
none	—	3	B-06	B-00	1		

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RCRA WASTE MANAGEMENT SUMMARY

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Industry TEXTILES

Model Felted Fabric - M - Direct

Number of Plants 1

Production 900 Klb/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/SI (acres)
none	—	1	A-06	A-00	1		

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RCRA WASTE MANAGEMENT SUMMARY

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Industry TEXTILES

Model Wool Scouring - S - Indirect

Number of Plants 7

Production 5800 Klb/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/SI (acres)
solvents	5.2	1	A-13	A-04	1		
none	—	6	B-06	B-00	6		

RCRA WASTE MANAGEMENT SUMMARY

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Industry TEXTILES

Model Wool Scouring - M - Indirect

Number of Plants 3

Production 35,700 Klb/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/ SI (acres)
None	—	3	A-06	A-00	3		

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Industry TEXTILES

Model Wool Finishing - S - Indirect

Number of Plants 21

Production 1400 Klb/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/SI (acres)
1. sludge 2. solvents	88.9 1.2	1	A-02 (waste 1) 13 (waste 2) 19	A-04,01	1	2	0.08
same as above	same as above	1	B-02 (waste 1) 13 (waste 2)	B-04	1		
solvents	1.2	1	C-13	C-04	1		
sludge	88.9	1	D-02,19	D-04,01	1	2	0.08
same as above	same as above	10	E-02	E-04	10		
"	"	1	F-11,19	F-04,01	1	2	0.08
none	—	6	G-06	G-00	6		

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RCRA WASTE MANAGEMENT SUMMARY

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Industry TEXTILES

Model Wool Finishing - M - Indirect

Number of Plants 4

Production 9900 Klb/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area SI (acres)
1. Sludge 2. Solvents	596.9 8.4	1	A-02 (waste 1) 13 (waste 2)	A-04	1		
Sludge	596.9	1	B-02	B-04	1		
none	—	2	C-06	C-00	2		

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RCRA WASTE MANAGEMENT SUMMARY

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Industry TEXTILES

Model Wool Finishing-L-Indirect

Number of Plants 1

Production 18,700 Klb/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area SI (acres)
Sludge	1187.3	1	A-02	A-04	1		

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Industry TEXTILES

Model Woven-Simple-S-Indirect

Number of Plants 52

Production 1100 Klb/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area SI (acres)
1. Sludge 2. Solvents	20.0 1.0	1	A-02 (waste 1) 13 (waste 2) 19	A-04, 01	1	1	0.02
same as above	same as above	3	B-02 (waste 1) 13 (waste 2)	B-04	3		
solvents	1.0	4	C-13	C-04	4		
sludge	20.0	2	D-11	D-04	2		
same as above	same as above	1	E-02, 19	E-04, 01	1	1	0.02
"	"	13	F-02	F-04	13		
none	—	28	G-06	G-00	28		

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Industry TEXTILES

Model Woven-Simple-M-Indirect

Number of Plants 76

Production 5400 klb/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area SI (acres)
1. Sludge 2. solvents	98.0 4.8	1	A-02 (waste 1) 13 (waste 2) 19	A-04,01	1	1	0.08
same as above	same as above	5	B-02 (waste 1) 13 (waste 2)	B-04	5		
solvents	4.8	5	C-13	C-04	5		
sludge	98.0	1	D-02, 19	D-04,01	1	1	0.08
same as above	same as above	20	E-02	E-04	20		
"	"	1	F-11	F-04	1		
"	"	1	G-11,19	G-04,01	1	1	0.08
sludge	784.0	1	H-05 10.08 ac	H-01	1		
none	—	41	I-06	I-00			

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Industry TEXTILES

Model Woven-Simple-L-Indirect

Number of Plants 26

Production 22,788 klb/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area SI (acres)
1. sludge 2. solvents	413.3 20.3	1	A-02 (waste 1) 13 (waste 2) 19	A-04, 01	1	1	0.30
same as above	same as above	1	B-02 (waste 1) 13 (waste 2)	B-04	1		
solvents	20.3	2	C-13	C-04	2		
sludge	413.5	7	D-02	D-04	7		
same as above	same as above	1	E-11	E-04	1		
none	—	14	F-06	F-00	14		

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RCRA WASTE MANAGEMENT SUMMARY

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Industry TEXTILES

Model Woven - Complex - S - Indirect

Number of Plants 23

Production 4200 Klb/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area SI (acres)
1. Sludge 2. Solvents	123.8 3.7	1	A-02 (waste1) 13 (waste2) 19	A-04, 01	1	1	0.08
same as above	same as above	1	B-02 (waste1) 13 (waste2)	B-04	1		
Solvents	3.7	1	C-13	C-04	1		
Sludge	123.8	2	D-02, 19	D-04, 01 -04, 01, 03	1 1	1	0.08
same as above	same as above	4	E-02	E-04	4		
"	"	1	F-11, 19	F-04, 01	1	1	0.08
none	—	13	G-06	G-00	13		

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RCRA WASTE MANAGEMENT SUMMARY

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Industry TEXTILES

Model Woven - Complex - M - Indirect

Number of Plants 17

Production 10,241 Klb/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area SI (acres)
1. sludge 2. solvents	301.9 9.1	1	A-02 (waste 1) 13 (waste 2) 19	A-04, 01	1	1	0.18
same as above	same as above	1	B-02 (waste 1) 13 (waste 2)	B-04	1		
solvents	9.1	1	C-13	C-04	1		
sludge	301.9	1	D-02, 19	D-04, 01	1	1	0.18
same as above	same as above	3	E-02	E-04	3		
"	"	1	F-11, 19	F-04, 01	1	1	0.18
none	—	9	G-06	G-00	9		

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RCRA WASTE MANAGEMENT SUMMARY

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Industry TEXTILES

Model Woven - Complex - L - Indirect

Number of Plants 16

Production 53,200 Klb/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area SI (acres)
1. Sludge 2. solvents	1568.3 47.3	1	A-02 (waste 1) 13 (waste 2) 19	A-04,01	1	1	0.92
solvents	47.3	1	B-13	B-04	1		
sludge	1568.5	1	C-02, 19	C-04,01	1	1	0.92
same as above	same as above	4	D-02	D-04	4		
none	—	9	E-06	E-00	9		

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RCRA WASTE MANAGEMENT SUMMARY

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Industry TEXTILES

Model Woven-Desizing-S-Indirect

Number of Plants 17

Production 9400 Klb/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area SI (acres)
1. Sludge 2. Solvents	469.0 8.4	1	A-02 (waste 1) 13 (waste 2) 19	A-04,01	1	2	0.18
same as above	same as above	1	B-02 (waste 1) 13 (waste 2)	B-04	1		
Solvents	8.4	1	C-13	C-04	1		
Sludge	469.0	1	D-02, 19	D-04,01	1	2	0.18
same as above	same as above	3	E-02	E-04	3		
"	"	1	F-11,19	F-04,01	1	2	0.18
none	—	9	G-06	G-00	9		

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RCRA WASTE MANAGEMENT SUMMARY

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Industry TEXTILES

Model Woven-Dyeing-M-Indirect

Number of Plants 10

Production 23,900 Klb/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area SI (acres)
1. sludge 2. solvents	1192.5 21.3	1	A-02 (waste 1) T3 (waste 2) 19	A-04, 01	1	2	0.46
solvents	21.3	1	B-13	B-04	1		
sludge	1192.5	1	C-02, 19	C-04, 01	1	2	0.46
same as above	same as above	2	D-02	D-04	2		
none	—	5	E-06	E-00	5		

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RCRA WASTE MANAGEMENT SUMMARY

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Industry TEXTILES

Model Woven - Desizing - L - Indirect

Number of Plants 4

Production 79,923 KLB/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area SI (acres)
1. Sludge 2. Solvents	3987.9 71.1	1	A-02 (waste 1) T3 (waste 2) 19	A-04, 01	1	2	1.54
NONE	—	3	B-06	B-00	3		

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RCRA WASTE MANAGEMENT SUMMARY

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Industry TEXTILES

Model Knit-Simple-S-Indirect

Number of Plants 77

Production 700 Klb/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area SI (acres)
1. Sludge 2. Solvents	19.1 0.6	1	A-02 (waste 1) 13 (waste 2) 19	A-04, 01	1	1	0.02
same as above	same as above	5	B-02 (waste 1) 13 (waste 2)	B-04	5		
solvents	0.6	6	C-13	C-04	6		
sludge	19.1	2	D-02, 19	D-04, 01 -04, 01, 03	1 1	1	0.02
same as above	same as above	6	E-02	E-04	6		
"	"	1	F-11, 19	F-04, 01	1	1	0.02
none	—	56	G-06	G-00	56		

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Industry TEXTILES

Model Knit-Simple-M-Indirect

Number of Plants 78

Production 8737 klb/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area SI (acres)
1. sludge 2. solvents	237.8 7.8	1	A-02 (waste 1) 13 (waste 2) 19	A-04, 01	1	1	0.18
same as above	same as above	5	B-02 (waste 1) 13 (waste 2)	B-04	5		
solvents	7.8	6	C-13	C-04	6		
sludge	237.8	2	D-02, 19	D-04, 01 -04, 01, 03	1 1	1	0.18
same as above	same as above	7	E-02	E-04	7		
"	"	1	F-11, 19	F-04, 01	1	1	0.18
none	—	56	G-06	G-00	56		

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RCRA WASTE MANAGEMENT SUMMARY

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Industry TEXTILES

Model Knit-Simple-L-Indirect

Number of Plants 29

Production 14,800 Klb/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area SI (acres)
1. Sludge 2. Solvents	402.8 13.2	1	A-02 (waste 1) 13 (waste 2) 19	A-04, 01	1	1	0.30
same as above	same as above	1	B-02 (waste 1) 13 (waste 2)	B-04	1		
solvents	13.2	2	C-13	C-04	2		
sludge	402.8	3	D-02	D-04	3		
same as above	same as above	1	E-11	E-04	1		
none	—	21	F-06	F-00	21		

RCRA WASTE MANAGEMENT SUMMARY

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Industry TEXTILES

Model Knit - Complex - S - Indirect

Number of Plants 20

Production 3200 Klb/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area SI (acres)
1. sludge 2. solvents	58.1 2.8	2	A-02 (waste 1) 13 (waste 2) 19	A-04, 01	1	1	0.08
solvents	2.8	1	B-13	B-04	2		
sludge	58.1	2	C-02, 19	C-04, 01 -04, 01, 03	1 1	1	0.02
none	—	14	D-06	D-00	14		

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RCRA WASTE MANAGEMENT SUMMARY

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Industry TEXTILES

Model Knit - Complex - M - Indirect

Number of Plants 15

Production 83464 Klb/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area SI (acres)
1. sludge 2. solvents	153.6 7.5	1	A-02 (waste 1) 13 (waste 2) 19	A-04, 01	1	1	0.18
solvents	7.5	1	B-13	B-04	1		
sludge	153.6	2	C-02, 19	C-04, 01 -04, 01, 03	1 1	1	0.18
none	—	11	D-06	D-00	11		

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RCRA WASTE MANAGEMENT SUMMARY

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Industry TEXTILES

Model Knit-Complex-L-Indirect

Number of Plants 12

Production 21,392 Klb/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area SI (acres)
1. sludge 2. solvents	391.8 19.2	1	A-02 (waste 1) 13 (waste 2) 19	A-04, 01	1	1	0.46
solvents	19.2	1	B-13	B-04	1		
sludge	391.8	1	C-02, 19	C-04, 01	1	1	0.46
none	—	9	D-06	D-00	9		

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Industry TEXTILES

Model Knit - Hosiery - S - Indirect

Number of Plants 130

Production 1111 Klb/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area Si (acres)
1. Sludge 2. Solvents	20.2 1.0	3	A-02 (waste 1) 13 (waste 2) 19	A-04,01 -04,01,03	2 1	1	0.02
same as above	same as above	6	B-02 (waste 1) 13 (waste 2)	B-04	6		
"	"	1	C-11 (waste 1) 13 (waste 2) 19	C-04,01	1	1	0.02
solvents	1.0	10	D-13	D-04	10		
sludge	20.2	3	E-02, 19		3	1	0.02
same as above	same as above	12	F-02	F-04	12		
"	"	1	G-11, 19	G-04,01	1	1	0.02
none	—	94	H-06	H-00	94		

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Industry TEXTILES

Model Knit-Hosiery-M-Indirect

Number of Plants 20

Production 2927 MLB/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area SI (acres)
1. Sludge 2. Solvents	44.0 2.2	1	A-02 (waste 1) 13 (waste 2) 19	A-04, 01	1	1	0.03
same as above	same as above	1	B-02 (waste 1) 13 (waste 2)	B-04	1		
solvents	2.2	1	C-13	C-04	1		
sludge	44.0	2	D-02	D-04	2		
none	—	15	E-06	E-00	15		

RCRA WASTE MANAGEMENT SUMMARY

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Industry TEXTILES

Model Knit - Hosiery - L - Indirect

Number of Plants 3

Production 6200 Klb/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area SI (acres)
sludge	112.5	1	A-02	A-04	1		
none	—	2	B-06	B-00	2		

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RCRA WASTE MANAGEMENT SUMMARY

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Industry TEXTILES

Model Carpet - S - Indirect

Number of Plants 17

Production 2900 Klb/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area SI (acres)
solvents	2.6	3	A-13	A-04	3		
none	—	14	B-06	B-00	14		

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RCRA WASTE MANAGEMENT SUMMARY

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Industry TEXTILES

Model Carpet - M - Indirect

Number of Plants 23

Production 20,100 Klb/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area SI (acres)
solvents	17.9	3	A-13	A-04	3		
none	—	20	B-06	B-00	20		

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RCRA WASTE MANAGEMENT SUMMARY

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Industry TEXTILES

Model Carpet - 2 - Indirect

Number of Plants 3

Production 53,600 Klb/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area SI (acres)
solvents	47.7	1	A-13	A-04	1		
none	—	4	B-06	B-00	4		

RCRA WASTE MANAGEMENT SUMMARY

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Industry TEXTILES

Model Stock & Yarn-S-Indirect

Number of Plants 92

Production 194.8 Klb/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/SI (acres)
1. Sludge 2. Solvents	35.3 1.7	5	A-02 (waste 1) 13 (waste 2) 19	A-04,01 -04,01,03	4 1	1	0.03
same as above	same as above	1	B-02 (waste 1) 13 (waste 2)	B-04	1		
"	"	1	C-11 (waste 1) 13 (waste 2) 19	C-04,01	1	1	0.03
solvents	1.7	7	D-13	D-04	7		
sludge	282.4	1	E-05 (0.03 ac)	E-01	1		
sludge	35.3	4	F-02,19	F-04,01	4	1	0.03
same as above	same as above	18	G-02	G-04	18		
"	"	1	H-11,19	H-04,01	1	1	0.03
none	—	54	I-06	I-00	54		

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RCRA WASTE MANAGEMENT SUMMARY

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Industry TEXTILES

Model Stock & Yarn-M-Indirect

Number of Plants 46

Production 4480 Klb/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area SI (acres)
1. sludge 2. solvents	81.3 4.0	2	A-02 (waste 1) 13 (waste 2) 19	A-04,01 -04,01,03	1 1	1	0.08
same as above	same as above	2	B-02 (waste 1) 13 (waste 2)	B-04	2		
solvents	4.0	3	C-13	C-04	3		
sludge	650.4	1	D-05 (0.08 ac)	D-01	1		
sludge	81.3	2	E-02, 19	E-04,01	2	1	0.08
same as above	same as above	7	F-02	F-04	7		
"	"	1	G-11, 19	G-04,01	1	1	0.08
none	—	28	H-06	H-00	28		

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Industry TEXTILES

Model Stock & Yarn - L - Indirect

Number of Plants 28

Production 10,441 Klb/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area SI (acres)
1. Sludge 2. Solvents	189.4 9.3	1	A-02 (waste 1) 13 (waste 2) 19	A-04,01	1	1	0.18
same as above	same as above	1	B-02 (waste 1) 13 (waste 2)	B-04	1		
solvents	9.3	2	C-13	C-04	2		
sludge	189.4	1	D-11, 19	D-04,01	1	1	0.18
same as above	same as above	2	E-02, 19	E-04,01 -04,01,03	1 1	1	0.18
"	"	4	F-02	F-04	4		
none	—	17	G-06	G-00	17		

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Industry TEXTILES

Model Stock & Yarn - XL - Indirect

Number of Plants 12

Production 25,900 Klb/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/SI (acres)
1. Sludge 2. Solvents	469.9 23.0	1	A-02 (waste 1) T3 (waste 2) 19	A-04, 01	1	1	0.46
solvents	23.0	1	B-13	B-04	1		
sludge	469.9	3	C-02	C-04	3		
none	—	7	D-06	D-00	7		

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Industry TEXTILES

Model Nonwoven - S - Indirect

Number of Plants 18

Production 4600 Klb/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/SI (acres)
solvents	4.1	3	A-13	A-04	3		
none	—	15	B-06	B-00	15		

RCRA WASTE MANAGEMENT SUMMARY

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Industry TEXTILES

Model Nonwoven - M - Indirect

Number of Plants 6

Production 11,100 klb/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area, SI (acres)
solvents	9.9	1	A-13	A-04	1		
none	—	5	B-06	B-00	5		

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RCRA WASTE MANAGEMENT SUMMARY

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Industry TEXTILES

Model Nonwoven - 1 - Indirect

Number of Plants 2

Production 25,000 Klb/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area SI (acres)
None	—	2	A-06	A-00	2		

RCRA WASTE MANAGEMENT SUMMARY

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Industry TEXTILES

Model Felted Fabric - S-Indirect

Number of Plants 5

Production 400 klb/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area SI (acres)
SOLVENTS	0.4	1	A-13	A-04	1		
NONE	—	4	B-06	B-00	4		

RCRA WASTE MANAGEMENT SUMMARY

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Industry TEXTILES

Model Felted Fabric - M- Indirect

Number of Plants 8

Production 2100 klb/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area, SI (acres)
solvents	1.9	1	A-13	A-04	1		
none	—	7	B-06	B-00	7		

RCRA WASTE MANAGEMENT SUMMARY

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Industry TEXTILES

Model Felted Fabric - L - Indirect

Number of Plants 2

Production 3000 Klb/yr

Waste Streams	Quantity (MT/yr-plant)	No. of Plants	Waste Management Technology	Applicable Technical Requirements	No. of Plants	Treatment/Storage Surface Impoundments	
						No. per Plant	Surface Area/SI (acres)
none	—	2	A-06	A-00	2		