OhioEPA
State of Ohio Environmental Protection Agency

P.O. Box 1049, 1800 WaterMark Dr.
Columbus, Ohio 43266-0149
(614) 644-3020
FAX (614) 644-2329

George V. Voinovich
Governor

September 15, 1994

Re: Master Metals, Incorporated
OHD097613871
Financial Assurance

Douglas Mickey, President
Master Metals, Incorporated
2850 West Third Street
Cleveland, Ohio 44113

Dear Mr. Mickey:

On July 9, 1993, Ohio EPA conducted a financial record review for Master Metals, Incorporated and cited the facility in a Notice of Violation ("NOV") letter dated September 21, 1993. The facility was cited in violation of Ohio Administrative Code ("OAC") rules 3745-66-42 and 3745-66-43 because the closure cost estimate and financial assurance mechanism for closure proposed by Master Metals, Incorporated was inadequate for the closing hazardous waste management units; the facility was cited in violation of OAC rule 3745-66-42 because the closure cost estimate for the operating hazardous waste management units did not reflect cost associated with all activities.

Upon review of Master Metals, Incorporated's financial assurance file, Master Metals, Incorporated remains in violation of those violations cited in the September 21, 1993 NOV letter.

On August 23, 1994, I called the Coastal Insurance Company to determine if Master Metals, Incorporated is maintaining liability coverage. I spoke with Mr. Michael Slifea and he said Master Metals, Incorporated did not renew their liability insurance.

On August 23, 1994, I contacted Bank One to determine the balance of the facility's Trust Fund. According to the account administrator at Bank One, Master Metals, Incorporated has a balance of $64,582.76.

On August 23, 1994, Ohio EPA conducted a financial record review of financial assurance documentation for Master Metals, Incorporated's facility. The facility was evaluated for compliance with closure, post-closure and liability requirements. OAC rules 3745-66-42, 3745-66-43 and 3745-66-47. To date, documentation has not been submitted to demonstrate compliance with financial rules. Master Metals, Incorporated, therefore, remains in violation of:

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U.S. EPA, REGION V

OAC rules 3745-66-42 and 3745-66-43 because the closure cost estimate and financial assurance mechanism are inadequate for the closing and operating hazardous waste management units.

Master Metals, Incorporated's 1991 closure cost estimate for the **closing hazardous waste management units was $74,018.00.** To date this estimate has not been updated and an acceptable mechanism has not been established for the closing hazardous waste management units.

The closure cost estimate for those hazardous waste management units which were called the **operating hazardous waste management units** have not been updated since 1992 as noted in a December 1, 1992 letter from Master Metals, Incorporated to Ohio EPA (the closure cost estimate was listed as $125,392.09). A payment has not been made to the Trust Fund.

OAC rule 3745-66-47 because Master Metals, Incorporated has not maintained liability coverage. Master Metals, Incorporated has not renewed their liability insurance.

Even though Master Metals, Incorporated has closed their process operations, the facility must continue to comply with financial assurance OAC rules 3745-66-42, 3745-66-43 and 3745-66-47. To demonstrate compliance with the above violations, the closure cost estimates must be updated to reflect the current estimate to close the hazardous waste management units. The facility must submit documentation to demonstrate compliance with liability requirements.

Please submit the above documentation to me within thirty (30) days of receipt of this letter. If you have any questions, you may contact me at (614)644-2934.

Sincerely,

Tina Jennings

Tina Jennings
Compliance Monitoring and Enforcement Section
Division of Hazardous Waste Management

wp51.TJ.lcn.mstrmet.

cc: Laurie Stevenson, CM&ES, DHWM
Dave Stroh, CM&ES, DHWM
Mark Navarre, Legal
Tim Kern, AGO/EES
Sherri Biachin, U.S. EPA, Region V

State of Ohio Environmental Protection Agency

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George V. Voinovich
Governor

Donald R. Schregardus
Director

September 21, 1993

Re: Master Metals
OHD097613871
Financial Assurance

Douglas Mickey, President
Master Metals, Inc.
2850 W. Third Street
Cleveland, Ohio 44113

Dear Mr. Mickey:

On July 3, 1991, Ohio EPA conducted a financial record review of the financial assurance related documentation on-file for the above referenced facility. In a Notice of Violation (NOV) letter dated July 11, 1991, the facility was cited in continued violation of Ohio Administrative Code (OAC) rules 3745-66-43 and 3745-66-45 for failure to maintain adequate financial assurance as explained in Ohio EPA's October 19, 1990 letter and U.S. EPA's May 17, 1991 letter. In addition, Master Metals was cited in continued violation of OAC rule 3745-66-47. Master Metals was also notified in the July 11, 1991 letter that the facility had adequately demonstrated abatement of the violations of OAC rules 3745-66-42 and 3745-66-44 as cited previously in an October 19, 1990 NOV letter.

On September 24, 1992, Ohio EPA conducted a review of financial assurance documentation and issued its findings in a NOV letter dated October 26, 1992. As a result of the review, the facility was cited in violation of OAC rules 3745-66-42 and 3745-66-44 because Master Metals had not revised the January 16, 1991 closure/post-closure cost estimates for inflation as required. The facility was also cited for OAC rule violations 3745-66-43 and 3745-66-45 because the trust fund established by Master Metals for the **operating hazardous waste management units** had not been funded with a 1992 annual payment (The payment was due to fund the trust to its required amount of $60,875.00) and because the trust fund established for the **closing hazardous waste management units** was not funded sufficiently. The facility was determined to be in compliance with liability requirements of OAC rule 3745-66-47 as specified in the October 26, 1992 letter.

On July 9, 1993, Ohio EPA again conducted a financial record review to determine compliance with OAC rules 3745-66-42, 3745-66-43 and 3745-66-47 regarding closure cost estimate requirements, closure financial assurance and liability requirements. The most recent documentation submitted to demonstrate compliance with the above financial assurance rules includes:

- A letter dated December 1, 1992 which included a revised closure cost estimate for the full closure with regard to the **operating** hazardous waste management units. [The **operating** hazardous waste management units' cost estimate of $125,392.00 was updated with an inflation factor of 1.02999 (1.0299 * $121,750.00).]

- Statements of Account for the period August 1, 1992 to June 30, 1993 provided by the Bank One Trust Company. These statements included a reference to $63,357.00 in the Trust Fund (for the operating hazardous waste management units).

Review of the above documentation indicates, ***Master Metals is in violation of:***

OAC rules 3745-66-42 and 3745-66-43 because the closure cost estimate and financial assurance mechanism for the closure proposed by Master Metals are inadequate as further described below.

CLOSING HAZARDOUS WASTE MANAGEMENT UNITS

The trust fund for the closing hazardous waste units must be fully funded at this time. Ohio EPA does not have documentation confirming that any contribution has been made to the existing trust fund with respect to the closing hazardous waste management units, therefore, ***the facility is in violation of OAC 3745-66-43.***

The $74,018.00 estimate for the closing hazardous waste management units has not been updated for inflation. **This is a violation of OAC 3745-66-42**. The cost estimate for the closing hazardous waste management units must include costs associated with closure of at least those units identified in the September 10, 1992 closure plan Notice of Deficiency (5 waste piles, 2 storage areas, battery dump area, former battery case storage area at southwest corner of the facility, mixing pile near the old furnace, container storage areas not designated in exhibit B of the Consent Decree, any areas used for bulk load dumping, drum storage area at southwest corner of the site, any visible waste near or on the old furnace, any container storage area which is or was being used as a waste pile).

Please note that comments provided to the facility on closure activities through the closure Notice of Deficiency process do not in any manner waive or stay the facility's responsibility to demonstrate and maintain compliance with the cost estimate and financial assurance requirements.

In addition, Ohio EPA disagrees that the closure trust fund associated with closing hazardous waste management units may already be funded in full as stated in Master Metals' December 1, 1992 letter, particularly since contractors (on behalf of U.S. EPA) assessing potential costs of the closure of the Master Metals' facility have arrived at an approximate seven figure range estimate for facility closure.

OPERATING HAZARDOUS WASTE MANAGEMENT UNITS

Although the closure estimate submitted with the December 1, 1992 letter was adequately updated for inflation (from $121,382.00 to $125,392.00) the cost estimate does not reflect costs associated with all activities required during closure at the site (specifically, decontamination cost are not encompassed in the current estimate) ***in violation of OAC rule 3745-66-42.***

It is noted that the 1993 annual payment was due in the trust fund no later than August 23, 1993.

To demonstrate abatement of the above violations, Master Metals must revise its closure cost estimate and update its funding mechanism to account for activities associated with all hazardous waste management units operated and/or closing at the facility. As mentioned above, the facility must reassess its closure cost estimate, particularly as U.S. EPA contractors have arrived at a seven digit range figure closure cost estimate for the facility.

An evaluation of Master Metals' compliance with the post-closure cost estimate and post-closure financial assurance requirements of OAC rules 3745-66-44 and 3745-66-45 was not conducted as part of Ohio EPA's July 9, 1993 financial record review. It is noted that the facility has been cited in violation of the aforementioned post-closure financial requirements, most recently in Notices of Violation dated October 19, 1990, July 11, 1991 and October 26, 1992.

GENERAL COMMENTS

Ohio EPA issued a Notice of Deficiency (NOD - dated September 10, 1992) for the closure plan Ohio EPA received on May 20, 1990 for Master Metals. The closure plan was for five (5) waste piles and two storage areas. Ohio EPA requested the facility resubmit a modified Closure Plan to address deficiencies identified in the NOD specifically indicating that Master Metals was required to revise the closure plan to address all hazardous waste management units at the site including those units addressed in the plan, operating units, newly discovered units, additional items and units - battery dump area, former battery case storage area at the southwest corner of the facility, mixing pile near the old furnace, container storage areas not designated in exhibit B of the Consent Decree, areas which were used for bulk load dumping, areas used for empty or semi-empty hazardous waste drum storage, visible waste near or on the old furnace, container storage area.

As indicated in the December 1, 1992 letter, Master Metals has suggested that the issues raised in the September 10, 1992 NOD may impact the closure costs for partial closure (closing hazardous waste units) and also requested that the funding for partial closure be

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held in abeyance until requirements in the NOD are settled and a cost reflecting any additions or changes to the partial closure plan can be calculated. The most recent closure cost estimate attached to the December 1, 1992 letter from Master Metals include costs associated with storage bin cleaning, cleaning of concrete pad in battery cracking area, drum storage area and paved surface area cleaning, cleaning of air pollution control equipment, underground tank removal, soil testing and inventory removal. This estimate does not reflect all hazardous waste management units and/or closure activities anticipated at the site. As previously stated, comments provided to the facility on closure activities through the closure plan NOD process do not in any manner waive or stay the facility's responsibility to demonstrate and maintain current compliance with the cost estimate and financial assurance requirements.

It is noted that the above OAC rule violations also appear to be violations of the U.S. EPA November 1989 U.S. EPA Consent Decree. This information is, therefore, additionally being forwarded to U.S. EPA for review.

Please submit documentation to me demonstrating abatement of these violations within thirty (30) days of receipt of this letter. If you have any questions, you may contact me at (614)-2934.

Sincerely,

Tina Jennings

Tina Jennings
Compliance Monitoring and Enforcement Section
Division of Hazardous Waste Management

wp.TJ.lcn.

cc: Ursula Schaler, DHWM, NEDO
Mark Navarre, Legal, CO
Laurie Stevenson, CM&ES, DHWM
Tim Kern, AGO/EES
Sherri Biachin, US EPA, Region V
Dave Stroh, CM&ES, DHWM

OhioEPA
State of Ohio Environmental Protection Agency

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U.S. EPA, REGION V

October 26, 1992

Master Metals, Inc.
OHD097613871
Financial Assurance

Mr. Douglas Mickey
Master Metals, Inc.
2850 W. Third Street
Cleveland, Ohio 44113

Dear Mr. Mickey:

On September 24, 1992, Ohio EPA conducted a review of the financial assurance and liability coverage documentation on file for Master Metals, Inc. (MMI). MMI was evaluted for compliance with closure and post-closure cost estimates, financial assurance and liability requirements set forth in Ohio Administrative Code (OAC) 3745-66-42 through 3745-66-45 and 3745-66-47.

As a result of this review, Ohio EPA has determined MMI is in violation of the following:

1. **OAC 3745-66-42 Cost estimate for closure**
   OAC 3745-66-44 Cost estimate for post-closure care

   MMI must demonstrate that it has revised its closure and post-closure cost estimates for inflation, for both the **closing hazardous waste management units** and **operating hazardous waste management units**. On January 16, 1991, MMI provided estimates to Ohio EPA. According to Ohio EPA files, these estimates have not been updated annually for inflation.

2. **OAC rule 3745-66-43 Financial assurance for closure**
   OAC rule 3745-66-45 Financial assurance for post-closure

   The trust fund established by MMI for the **operating hazardous waste management units** has not been funded with a 1992 annual payment in accordance with OAC rules 3745-66-43(A) and 3745-66-45(A). According to the account administrator at Bank One, the trust fund for the operating hazardous waste management units is currently funded to $55,663.05. The annual payment for 1992 was due no later than August 23, 1992. This payment was due to fund the trust to its required amount of $60,875.00.

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MMI has chosen to establish a trust fund for the **closing hazardous waste management units** to satisfy the requirements of an escrow account in accordance with Section G.3. of the November 1989 Consent Decree with U.S. EPA. This trust fund has only been funded to $16,207.00. The amount placed in this trust is not sufficient to satisfy the closure cost estimate of $74,018.00 (which has not been updated for inflation) for the closing hazardous waste management units. Ohio EPA has received no documentation demonstrating additional payments into this trust.

In order to demonstrate abatement of these violations, MMI must update its cost estimates, make the 1992 annual payment to the trust fund for the **operating hazardous waste management units** and set aside sufficient funds to close the **closing hazardous waste management units**.

In a letter dated July 25, 1991, Michael Cyphert, the attorney representing MMI, submitted a hazardous waste facility Certificate of Liability Insurance to Ohio EPA on behalf of MMI, to demonstrate compliance with the liability requirements of OAC rule 3745-66-47(A) for sudden accidental occurrences. The Certificate appears to meet the wording requirements of OAC rule 3745-55-51(J), and therefore, at this time, Ohio EPA has determined MMI to be in compliance with OAC rule 3745-66-47. However, if in the process of implementing an Ohio EPA approved closure plan, MMI is unable to demonstrate all waste has been removed to background levels or a risk based closure has been achieved, MMI will also be required to provide liability insurance for non-sudden accidental occurrences.

Please submit documentation demonstrating abatement of these violations within thirty (30) days of the date of this letter. If you have any questions, you may contact me at (614) 644-2934.

Sincerely,

Kelly G. Smith

Kelly G. Smith
Compliance Monitoring and Enforcement Section
Division of Hazardous Waste Management

sp/ks

cc: Paul Anderson/Ursula Schaler, DHWM, NEDO
Mark Navarre, Legal
Laurie Stevenson, DHWM
Tim Kern, AGO
Sherri Bianchin, U.S. EPA, Region V
Mr. Robert Caserona, Climaco, et al.

MASTER METALS, INC., 2850 W. THIRD ST., CLEVELAND, OHIO 44113 • (216) 621-2361 FAX 621-7475

Lead Smelter and Refiner

December 1, 1992

Ms. Kelly Smith
Ohio Environmental Protection Agency
Compliance Monitoring and Enforcement Section
Division of Hazaardous Waste Management
PO Box 1049, WaterMark Drive
Columbus, Ohio 43266-0149

RE: Financial Assurance - Master Metals, Inc.

Dear Ms. Smith:

Enclosed please find Master Metals, Inc.'s response to Ohio EPA's letter dated October 26, 1992, regarding Master Metals, Inc.'s financial assurance for closure.

As you know, Ohio EPA issued a notice of deficiency ("NOD") dated September 10, 1992 concerning Master Metals, Inc.'s partial closure plan. Ohio EPA requested that Master Metals Inc. revise its closure cost estimates for closing hazardous waste units based upon deficiencies which were detailed in the NOD.

Master Metals, Inc. requested clarification of specific items that had been addressed in the NOD. A meeting was held on November 11, 1992 with Ohio EPA. Ohio EPA was represented by Mr. Paul Anderson and Ms. Ursala Schaler of the Northeast District Office, and Mr. Paul Vandermeer of your Central Office.

Although Ohio EPA was helpful and clarified some issues at the meeting, Ohio EPA was not able to provide responses to other issues which were of great concern to Master Metals, Inc. In essence, Ohio EPA stated that, with regard to these issues, U.S. EPA was to be contacted for further explanation.

Thus, Ms. Sherri Bianchin of U.S. EPA was contacted on November 13, 1992. Ms. Bianchin suggested that a meeting would be advantageous in settling these issues. It was agreed that a meeting would be scheduled immediately after the Thanksgiving Holiday.

Clearly, issues raised in Ohio EPA's NOD may impact considerably the closure costs for partial closure (i.e. closing hazardous waste units). In fact, the closure costs may already be funded in full. Therefore, at this time, Master Metals, Inc. requests that review of the funding for partial closure be held in abeyance until additional requirements detailed in Ohio EPA's NOD are settled and a cost reflecting any additions or changes to the partial closure plan can be calculated.

In addition, Master Metals, Inc. conducted extensive soil sampling in December, 1990 at a cost of 28,253.70. Master Metals, Inc. asserts that this soil sampling complies with the requirements detailed in its partial closure plan. The results of the said soil sampling have been submitted to Ohio EPA. The invoices are attached for your reference.

With regard to the cost estimate for facility closure, the estimate has been updated by utilizing the current annual deflator as computed by the Department of Commerce. This provides a current closure estimate of $125,392.09. The closure trust fund has been funded to a total of $62,697.00. A revised closure cost estimate indicating the same is enclosed. I believe this fund is properly funded in accordance with a 20-year pay-in period.

If you have any questions or comments, please call me.

Sincerely,

Douglas K. Mickey
President

Enclosures
cc: Robert Casarona, Esq.
Climaco, Climaco, Seminatore, Lefkowitz, & Garofoli

MASTER METALS, INC., 2850 W. THIRD ST., CLEVELAND, OHIO 44113 • (216) 621-2361 FAX 621-7475

Lead Smelter and Refiner

FAX TRANSMITTAL SHEET

FAXED TO: USEPA
Sherri Bianchin

DATE 12/21/92

FROM: Rudy Zupan

NO. OF PAGES INCLUDING COVER 3

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MESSAGE: Financial Assurance

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RCRIS ENTRY CODES: (EVALULATION) 012 (ENFORCEMENT) 010
CEI __ CI __ OTHER FRL __ INITIAL NOV __ FOLLOW-UP NOV __
FULL RTC __ PRTL RTC __ TCLP __ LDR __ SENT TO USEPA: YES__ NO__

OhioEPA
State of Ohio Environmental Protection Agency

O. Box 1049, 1800 WaterMark Dr.
olumbus, Ohio 43266-0149
(614) 644-3020
FAX (614) 644-2329

George V. Voinovich
Governor

Donald R. Schregardus
Director

October 26, 1992

Master Metals, Inc.
OHD097613871
Financial Assurance

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DIV. OF HAZARDOUS WASTE MGT.

Mr. Douglas Mickey
Master Metals, Inc.
2850 W. Third Street
Cleveland, Ohio 44113

Dear Mr. Mickey:

On September 24, 1992, Ohio EPA conducted a review of the financial assurance and liability coverage documentation on file for Master Metals, Inc. (MMI). MMI was evaluted for compliance with closure and post-closure cost estimates, financial assurance and liability requirements set forth in Ohio Administrative Code (OAC) 3745-66-42 through 3745-66-45 and 3745-66-47.

As a result of this review, Ohio EPA has determined MMI is in violation of the following:

1. **OAC 3745-66-42 Cost estimate for closure**
   OAC 3745-66-44 Cost estimate for post-closure care

   MMI must demonstrate that it has revised its closure and post-closure cost estimates for inflation, for both the **closing hazardous waste management units** and **operating hazardous waste management units**. On January 16, 1991, MMI provided estimates to Ohio EPA. According to Ohio EPA files, these estimates have not been updated annually for inflation.

2. **OAC rule 3745-66-43 Financial assurance for closure**
   OAC rule 3745-66-45 Financial assurance for post-closure

   The trust fund established by MMI for the **operating hazardous waste management units** has not been funded with a 1992 annual payment in accordance with OAC rules 3745-66-43(A) and 3745-66-45(A). According to the account administrator at Bank One, the trust fund for the operating hazardous waste management units is currently funded to $55,663.05. The annual payment for 1992 was due no later than August 23, 1992. This payment was due to fund the trust to its required amount of $60,875.00.

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MMI has chosen to establish a trust fund for the **closing hazardous waste management units** to satisfy the requirements of an escrow account in accordance with Section G.3. of the November 1989 Consent Decree with U.S. EPA. This trust fund has only been funded to $16,207.00. The amount placed in this trust is not sufficient to satisfy the closure cost estimate of $74,018.00 (which has not been updated for inflation) for the closing hazardous waste management units. Ohio EPA has received no documentation demonstrating additional payments into this trust.

In order to demonstrate abatement of these violations, MMI must update its cost estimates, make the 1992 annual payment to the trust fund for the **operating hazardous waste management units** and set aside sufficient funds to close the **closing hazardous waste management units**.

In a letter dated July 25, 1991, Michael Cyphert, the attorney representing MMI, submitted a hazardous waste facility Certificate of Liability Insurance to Ohio EPA on behalf of MMI, to demonstrate compliance with the liability requirements of OAC rule 3745-66-47(A) for sudden accidental occurrences. The Certificate appears to meet the wording requirements of OAC rule 3745-55-51(J), and therefore, at this time, Ohio EPA has determined MMI to be in compliance with OAC rule 3745-66-47. However, if in the process of implementing an Ohio EPA approved closure plan, MMI is unable to demonstrate all waste has been removed to background levels or a risk based closure has been achieved, MMI will also be required to provide liability insurance for non-sudden accidental occurrences.

Please submit documentation demonstrating abatement of these violations within thirty (30) days of the date of this letter. If you have any questions, you may contact me at (614) 644-2934.

Sincerely,

Kelly G. Smith

Kelly G. Smith
Compliance Monitoring and Enforcement Section
Division of Hazardous Waste Management

sp/ks

cc: Paul Anderson/Ursula Schaler, DHWM, NEDO
Mark Navarre, Legal
Laurie Stevenson, DHWM
Tim Kern, AGO
Sherri Bianchin, U.S. EPA, Region V
Mr. Robert Caserona, Climaco, et al.

PRC Environmental Management, Inc.
214 Second Avenue North
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Nashville, TN 37201
615-256-1191
Fax 615-256-1195

PRC

September 5, 1992

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OFFICE OF RCRA
Waste Management Division
U.S. EPA, REGION V

Ms. Sheri Bianchin
U.S. Environmental Protection Agency, Region 5
RCRA Enforcement Branch
77 West Jackson Boulevard
Chicago, IL 60604

RE: EPA Contract No. 68-W9-0006
Work Assignment No. R05053
Contingent Closure and Post-Closure
Cost Estimates for Master Metals

Dear Ms. Bianchin:

PRC Environmental Management, Inc. (PRC) has completed work on the contingent closure and post-closure cost estimates for the Master Metals facility in Cleveland, Ohio. Enclosed are two copies of the cost estimates prepared in accordance with applicable U.S. Environmental Protection Agency (EPA) and Ohio EPA guidance.

PRC estimates that the costs of closure and post-closure care associated with closing the facility as a landfill will be $ 7,111,349. PRC emphasizes to EPA that the cost estimates contained herein are "ballpark" figures that must be supplanted by EPA with engineering cost estimates based on detailed plans and specifications.

Please contact me at 615-256-1191 if you have any questions or comments regarding the enclosed cost estimates.

Sincerely,

Robert E. Melton
for Mike Navetta
Contractor Project Manager

cc: Fred Norling, RPO (letter only)
E. Schuessler, PRC (w/1 copy)
Project File

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July 29, 1992

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OFFICE OF RCRA
Waste Management Division
U.S. EPA, REGION V

Mr. Joseph M. Boyle
RCRA Enforcement Branch, Region V
77 West Jackson Boulevard
Chicago, Illinois 60604-3590

Re: Financial Assurance and Closure Plans
U.S. v. Master Metals, Inc.
C87-1471 (N.D. Ohio)

Dear Mr. Boyle:

My office represents Master Metals, Inc. I have your letter written to Douglas Mickey dated July 9, 1992. In a previous telephone conversation with Stuart Hersh at Region V and by letter to Arthur Harris, the District Attorney representing the United States in the above-captioned matter, I have indicated that Master Metals believes it is complying with the financial assurance and closure provisions of the subject consent order and the requisite RCRA regulations.

As of June 30, 1992, Master Metals had $55,258.94 in a trust fund for closure of their facility. The statement that Master Metals has not funded the trust fund with at least $54,787.50 may be a misunderstanding on your behalf. While Master Metals disagrees with many of the statements set forth in your July 9, 1992 letter, I believe it will be more conducive to meaningful discussion and resolution of the numerous regulatory issues surrounding this facility in the context of resolving all of Master Metals' regulatory issues at one time.

Accordingly, I look forward to an opportunity to address these concerns at what I am led to believe will be a meeting addressing RCRA compliance issues, including financial assurance, and potential remediation concerns.

I will await to hear from Mr. Hersh regarding the same. Thank you for your consideration.

Very truly yours,

Robert B. Casarona

Robert B. Casarona

RBC:acm
cc: Douglas Mickey
Jerry Moody
Richard Boylan

PRC Environmental Management, Inc.
214 Second Avenue North
Suite 200
Nashville, TN 37201
615-256-1191
Fax 615-256-1195

PRC

July 28, 1992

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OFFICE OF RCRA
Waste Management Division
U.S. EPA, REGION V

Ms. Sheri Bianchin
U.S. Environmental Protection Agency, Region 5
RCRA Enforcement Branch
77 West Jackson Boulevard
Chicago, IL 60604

RE: EPA Contract No. 68-W9-0006
Work Assignment No. R05053
Closure Cost Estimates for Master Metals

Dear Ms. Bianchin:

PRC Environmental Management, Inc. (PRC) has completed work on the closure cost estimates for the Master Metals facility in Cleveland, Ohio. Enclosed are two copies of closure cost estimates prepared in accordance with applicable U.S. Environmental Protection Agency (EPA) guidance. The closure cost estimates are presented such that they can be used as an EPA document with no reference to PRC.

PRC estimates that the cost of closing all of the hazardous waste management units at the Master Metals facility, excluding the furnace and baghouse areas, will be $5,167,774. Citing the $121,750 closure cost reported in the latest version of the Master Metals Closure Plan, PRC's work demonstrates that the figures are at least one order of magnitude low.

Please contact me at 615-256-1191, if you have any questions or comments regarding the enclosed cost estimates.

Sincerely,

Robert E. Melton
for Mike Navetta
Contractor Project Manager

cc: Fred Norling, RPO (letter only)
E. Schuessler, PRC (w/1 copy)
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HRE-8J

Douglas Mickey, President
Master Metals, Inc.
2850 West Third Street
Cleveland, Ohio 44113

Re: Financial Assurance and Closure Plans for Closing and Operating Hazardous Waste Units
Master Metals, Inc.
U.S. v. Master Metals
C87-1471 (N.D. Ohio)
OHD 097 613 871

Dear Mr. Mickey:

This letter is the third letter from the United States Environmental Protection Agency (U.S. EPA) regarding the financial assurance required of Master Metals, Inc. for closure of its Cleveland, Ohio facility pursuant to the Consent Decree in the above cited case, and 40 CFR 265.142 - 265.146 and OAC 3745-66-42 through 3745-66-46. As more fully described below, the financial assurance for closure proposed by Master Metals is inadequate. Within 15 days of receipt of this letter, Master Metals must fully fund the mechanism(s), consistent with the regulatory requirements and the Consent Decree. Additionally, in accordance with the Ohio Environmental Protection Agency's (OEPA) technical review which will be forthcoming, and U.S. EPA's comments outlined in this letter, the Closure Plans must be revised by Master Metals Inc. and must be resubmitted within the time frame specified by the OEPA.

Pursuant to Section V.G.3 of the Consent Decree (Case No. 87-1471), Master Metals, Inc. was required to implement, and certify no later than March 16, 1990, that it had established financial assurance for closure of the Closing Hazardous Waste Units at Master Metals' Cleveland, Ohio facility. Certification of financial assurance was to include a detailed description of the proposed financial assurance mechanism(s).

In addition, the financial assurance for closure of the facility (i.e. final facility closure) including the Operating Hazardous Waste Units was to be established no later than May 15, 1990. Certification of financial assurance was to include a detailed description of the proposed financial assurance mechanism. Financial assurance information for both sets of closing units was untimely submitted on September 17, 1990, with the August 1990 monthly report.

On January 3, 1991, and on May 17, 1991, U.S. EPA notified Master Metals that the financial assurance mechanisms were not adequate for the Partial Closure Plan (i.e., Closing Hazardous Waste Units) and the Final Closure Plan (i.e., Final Facility). U.S. EPA informed Master Metals that the cost estimate for the Partial Closure Plan was inadequate, and Master Metals had failed to establish, certify and adequately fund financial assurance for the Closing Hazardous Waste Units subject to the Partial Closure Plan. In addition, with respect to the Operating Hazardous Waste Units, Master Metals had failed to implement the financial assurance mechanism for those units. Implementing the financial assurance mechanism requires Master Metals to provide, pursuant to V.G.3 of the Consent Decree, financial resources pursuant to 40 CFR 265.142 through 265.146 and OAC Rules 3745-66-42 through 3745-66-46. Master Metals failed to adequately fund the financial assurances mechanisms.

Master Metals responded to U.S. EPA on June 14, 1991. Once again, Master Metals' response is unacceptable and inconsistent with the express terms of RCRA, OAC 3745-66-42 through 3745-66-46, and Section V.G.3. of the Consent Decree. In essence, Master Metals established no approvable mechanisms for both the Operating and Closing Hazardous Waste Units. Approvable mechanisms are discussed below. In addition, the amount which Master Metals proposes to fund its financial assurance mechanisms is inadequate and the amount set aside to date falls short even of the amount required based on Master Metals' current closure cost estimates.

With regard to the Operating Hazardous Waste Units, the regulations and the Consent Decree may allow a schedule for achieving full funding of the financial assurance mechanism. Specifically, where a trust fund will be utilized, financial assurance is to be established by the effective date of the regulations (i.e., August 23, 1983), and funded annually over a pay-in-period equal to the remaining useful life of the facility (as estimated in the closure plan), or 20 years, whichever is shorter. Hence, for a 20 year pay-in period, the funding of the financial assurance must be completed no later than the year 2002. As Master Metals was previously informed, the first payment must equal the equivalent amount of eight years of annual payments (i.e, 1983 to 1991). Subsequent payments must then be made annually until full funding of the financial assurance mechanism is achieved by year 2002.

Master Metals proposed to deposit the initial payment into the facility trust fund over 10 equal payments, starting in March 1991. This payment schedule is not an option permitted by the regulations.

In particular, Master Metals' current estimate for implementation of the Final Closure Plan is $121,750. As of May 15, 1992, $54,555.86 has been placed into the trust fund. Assuming a useful life of the maximum allowed by the pay-in schedule discussed above (i.e., year 2002), the initial payment was supposed to equal at least $54,787.50 covering the eight years from 1983 until 1991. In addition, the 1992 annual payment of $6,087.50 will be due no later than August 23, 1992.

Master Metals claims that it does not have the liquid funds to fully fund the facility closure to the level required. U.S. EPA reminds Master Metals that the requirement to fund the financial assurance mechanism for closure is not

contingent upon availability of liquid funds. In fact, the reason that a closure plan must be funded is to ensure funds for closure of a facility in case a facility does not have liquid funds available once the operation ceases.

In summary, in accordance with the Consent Decree and the regulations, Master Metals is required to fund the appropriate financial assurance mechanisms for closure of the Operating Hazardous Waste Units concurrent with submittal of its closure plans (March 1990). To date, Master Metals has not fully funded the first required payment of at least $54,787.50.

With regard to the Closing Hazardous Waste Units, full funding must be completed immediately. As stated in the regulation, where the operating life of the unit ends prior to the year 2002, the pay-in-period must be accelerated to be completed prior to initiating closure. The waste piles at Master Metals (i.e., the Closing Hazardous Waste Units) have lost interim status and have no remaining useful life.

Since the closing units have no remaining useful life, there is no basis in the regulations or the Decree permitting a scheduled payment. The Closure Plan must be fully funded at this time. For the Closing Hazardous Waste Units, Master Metals estimated that closure cost at $74,018. To date only approximately $16,000 has been made available, and those funds are not in an acceptable financial assurance mechanism (40 CFR 265.143/OAC 3745-66-43).

Master Metals claims that it believes that the amount presently set aside, approximately $16,000, is sufficient to complete closure because to date, Master Metals has removed all waste piles of lead-containing feed stocks, and has conducted soil and groundwater sampling. U.S. EPA disagrees with Master Metals conclusion. Funds for all soil and groundwater sampling to date were not expended in accordance with an approved Closure Plan as is described in the next paragraph, and thus are not expenditures made in furtherance of closure.

A facility must use its own funds for closure, but may obtain release of trust moneys at certain intervals (40 CFR 265.143(a)(10)/OAC 3745-66-43(a)(10)). The funds can be released only after approval by the authorized agency (OEPA). Additionally, the OEPA may authorize release of funds only for expenditures which are consistent with the approved Closure Plans as documented by itemized bills, and only if sufficient closure funds will remain in the trust. Id U.S. EPA notes that expenditures made by Master Metals were primarily required by its insurance carrier and have not been specifically included in the Closure Plans. In addition, reductions from the trust have not been requested by Master Metals or authorized by OEPA.

In summary, Master Metals must immediately fully fund an acceptable financial assurance mechanism for the Closing Hazardous Waste Units to not less than the current estimate for implementation of the Partial Closure Plan, $74,018.

Regarding proceeding with Partial Closure, Master Metals claims that since the operations at this facility are dependent on material movement by means of heavy industrial vehicles in the same areas subject to closure, cleaning the

surfaces of these areas is an activity more appropriately conducted during final facility closure.

Pursuant to Section V of the Consent Decree and consistent with the regulations, Master Metals is required to close these "closing units" in advance of final facility closure. Master Metals must proceed to "close" the area upon approval of the closure plan by OEPA based upon the schedule contained therein.

The time allowed for closure is presented at 40 CFR 265.113/OAC 3745-66-13 . "Within 90 days after receiving the final volume of hazardous waste at a hazardous waste management unit, . . or within 90 days after approval of the closure plan, whichever is later, . . . the owner or operator must treat, remove from the unit or facility or dispose of on-site, all hazardous wastes in accordance with the approved Closure Plan."

The Closure Performance Standards are described in 40 CFR 265.111/OAC 3745-66-11:

> "the owner or operator must close the facility in a manner that (a) minimizes the need for further maintenance, and (b) controls, minimizes or eliminates, to the extent necessary to protect human health and the environment, post-closure escape of hazardous waste, hazardous constituents, leachate, contaminated run-off, or hazardous waste decomposition products to the ground or surface waters or to the atmosphere; and (b) complies with the closure requirements of this subpart including. . . " 40 CFR 265.258/OAC 3745-67-58.

40 CFR 265.258(a)/OAC 3745-67-58(a) sets forth the closure requirements stating that:

> "at closure, the owner or operator must remove or decontaminate all waste residues, contaminated containment system components, contaminated subsoils, and structures and equipment contaminated with waste and leachate and manage them as hazardous waste. . . and (b) If after removing or decontaminating all residues and making all reasonable efforts to effect removal or decontamination of contaminated components, subsoils, structures, and equipment, as required in paragraph (a) of this section, the owner or operator finds that not all contaminated subsoils can be practically removed or decontaminated, he must close the facility and perform post-closure care in accordance with the closure and post-closure requirements that apply to landfills" (40 CFR 265.310/ OAC 3745-68-18).

Furthermore, now that soil and groundwater contamination have been detected on-site by sampling conducted by Master Metals, the releases must be addressed in the revised Closure Plans.

> "The owner or operator must amend the Closure Plan . . . no later than 60 days after the unexpected event has occurred which has affected the closure plan in accordance with 40 CFR 265.112(c)/OAC 3745-66-12(c). The closure plan must include a detailed description of the steps needed

to remove or decontaminate all hazardous waste residues . . including procedures for removing contaminated soils. . . and a detailed description of activities necessary, including groundwater monitoring" in accordance with 40 CFR 265.112(b)/OAC 3745-66-12(b).

Hence, Master Metals must amend the Partial and Final Closure Plans and closure cost estimates to address the soil and groundwater contamination. On August 12, 1991, Master Metals committed to submit a revised Closure Plan including the closure cost estimates under separate cover. However, this plan has not been received by OEPA or U.S. EPA as of the date of this letter.

Consequently, based on the regulations, the Consent Decree and Master Metals' most current estimates of the cost of closure, Master Metals must:

1) submit amended Closure Plans to the OEPA with a copy to U.S. EPA. The plans must address the releases to the soil and groundwater as was discussed earlier in this letter and in accordance with OEPA's requirements, and must include amended cost of closure estimates. The payments in items 2-3 below must be increased to reflect cost of closure under the amended closure plans;

2) provide an acceptable financial assurance mechanism for the closing units and provide funding of at least $74,018; and

3) properly fund the operating units financial assurance mechanism to not less than $54,787.50.

Finally, you should be aware that this letter does not address the technical adequacies or inadequacies of the closure plans, or approve Master Metals' cost estimates for closure under the plans submitted by Master Metals or under any revised plan. Review of the Closure Plans will be conducted by OEPA. OEPA will also review the financial assurance mechanisms.

In accordance with Section V.G.3 of the Consent Decree, Master Metals must correct the deficiencies regarding financial assurance outlined in this letter and respond to this letter in writing within 15 days. Response to this letter must be under separate cover and not included as part of the monthly report. If you have any questions, you may contact Sheri L. Bianchin of my staff at (312) 886-4446.

Sincerely yours,

ORIGINAL SIGNED BY
JOSEPH M. BOYLE

Joseph M. Boyle, Chief
RCRA Enforcement Branch

cc: Pam Allen, OEPA-CO
Paul Anderson, OEPA-NEDO
Ed Kitchen, OEPA-CO
Paul Vandermeer, OEPA-CO
Robert B. Casarona, Esq.-MM

bcc: Barbara Rogers, U.S. DOJ
Arthur Harris, Assistant U.S. Attorney
Stuart Hersh, ORC
Dan Patulski, RPB

SENDER:
- Complete items 1 and/or 2 for additional services.
- Complete items 3, and 4a & b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write "Return Receipt Requested" on the mailpiece below the article number.
- The Return Receipt Fee will provide you the signature of the person delivered to and the date of delivery.

I also wish to receive the following services (for an extra fee):
1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:

DOUGLAS MICKEY PRESIDENT
MASTER METALS INC
2850 WEST THIRD STREET
CLEVELAND OH 44113

4a. Article Number
P 849 142 002

4b. Service Type
☐ Registered ☐ Insured
☒ Certified ☐ COD
☐ Express Mail ☐ Return Receipt for Merchandise

7. Date of Delivery
7/13/92

5. Signature (Addressee)

6. Signature (Agent)

8. Addressee's Address (Only if requested and fee is paid)

PS Form 3811, November 1990 ☆U.S. GPO: 1991—287-066 **DOMESTIC RETURN RECEIPT**

HRE-8J:SBIANCHIN:ab:6-4446:06/10/92 #4

Master\Mickey.ltr

| OFFICIAL FILE COPY |

AP 6/26/92

CONCURRENCE REQUESTED FROM REB			
OTHER STAFF	REB STAFF	REB SECTION CHIEF	REB BRANCH CHIEF
AB		6-23-92	

SPHerk 7/6/92 w/changes

RECEIVED
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OFFICE OF RCRA
Waste Management Division
U.S. EPA, REGION V

BANK ONE

BANK ONE OHIO TRUST COMPANY, NA

October 30, 1991

Dear Trust Client:

Enclosed you will find your Statement of Account for the period ending September 30, 1991. These are the first reports provided to you since our merger with Bank One Ohio Trust Company, NA. We are pleased with the new format and believe you will be also.

The format of your statements has changed but the Employee Benefit staff has not. We remain located in downtown Canton. Please be advised, though, that our address had changed to:

Bank One Ohio Trust Company, NA
101 Central Plaza, South
P.O. Box 20820
Canton, OH 44701-0820

Please contact our office at 438-8352 if you have any questions.

Sincerely,

George R. Briercheck
Trust Officer
Employee Benefits

GRB/cjk
Enclosures

OhioEPA
State of Ohio Environmental Protection Agency

P.O. Box 1049, 1800 WaterMark Dr.
Columbus, Ohio 43266-0149
(614) 644-3020
FAX (614) 644-2329

George V. Voinovich
Governor

July 11, 1991

Re: Master Metals, Inc.
OHD97613871

Douglas Mickey, President
Master Metals, Inc.
2850 W. Third Street
Cleveland, OH 44113

Dear Mr. Mickey:

On July 3, 1991 Ohio EPA conducted a review of the financial assurance and liability coverage documentation on file for the Master Metals, Inc. facility referenced above. The facility was evaluated for compliance with the cost estimate, financial assurance, and liability coverage requirements set forth in Ohio Administrative Code (OAC) rules 3745-66-42 through 3745-66-47.

On January 16, 1991 Master Metals, Inc. provided revised closure cost estimates for the closing and operating units. These estimates, with the comments provided in your letter, appear to meet the requirements of OAC rules 3745-66-42 and 3745-66-44 at this time. These estimates must be revised annually for inflation in accordance with these rules. These estimates must also be revised within thirty (30) days after a revision is made to the closure plan which increases the costs of closure. Ohio EPA has not yet acted upon the closure plans submitted by Master Metals, Inc.

Master Metals, Inc. has submitted mechanisms for closure of the closing and operating hazardous waste units. For reasons explained in Ohio EPA's October 19, 1990 letter and most recently in U.S. EPA's May 17, 1991 letter these mechanisms do not meet the requirements of OAC rules 3745-66-43 and 3745-66-45. Therefore, Master Metals, Inc. remains in violation of these rules.

Master Metals, Inc. has not submitted documentation of compliance with the liability coverage requirements for the closing and operating units. Therefore, Master Metals, Inc. remains in violation of OAC rule 3745-66-47.

Within thirty (30) days of the date of this letter, please submit documentation demonstrating that the violations noted above have been abated in accordance with all applicable rules and the January 15, 1990 Consent Decree entered into with U.S. EPA (Civil Action No. C87-1471).

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JUL 25 1991
OFFICE OF RCRA
Waste Management Division
U.S. EPA, REGION V

I may be reached at (614) 644-2934 if you have any questions.

Sincerely,

Carolyn Reierson

Carolyn Reierson
Hazardous Waste Enforcement Section
Division of Solid and Hazardous Waste Management

Sp.CR.lcn

cc: Laurie Stevenson, HWES, DSHWM
Linda Lagunzad, DSHWM, NEDO
Sheri Bianchin, U.S. EPA, Region V
Michael Cyphert, Esq.

MASTER METALS, INC., 2850 W. THIRD ST., CLEVELAND, OHIO 44113 • (216) 621-2361 FAX 621-7475

Lead Smelter and Refiner

August 12, 1991

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SEP 1991
OFFICE OF RCRA
Waste Management Division
U.S. EPA, Region V

RECEIVED
OHIO EPA
AUG 19 1991
DIV. of SOLID & HAZ. WASTE MGT.

Ms. Carolyn Reierson
Ohio EPA
Hazardous Waste Enforcement Section
Division of Solid and Hazardous Waste Management
P.O. Box 1049
1800 WaterMark Drive
Columbus, Ohio 43266-0149

RE: Financial Assurance and Environmental Liability Coverage

Dear Ms. Reierson:

Based upon notification by USEPA on May 17, 1991 that the financial assurance mechanisms used by Master Metals for the closing and operating hazardous waste units were not acceptable, a revised plan was proposed and submitted to USEPA on June 14, 1991. Master Metals requested that USEPA respond immediately if this plan is not acceptable. No response has been received in this regards and therefore Master Metals assumes that the plan has been approved.

A Trust Fund had been established for funding the facility closure costs on August 1, 1990. An initial payment of $ 4,640.50 was placed into the Fund. A revised cost estimate for facility closure was submitted January 16, 1991 which detailed an estimated cost increase to $121,750.00. Based on a 20 year pay-in period beginning in 1983 Master Metals is required to fund the facility closure Trust to $ 54,787.50, or an additional $50,147.00. As was explained to USEPA, Master Metals does not have the liquid funds to fully fund the facility closure Trust to the level required. Therefore Master Metals will make payments to the Trust Fund of $ 5,014.70 per month until an additional $ 50,147.70 is contained in the Fund. An initial payment of $ 5,014.70 was made to the Fund for the month of August on August 2, 1991.

Partial closure had been financially assured through a certificate of deposit which was deemed as an unacceptable financial assurance mechanism. Therefore, on August 7, 1991 Master Metals established an additional Trust Fund to fund partial closure activities. The Trust Fund has been funded to $ 16,053.84, which was the value of the certificate of deposit upon withdrawal.

Master Metals believes that this amount is sufficient to complete the partial closure plan. To date Master Metals has removed all waste piles of lead-containing feedstocks. Master Metals has conducted soil and groundwater sampling and analyses at a cost of $27,198.00.

In addition, since the operations at this facility are dependent on material movement by means of heavy industrial vehicles in the same areas subject to closure, cleaning the surfaces of these areas, as detailed in the partial closure plan, is an activity more appropriately conducted during full facility closure. Master Metals will submit a revised closure plan under separate cover.

Master Metals has obtained Environmental Liability Coverage for sudden accidental occurrences in the amounts of 1 million per occurrence with an annual aggregate of 2 million as required by Ohio Administrative Code Rule 3745-66-47.

A copy of the policy and a Certificate of Liability Insurance is attached. Also attached are copies of deposits to the facility and partial closure Trust Funds.

If you have any questions please contact me at (216) 621-2361.

Sincerely,

Douglas K. Mickey
President

cc: Michael Cyphert, Esq.
Thompson, Hine, & Flory

MASTER METALS, INC., 2850 W. THIRD ST., CLEVELAND, OHIO 44113 • (216) 621-2361 FAX 621-7475

Lead Smelter and Refiner

June 14, 1991

RECEIVED
JUN 1 8 1991
OFFICE OF RCRA
Waste Management Division
U.S. EPA, Region V

Kevin M. Pierard, Acting Chief
United States Environmental Protection Agency
Region V
RCRA Enforcement Branch, 5HR-12
230 South Dearborn St.
Chicago, Illinois 60604

RE: Financial Assurance for Closing and Operating Hazardous Waste Units
Master Metals Inc. OHD 097613871

Dear Mr. Pierard:

Master Metals has received your letter dated May 17, 1991, alleging that the financial assurance mechanisms proposed and utilized by Master Metals are inadequate.

Although it disagrees with the United States' position and interpretations, Master Metals is willing to accommodate your requests in order to avoid Dispute Resolution procedures under Section XV of the Consent Decree. Master Metals, therefore, proposes to fund the partial and facility closure plans in the following manner:

Facility Closure (Operating Hazardous Waste Units)

A Trust Fund had been established for funding the facility closure costs. To date $4,640.50 has been placed into the Fund, based on a pay-in period of 20 years. We understand that it is the United States' position that financial assurance was to be established by the effective date of the regulations in 1983.

As you have been advised previously, a revised cost estimate for facility closure was submitted January 16, 1991 which detailed an estimated cost increase to $121,750.00.

Based on the above, we understand that the United States requires Master Metals make an immediate payment to the Fund of a substantial amount of money. Currently, Master Metals does not have the liquid funds to fully fund the facility closure Trust to the level required. Therefore, Master Metals proposes the following:

Revised facility closure costs	$ 121,750.00
Initial Payment Required (based on a 20 year pay-in period)	$ 6,087.50
Total funds required in Trust Fund (based on payments from 1983 to 1991)	$ 54,787.50
Total current funds in Trust Fund	$ 4,640.50
Additional funds required	$ 50,147.00

Master Metals will make payments to the Trust Fund of $ 5,014.70 per month until an additional $ 50,147.70 is contained in the Fund (April 1992). Beginning in 1992, Master Metals will provide annual payments to the Fund to conform with Part 265.143 (a)(3)(ii).

Partial Closure (Closing Hazardous Waste Units)

Currently, partial closure is being financially assured through a certificate of deposit in an amount of $ 15,000. Since you have requested that a certificate of deposit not be used as a financial assurance mechanism, Master Metals will establish an additional Trust Fund to fund partial closure activities.

Master Metals believes that $ 15,000 (current value $ 16,207.84) is sufficient to complete the partial closure plan. To date Master Metals has removed all waste piles consisting of lead-containing feedstocks. In addition, Master Metals has conducted soil and groundwater sampling and analyses at a cost of $ 27,198.00.

Further, since the operations at this facility are dependent on material movement by means of heavy industrial vehicles in the same areas subject to closure (i.e. former waste pile units), cleaning the surfaces of these areas, as detailed in the partial closure plan, is

an activity more appropriately conducted during full facility closure. Master Metals will submit a revised partial closure plan under separate cover.

If the United States disagrees with Master Metals' proposals, please advise immediately. If you have any questions please contact me at (216)-621-2361.

Sincerely,

Douglas K. Mickey
President

cc: Michael Cyphert, Esquire
Thompson, Hine, and Flory

5HR-12

MAY 17 1991

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Douglas Mickey, President
Master Metals, Inc.
2850 West Third Street
Cleveland, Ohio 44113

Re: Financial Assurance for
Closing and Operating
Hazardous Waste Units
Master Metals, Inc.
OHD 097 613 871

Dear Mr. Mickey:

This letter is in regard to the financial assurance required of Master Metals, Inc., for closure of its Cleveland, Ohio facility pursuant to 40 CFR 265.142 - 265.146 and OAC 3745-66-42 through 3745-66-46. As more fully described below, the financial assurance mechanisms proposed by Master Metals are inadequate. Within 15 days of receipt of this letter, Master Metals must revise the financial assurance mechanisms, and fully fund the mechanisms, consistent with this letter and the requirements of the Consent Decree.

Pursuant to Section V.G.3 of the Consent Decree (Case No. 87-1471), Master Metals, Inc. was required to implement, and certify no later than March 16, 1990, that it had established, financial assurance for closure of the Closing Hazardous Waste Units at Master Metals' Cleveland, Ohio facility. The Closing Hazardous Waste Units are those units which must immediately close as described in the Consent Decree and are addressed in the Partial Closure Plan. In addition, Master Metals was required to implement and certify establishment of financial assurance for closure of the full facility including the Operating Hazardous Waste Units, no later than May 15, 1990. The Operating Hazardous Waste Units, pursuant to the Consent Decree, are the hazardous waste units, other than the closing units, which are identified and addressed in the Full Facility Closure Plan. The Full Facility Closure Plan deals with final closure of all the hazardous waste units. Certification of financial assurance was to include a detailed description of the proposed financial assurance mechanism. Financial assurance certifications for both sets of units were submitted on September 17, 1990.

On December 27, 1990, U.S. EPA disapproved the financial assurance mechanisms for the Partial Closure Plan and the Final Closure Plan. Section V.G.3 of the Consent Decree, 40 CFR 265.142 through 265.146 and OAC Rules 3745-66-42 through 3745-66-46 require Master Metals to establish and adequately fund financial assurance mechanisms needed to implement the closure plans. U.S. EPA informed Master Metals that the cost estimate for the Partial Closure Plan was inadequate, and Master Metals had failed to establish, certify, and adequately fund an acceptable financial assurance for the Closing Hazardous Waste Units. In addition, with respect to the Operating Hazardous Waste Units, Master Metals was informed that it had failed to implement the financial assurance mechanism for those units. Furthermore, the Ohio Environmental Protection Agency provided comments to Master Metals, in an October 19, 1990 letter, regarding Master Metals' financial assurance needed for closure.

Master Metals' January 16, 1991 response to these letters is unacceptable and inconsistent with the express terms of RCRA, OAC 3745-66-42 through 3745-66-46, and Section V.G.3. of the Consent Decree. Under RCRA, the State law and the Consent Decree, the requirement to fund the financial assurance mechanism for closure is not contingent upon closure plan approval. Therefore, Master Metals was required to fund the appropriate financial assurance mechanisms for closure concurrent with submittal of its closure plans. There is no basis for withholding funding of the financial assurance pending approval of the closure plans. RCRA, State law and the Decree contemplate that the financial assurance amount may change (whether through the process of approval of the closure plan, the effects of inflation or through amendments of the plan) and requires that the amount of financial assurance be adjusted accordingly pursuant to 40 CFR 265.142 (Consent Decree at V.G.3.).

With regard to the Operating Hazardous Waste Units, the regulations and the Consent Decree allow a schedule for fully funding the financial assurance mechanism. Where a trust fund will be utilized, financial assurance is to be established by the effective date of the regulations (i.e., 1983), and funded annually over a pay-in-period equal to the remaining useful life of the facility (as estimated in the closure plan), or 20 years, whichever is shorter. Hence for a 20 year pay-in period as is currently the case for the operating units, the funding of the financial assurance must be completed no later than the year 2002. The first payment must account for the first eight years of payments, from 1983 through 1990. Payments must then be made annually until full funding of the financial assurance mechanism is achieved.

With regard to the Closing Hazardous Waste Units, the period for funding is accelerated. As stated in the regulation, where the operating life of the unit ends prior to the year 2002, the pay-in-period must be accelerated to be completed prior to the initiation of closure. This is the case for the units at Master Metals which have lost interim status (i.e., the Closing Hazardous Waste Units) and have no remaining life. Since the closing units have no remaining useful life, there is no basis in the regulations or the Consent Decree permitting a scheduled pay-in-period.

In addition, the amount of funding Master Metals has provided is wholly inadequate. Master Metals' current estimate for implementation of the Full Closure Plan is $101,070. To date, only $4640.50 has been placed into the trust fund for closure of the operating Hazardous Waste Units. Even assuming a useful life of the maximum allowed by the pay-in period discussed above, the initial payment should have been equal to at least $40,428, covering the eight years from 1983 through 1990.

Additionally, for the Closing Hazardous Waste Units at Master Metals, where closure is accelerated because the units have lost interim status, the pay-in period must be accelerated such that full funding is immediately available. For the Closing Hazardous Waste Units, Master Metals estimated that closure cost to be $74,018. To date only $15,000 has been placed into a certificate of deposit. As an initial matter, a certificate of deposit is not a financial assurance mechanism which is acceptable under RCRA, State law or the Decree. The $15,000 must be promptly transferred to an acceptable financial assurance mechanism. In addition, Master Metals must immediately fund this financial assurance mechanism for the Closing Hazardous Waste Units to not less than the current estimate for implementation of the Partial Closure Plan, $74,018. If Master Metals chooses to use an escrow account, Master Metals must assure U.S. EPA that the funds may only be released for closure of the Closing Hazardous Waste Units. We note that an escrow account consists of money placed into the custody of a third party for delivery to a grantee only after the fulfillment of a specific purpose. The specific purpose in this case is closure of the Closing Hazardous Waste Units. The grantee in this case is the party who actually performs the closure activities. The third party selected as a trustee to distribute the funds, must only do so under the direction of the Director of the Ohio Environmental Protection Agency. Specifically, the third party will make such payments as the Director will direct, in writing, to provide for the payment of closure of the facility (OAC 3745-55-51).

Consequently, based on the regulations, the Consent Decree and Master Metals' most current estimates of the cost of closure, Master Metals must: 1) propose an acceptable financial assurance mechanism for the closing units; 2) provide financial assurance funding for the closing units of $74,018; 3) update the pay-in schedule for the operating units financial assurance mechanism; 4) properly fund the operating units financial assurance mechanism to not less than $40,428; and 5) certify that the mechanisms are adequately funded.

Finally, you should be aware that this letter does not address the technical adequacies or inadequacies of the closure plans, nor approve Master Metals' estimates for closure under the plan submitted by Master Metals or under any revised plan. Review of the Closure Plans will be conducted by Ohio Environmental Protection Agency (OEPA). OEPA will also evaluate the financial assurance mechanisms to determine compliance with the OAC. This includes a determination of the adequacy of the closure cost estimates.

In accordance with Section V.G.3. of the Consent Decree, Master Metals must correct the deficiencies outlined in this letter and respond to this letter in writing within 15 days. Response to this letter must be under separate cover

and not included as part of the monthly report. If you have any questions, you may contact Sheri L. Bianchin of my staff at (312) 886-4466.

Sincerely,

ORIGINAL SIGNED BY
KEVIN M. PIERARD

Kevin M. Pierard, Acting Chief
RCRA Enforcement Branch

cc: Mike Savage OEPA-CO
Ed Kitchen, OEPA-CO
Carolyn Reierson, OEPA-CO
Paul Vandermeer, OEPA-CO
Paul Anderson, OEPA-NEDO
Linda Lagunzad, OEPA-NEDO
Michael Cyphert, Esq.

bcc: Barbara Rogers, Esq. DOJ
Arthur Harris, Assistant U.S. Attorney
Stuart Hersh, ORC-TUB-03
Lisa Pierard, RPB-5HR-13

5HR:SBIANCHIN:05/09/91:6-4446 MM.hom

| AUTHOR'S FILE COPY |

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3. Article Addressed to: Douglas Mickey Master Metals, Inc. 2850 West Third Street Cleveland, OH 44113	4. Article Number P352 932 143 Type of Service: ☐ Registered ☐ Insured ☐ Certified ☐ COD ☐ Express Mail ☐ Return Receipt for Merchandise Always obtain signature of addressee or agent and DATE DELIVERED.
5. Signature — Addressee X	8. Addressee's Address *(ONLY if requested and fee paid)*
6. Signature — Agent X	
7. Date of Delivery 5-25-91	

PS Form 3811 Apr. 1989 ...U.S.G.P.O. 1989-238-815 DOMESTIC RETURN RECEIPT

MASTER METALS, INC., 2850 W. THIRD ST., CLEVELAND, OHIO 44113 • (216) 621-2361

Lead Smelter and Refiner

RECEIVED
JAN 25 1991
OFFICE OF RCRA
Waste Management Division
U.S. EPA, REGION V

January 16, 1991

Mr. Joseph M. Boyle, Acting Chief
RCRA Enforcement Branch
U. S. E. P. A.
Region V
230 S. Dearborn Street
Chicago, Il. 60604
ATTN: 5HR-12

RE: Financial Assurance for Closing
and Operating Hazardous Waste Units
Master Metals, Inc.
OHD 097 613 871

Dear Mr. Boyle,

Master Metals has received your letter dated January 3, 1991 indicating disapproval of the financial mechanisms for funding Master Metals' Partial and Facility Closure Plans. In addition, the cost estimates for closure activities has been deemed to be inadequate.

Based on the applicable sections of 40 CFR 265.142 and 261.7 final closure costs have been recalculated to include the following:

1. There is a difference of opinion regarding the utilization of inventory upon initiation of final closure. It has always been our intention to consume all lead bearing feed stocks in our furnaces prior to the final closure of the facility. Therefore, there would be, in essence, no cost associated with the removal and disposition of lead bearing feed stocks since they would not exist on the site at the time of final closure.

   It should be noted that lead-bearing feed stocks do have an inherent value. However, to comply with 40 CFR 265.142(a)(3) no "salvage" value has been attributed to this material. Therefore, this cost estimate assumes a zero monetary value for all lead containing waste material on-site at closure and includes third-party transportation costs from Master Metals facility to the nearest secondary facility which would utilize the material in its production process.

2. The estimated maximum amount of lead bearing feed stock that would be on site at closure has been recalculated at 4,000,000 pounds.

3. In accordance with 40 CFR 261.7 "Residues of Hazardous Waste in Empty Containers" the procedure for cleaning storage bins as detailed in the Facility Closure Plan, Section 3.2 has been revised. The containers will be scraped of residue until it is "empty" in accordance with 40 CFR 261.7(b)(1). No washing or rinsing of the containers, or associated analytical fees for wash or rinse waters is anticipated. Any quantity of residues removed from the containers has been previously calculated as specified in the above Paragraph 2.

The Partial Closure Plan submitted by Master Metals includes all hazardous waste units as described and detailed in the Consent Decree. However, subsequent inspections by US EPA indicated that additional areas of the facility may require closure. Therefore, the partial closure plan and costs for closure are being revised to include the following:

1. A former waste pile storage area which contained dross and battery casings located on the southwest corner of the facility.

2. Waste pile storage area (Area #6 in Figure 2 of the Partial Closure Plan) is to be increased.

All closure cost estimates are based on hiring a third party to close the hazardous waste units.

Revised partial and facility closure plans will be submitted under separate cover. Cost estimates for these revisions are contained in the attachment to this letter.

In regards to the establishment, certification and implementation of the financial assurance mechanisms we have the following comments:

1. The primary factor in our inability to establish an appropriate financial assurance mechanism for funding the Partial Closure Plan was the lack of a response from appropriate Agencies regarding the adequacy of our Partial Closure Plan. Without this approval, the amount required for the financial assurance mechanism was unknown. In an attempt to show good faith, a certificate of deposit of $15,000.00 was established and has been maintained awaiting the outcome of discussions regarding the Partial Closure Plan. The establishment of a Trust, the financial assurance mechanism that would be used, is both time consuming and expensive.

We would like to create this Trust and fund it to an appropriate level when agreement is reached on the correct amount of the fund. Please note that the Consent Decree, at article V.G.3., Page 22, specifically accepts an escrow account as a permissable financial assurance mechanism for the Closing Hazardous Waste Units (i.e. the Partial Closure Plan).

2. In regards to payment into the Trust fund for the Facility Closure Plan, our initial review of the regulation indicated that the funding of the Trust fund over a twenty year term was correct. Based, however, on the effective date of the regulations it appears that the first payment should have been higher. We intend to make the appropriate adjustment when the cost estimates for closure are approved.

Master Metals has been awaiting a definitve response from both the Ohio and US EPA on the Partial Closure Plan and the Facility Closure Plan. It is our intention to come to final resolution on these matters and initiate the actions that are appropriate and in compliance with the regulations.

I can be contacted at the letterhead address or telephone number if you have any questions.

Sincerely yours,
Master Metals, Inc.

Douglas K. Mickey, President

cc: Sheri Bianchin, U.S EPA Region V
Carolyn J.Reierson, OEPA-HWES, DSHWM
Mark Bergman, OEPA-NEDO
Michael Cyphert, Esq.

REVISED PARTIAL CLOSURE COST ESTIMATE
MASTER METALS, INC.
CLEVELAND, OHIO

A. Concrete Pad Cleaning		
Residue removal, cleaning, and surface rinsing (labor and materials @ 1.50/SF)	$40650.00	
Analytical fees	5388.00	
Liquid waste disposal Sanitary sewer $0.03-0.04/gallon	1500.00	
		$ 47538.00
B. *Soil Testing		
Soil Sampling		
Mobilization/demobilization	$ 1250.00	
Soil borings @ $14/LF	4480.00	
Split-spoon samples @ $10/ea.	1280.00	
Decontamination	360.00	
Materials	350.00	
		$ 7720.00
Soil Analysis		
Total Metals @ $140/sample	$17920.00	
EP Toxicity @ $120/sample	840.00	
		$ 16400.00
TOTAL		$ 74018.00

REVISED FACILITY CLOSURE COSTS
MASTER METALS, INC.
CLEVELAND, OHIO

A. Storage Bin Cleaning		
Residue removal (labor and materials)	$ 3840.00	
		$ 3840.00
B. Cleaning of Concrete Pad in Battery Cracking Area		
Residue removal, cleaning and surface rinsing (labor and materials)	$ 5250.00	
Analytical Fees	420.00	
Liquid Waste Disposal sanitary sewer $0.03/0.04/gal.	400.00	
		$ 6070.00
C. Drum Storage Area and Paved Surface Area Cleaning		
Sweep/vacuum concrete (labor and materials)	$ 3900.00	
Residue disposal (transportation costs to reclaiming facility)	3000.00	
		$ 6900.00
D. Cleaning of Air Pollution Control Equipment		
Residue removal and cleaning (labor and materials)	$ 5550.00	
Residue and filter bag disposal	2500.00	
		$ 8050.00
E. Underground Tank Removal		
Residue removal, cleaning, and and rinsing	$ 1500.00	
Residue disposal	6250.00	
Analytical fees (tank cleaning)	420.00	
Tank removal	2000.00	
		$ 10170.00

REVISED FACILITY CLOSURE COSTS
MASTER METALS
CLEVELAND, OHIO

F. Soil Testing		
*Soil Sampling		
Mobilization/demobilization	$ 1500.00	
Soil borings @ $14/LF	6160.00	
Split-spoon samples @ $10 ea.	1760.00	
Decontamination	500.00	
Materials	500.00	
		$ 10420.00
**Soil Analysis		
Total metals @ $140/sample	$ 19880.00	
EP Toxicity @ $120.00/sample	1320.00	
Corrosivity @ $15/sample	300.00	
		$ 21500.00
G. Inventory Removal		
Transportation costs	$ 50000.00	
Labor	4800.00	
		$ 54800.00
TOTAL		$ 121750.00

* Soil sampling costs are based on a maximum of four core samples taken at each of 10 paved or unpaved areas of the facility, plus four background core samples.

** Soil analysis costs include costs for analysis of soils at the underground tank.

DON
FYI

JAN 0 3 1991

5HR-12

CERTIFIED MAIL: P 659 043 835
RETURN RECEIPT REQUESTED

Douglas Mickey, President
Master Metals, Inc.
2850 West Third Street
Cleveland, Ohio 44113

RE: Financial Assurance for Closing
and Operating Hazardous Waste Units
Master Metals, inc.
OHD 097 613 871

Dear Mr. Mickey:

Pursuant to Section V.G.3 of the January 15, 1990, Consent Decree (Case No. 87-1471), this letter is notice to Master Metals, Inc. of the United States Environmental Protection Agency's (U.S. EPA) disapproval of the financial assurance mechanism for the Closure of the Cleveland, Ohio facility. Information regarding the Closure of closing Hazardous Waste Management Units is contained in the Partial Closure Plan and Closure of Operating Hazardous Waste Management Units is contained in the Final Closure Plan.

The financial assurance information was submitted with the August 1990 monthly report submitted in September 1990. The financial assurance mechanisms proposed by Master Metals are disapproved for the following reasons: (1) the financial assurance amounts proposed by Master Metals are inadequate to complete the activities required by the Partial Closure Plan and the Final Closure Plan at the facility, and (2) Master Metals has failed to establish, certify that it has established, and implement the financial assurance mechanism, in accordance with the Consent Decree.

In particular, the cost estimate for the Partial Closure Plan provided by Master Metals, Inc., is inadequate due to its failure to comply with the cost estimate provisions of 40 CFR 265.142, and for failure to address all units subject to closure at this time. The cost estimates for the Final Closure Plan provided by Master Metals, Inc., is inadequate due to its failure to comply with the cost estimate provisions of 40 CFR 265.142.

The cost estimate must include a "detailed written estimate... of the cost of closing the facility ..." in accordance with the requirements of 40 CFR 265.142. The cost estimate for closure, among other things, "must equal the cost of final closure at the point in the facility's active life when the extent and manner of its operation would make closure the most expensive ..." 40 CFR 265.142(a)(1).

In addition, the "closure cost estimate must be based on the costs to the owner or operator of hiring a third party to close the facility." 40 CFR 265.142(a)(2). "The closure cost estimate may not incorporate any salvage value ..." 40 CFR 265.142(a)(3).

The estimate provided by Master Metals, Inc. for implementing the Partial Closure Plan fails to provide the details necessary to assure that these provisions have been complied with and apparently anticipates cost savings through the use of facility personnel and facility equipment.

Furthermore, since the Partial Closure Plan fails to include all units which are subject to closure at this time pursuant to the Decree, the proposed financial assurance amount is understated.

With regard to the Closing Hazardous Waste Management Units, Master Metals was required to establish, certify, and implement the financial assurance mechanism simultaneous with the submittal of the Closure Plans due March 16, 1990. Nonetheless, the only inference of such a financial assurance mechanism was submitted by Master Metals, Inc. in its August 1990 monthly report received in September 1990. This submittal is a copy of a certificate evidencing a deposit of $15,000 in Society National Bank. The submittal fails to identify the type of financial assurance mechanism, if any, being established. Consequently, we cannot determine if the mechanism is in compliance with the Decree, and the applicable regulations.

In addition, no certification of implementation has been received, and the mechanism has not been implemented. Certification and implementation was required by the Decree. In particular, the $15,000 is completely inadequate, and no schedule exists to fully find the financial assurance for the Partial Closure Plan.

For Operating Hazardous Waste Management Units, the specific provisions of the trust fund which was established, its under review; however, this mechanism has not been implemented in accordance with the Decree and the applicable regulations. Specifically, the first payment should have been equal to or greater than the amounts which would have been paid in from 1983 to the present, with completion of the annual payments by 2003 (i.e., 20 years from the 1983). 40 CFR 265.143(a)(3) and (a)(5).

Master Metals, Inc. has not adequately funded the financial assurance mechanisms. In addition, Master Metals has not demonstrated that it was funding the mechanisms as expeditiously as practicable.

In summary, the cost estimate by Master Metals to complete Partial Closure is inadequate. Furthermore, the U.S. EPA finds that Master Metals has failed to establish, certify, and implement a financial assurance mechanism for the Closing Hazardous Waste Management Units and has failed to implement a financial assurance mechanism for the Operating Hazardous Waste Management Units. These mechanisms were required by the Decree, 40 CFR 265.142 through 265.146, and OAC Rules 3745-66-42 through 3745-66-46. Master Metals, Inc. has not adequately funded either of the financial assurance mechanisms. In addition, Master Metals has not demonstrated that it was funding the mechanisms for the Partial Closure Plan or Final Closure Plan as expeditiously as practicable.

In accordance with Section V.C.1 of the Consent Decree, within 15 days of the disapproval, Master Metals must submit a description of financial assurance mechanisms for the Closing and Operating Hazardous Waste Units which certifies that the outlined deficiencies have been addressed.

Response to this letter must be under separate cover and not included in the monthly report.

If you have any questions or comments regarding the letter, please contact Sheri Bianchin of my staff at (312) 886-4446.

Sincerely yours,

Joseph M. Boyle, Acting Chief
RCRA Enforcement Branch

cc: Mike Savage, OEPA-CO
Paul Anderson, OEPA-NEDO
Mark Bergman, OEPA-NEDO
Michael Cyphert, Esq.

bcc: Lisa Pierard, RPB-5HR-13 ✓
Catherine McCord, REB-5HR-12
Arthur Harris, Assistant U.S. Attorney
Stuart Hersh, ORC-TUB-03

5HR-12:BIANCHIN:pb:12/03/90:6-4446 Mickey.ltr

OhioEPA
State of Ohio Environmental Protection Agency
P.O. Box 1049, 1800 WaterMark Dr.
Columbus, Ohio 43266-0149
(614) 644-3020 Fax (614) 644-2329

RECEIVED
OCT 26 1990
OFFICE OF RCRA
Waste Management Division
U.S. EPA, REGION V

Richard F. Celeste
Governor

CERTIFIED MAIL

October 19, 1990

Re: Master Metals, Inc.
OHD097613871
Financial Assurance

Douglas K. Mickey, President
Master Metals, Inc.
2850 W. Third Street
Cleveland, OH 44113

Dear Mr. Mickey:

On September 24, 1990, Ohio EPA conducted an annual financial record review of the records on file for the Master Metals, Inc. facility referenced above. The facility was evaluated for compliance with the financial assurance requirements for closure care, post-closure care, and liability coverage, as specified in Ohio Administrative Code (OAC) rules 3745-66-42 through 3745-66-45 and 3745-66-47.

On January 15, 1990 Master Metals, Inc. entered into a judicial Consent Decree (Civil Action No. C87-1471) with the United States of America, which set forth, among other things, the timeframes for Master Metals, Inc. to establish financial assurance for closure and liability coverage for the "Closing Hazardous Waste Units" and the "Operating Hazardous Waste Units" pursuant to 40 CFR 265.142 through 265.147 and OAC rules 3745-66-42 through 3745-66-47. Per the provisions of the Consent Decree, Master Metals, Inc. has filed a motion with the court to obtain an extension in which to obtain liability coverage pursuant to 40 CFR 265.147 and OAC rule 3745-66-47.

Since Master Metals, Inc. has not established liability coverage to date, Ohio EPA finds Master Metals, Inc. to be in violation of OAC 3745-66-47; Master Metals, Inc. appears to therefore also be in violation of 40 CFR 265.147. Effective June 29, 1990 Ohio EPA adopted mechanisms, in addition to the existing insurance and Financial Test/Corporate Guarantee mechanisms, for an owner or operator to demonstrate compliance with the liability coverage requirements of OAC rule 3745-66-47. These additional mechanisms include a guarantee for liability coverage, letter of credit for liability coverage, surety bond for liability coverage, and trust fund for liability coverage. U.S. EPA adopted these additional mechanisms effective October 3, 1988. Master Metals, Inc. may pursue one or a combination of these additional mechanisms to demonstrate compliance with OAC rule 3745-66-47 and therefore 40 CFR 265.147.

On September 6, 1990 Ohio EPA received a copy of a $15,000 certificate of deposit in the name of Master Metals, Inc. This certificate of deposit is intended to demonstrate financial assurance for closure of the closing hazardous waste units pursuant to Section V(G)(3) of the Consent Decree, 40 CFR 265.142 through 265.146, and OAC rules 3745-66-42 through 3745-66-46. The viability of this mechanism as a means of demonstrating compliance with the referenced rules is currently being reviewed by Ohio EPA and U.S. EPA, Region V. Master Metals, Inc. will be notified of the results of this determination under separate cover by Ohio EPA and/or U.S. EPA, Region V.

Ohio EPA has reviewed the closure cost estimate of the March 16, 1990 Partial Closure Plan for the closing hazardous waste units and finds the following violation of the OAC:

> OAC rule 3745-66-42, because the $66,815.00 estimate does not fully meet the requirements of OAC rule 3745-66-42. Specifically, it does not appear to based on the most expensive closure scenario and third party closure costs; costs of off-site hazardous waste inventory removal must be included in the cost estimate. Master Metals, Inc. appears to therefore be in violation of 40 CFR 265.142.
>
> Master Metals, Inc. must revise this estimate so that it meets requirements of OAC rule 3745-66-42 and 40 CFR 265.142 and so that it includes any additional hazardous waste units to be closed under a revised partial closure plan. Master Metals, Inc. must use this revised estimate and any estimate subsequently revised in accordance with the referenced rules to establish and maintain financial assurance for the closing hazardous waste units. If the certificate of deposit is determined to be a viable financial assurance mechanism, then Master Metals, Inc. must cause its amount to be increased in accordance with the closure cost estimate.

On September 6, 1990 Ohio EPA received a signed duplicate original of a Trust Agreement entered into on May 15, 1990 by Master Metals, Inc. with the Central Trust Company of Northeastern Ohio. On May 21, 1990 Ohio EPA received the facility closure plan which included the cost estimate for closure of the operating hazardous waste units. The Trust Agreement was established by Master Metals, Inc. to demonstrate financial assurance for closure of the operating hazardous waste units pursuant to Section V(G)(3) of the Consent Decree, 40 CFR 265.142 through 265.146, and OAC rules 3745-66-42 through 3745-66-46. Since Master Metals, Inc. has elected to establish this Trust Agreement for the benefit of the Director of Ohio EPA <u>or</u> the Regional Administrator of U.S. EPA, Region V, the wording of the Trust Agreement deviates from the wording of 40 CFR 264.151(a) and OAC rule 3745-55-51(A) as required by 40 CFR 265.143(a) and OAC rule 3745-66-43(A). Ohio EPA is not requesting at this time, however, that Master Metals, Inc. submit to Ohio EPA a revised Trust Agreement which exclusively meets the wording requirements of OAC rules 3745-55-51(A).

Ohio EPA has reviewed the Trust Agreement and closure cost estimate and finds the following violations of the OAC:

1. OAC rule 3745-66-42, because the $92,810.00 estimate does not fully meet the requirements of OAC rule 3745-66-42. Specifically, it does not appear to based on the most expensive closure scenario in that it does not include disposal costs for a third party to dispose of the maximum inventory of hazardous waste, engineer certification costs, or other administrative costs, as applicable. Master Metals, Inc. appears to therefore be in violation of 40 CFR 265.142.

   Master Metals, Inc. must revise the closure cost estimate so that it meet the requirements of OAC rule 3745-66-42 and 40 CFR 265.142 and so that it includes any changes made to the closure plan since its submittal in May, 1990.

2. OAC rule 3745-66-43(A)(3) and (5), because the first payment was not at least the amount that the Trust Fund would have contained if the Fund were established as of the effective date of the OAC rule, August 26, 1983, and annual payments were made to the Fund since this date. This rule specifies that any Trust Agreement established after the effective date of the rule must have annual payments to the Fund "over the twenty years beginning with the effective date of the rule or over the remaining operating life of the facility as estimated in the closure plan, whichever period is shorter."

   Therefore, at the time of establishment of the May 15, 1990 Trust Agreement there were fourteen (14) years left in the pay-in period, and Master Metals, Inc. should have made a payment to the Fund based on this pay-in period. Master Metals, Inc. must revise the closure cost estimate and make a supplemental deposit to the Fund based on this estimate and pay-in period.

Master Metals, Inc. appears to have violated Section V(G)(3) of the Consent Decree in that financial assurance mechanisms for closure for the closing and operating units were not submitted simultaneous with the submittal of any closure or post-closure plan pursuant to Section V(C)(1) of the Consent Decree.

Please submit to this office for review documentation demonstrating that Master Metals, Inc. has established liability coverage for the closing and operating hazardous waste units, and has made an appropriate deposit to the Trust Fund based on a twenty year pay-in period staring August 23, 1983 (fourteen years left in the pay-in period) and revised closure cost estimate as specified above. This documentation must demonstrate that Master Metals, Inc. has abated the violations of OAC rules 3745-66-42, 3745-66-43, and 3745-66-47 as cited above and 40 CFR 265.142, 265.143, and 265.147, as appropriate.

The results of this September 24, 1990 financial assurance record review are being forwarded to U.S. EPA, Region V for appropriate follow-up. If you have any questions regarding these matters, I may be reached at (614) 644-2934.

Sincerely,

Carolyn J. Reierson

Carolyn J. Reierson
Hazardous Waste Enforcement Section
Division of Solid and Hazardous Waste Management

Sp.CR.lcn

cc: Laurie Stevenson, HWES, DSHWM
Jeff Mayhugh, HWES, DSHWM
Mark Bergman, DSHWM, NEDO
Sheri Bianchin, U.S. EPA, Region V
Catherine McCord, U.S. EPA, Region V

MASTER METALS, INC., 2850 W. THIRD ST., CLEVELAND, OHIO 44113 • (216) 621-2361

Lead Smelter and Refiner

August 24, 1990

United States Department of Justice
Environmental Enforcement Section
P. O. Box 7611
Ben Franklin Station
Washington, D. C. 20044

U. S. Attorney for the Northern District of Ohio
1404 East 9th Street
Cleveland, Oh 44114

Ohio Environmental Protection Agency
Northeast District Office
Division of Solid and Hazardous Waste
2110 East Aurora Road
Twinsburg, Oh 44087-1969

Section Chief
Ohio Environmental Protection Agency
Division of Solid and Hazardous Waste Management
1800 WaterMark Drive
P. O. Box 1049
Columbus, Oh 43265-1049

Branch Chief
U. S. EPA, Region V
RCRA Enforcement Branch, 5HR-12
230 South Dearborn Street
Chicago, Il. 60604

RE: Consent Decree - Financial Assurance Mechanisms

As contemplated by Section V.G.3. of the Consent Decree, attached to this letter are the following closure financial assurance documents:

1. A copy of the certificate of deposit for $15,000.00 held in escrow in the name of Master Metals, Inc. and the EPA to fund the Closure of Closing Hazardous Waste Units. This escrow account was established on October 19, 1987.

2. A copy of the Trust Agreement between Master Metals, Inc. and The Central Trust Company of North East Ohio Dated May 15, 1990 to fund the closure of operating hazardous waste units. Arrangements have been made for notification of appropriate parties regarding the funding of this Trust, on an annual basis.

If you have any questions, please contact me or Jonathon Bodzin at the Letterhead address or telephone number.

Master Metals, Inc.

Douglas K. Mickey
President

NOT NEGOTIABLE — NONTRANSFERABLE

SOCIETY
NATIONAL BANK

BRANCH 203 — 47 — 14-2130/0-0

NAME AND ADDRESS OF DEPOSITOR(S)

MASTER METALS INC
EPA ACCOUNT

2850 W 3RD ST

CLEVELAND OH 44113

SSN OR [illegible]

341-28-6665

☐ Joint-Right of Survivorship Certificate [illegible] is payable [illegible] any time before death and upon death [illegible] balance shall [illegible] property of [illegible]

THE BANK CERTIFIES THAT THE DEPOSITOR(S) HAS DEPOSITED WITH IT THE SUM OF

FIFTEEN THOUSAND ($ 15,000.00) Dollars

Issue Date 04/05/90 Rate 7.820 Term M 12

First Maturity Date 04/05/91 First Interest Date 7/05/90

The interest earned shall be payable QUARTERLY

☐ deposited to savings account #

☐ deposited to checking account #

☐ mailed by check to above address

☒ compounded

SOCIETY
NATIONAL BANK

Member F.D.I.C.

BY [signature]
AUTHORIZED SIGNATURE

AUTOMATICALLY RENEWABLE — SEE REVERSE SIDE FOR TERMS OF RENEWAL

TRUST AGREEMENT

Trust agreement. The "Agreement," entered into as of MAY 15, 1990 by and between Master Metals, Inc., a corporation, the "Grantor," and Central Trust Company of Northeastern Ohio, a national bank, the "Trustee."

WHEREAS, the United States Environmental Protection Agency ("U.S. EPA"), and the Ohio Environmental Protection Agency ("Ohio EPA") have established certain rules applicable to the Grantor, requiring that the owner or operator of a hazardous waste management facility must provide assurance that funds will be available when needed for closure and/or post-closure care of the facility.

WHEREAS, the Grantor has elected to establish a trust to provide all or part of such financial assurance for the facilities identified herein.

WHEREAS, the Grantor, acting through its duly authorized officers, has selected the Trustee to be the trustee under this agreement, and the Trustee is willing to act as trustee.

NOW, THEREFORE, the Grantor and the Trustee agree as follows:

Section 1. Definitions. As used in this Agreement:

(a) The term "Grantor" means the owner or operator who enters into this Agreement and any successors or assigns of the Grantor.

(b) The term "Trustee" means the Trustee who enters into this Agreement and any successor Trustee.

(c) The term "Director" means the Director of the Ohio EPA, or his designee.

(d) The term "Regional Administrator" means the Regional Administrator of Region V of the U.S. EPA, or his designee.

Section 2. Identification of Facilities and Cost Estimates. This Agreement pertains to the facilities and cost estimates identified on attached Schedule A.

Section 3. Establishment of Fund. The Grantor and the Trustee hereby establish a trust fund, the "Fund" for the benefit of the U.S. EPA and Ohio EPA. The Grantor and the Trustee intend that no third party have access to the Fund except as herein provided. The Fund is established initially as consisting of the property, which is acceptable to the Trustee, described in Schedule B attached hereto. Such property and any other property subsequently transferred to the Trustee is referred to as the Fund, together with all earnings and profits thereon, less any

payments or distributions made by the Trustee pursuant to this Agreement. The Fund will be held by the Trustee, in trust, as hereinafter provided. The Trustee shall not be responsible nor shall it undertake any responsibility for the amount or adequacy of, nor any duty to collect from the Grantor, any payments necessary to discharge any liabilities of the Grantor established by the U.S. EPA or Ohio EPA.

Section 4. Payment for Closure and Post-Closure Care. The Trustee will make such payments from the Fund as the Director or the Regional Administrator will direct, in writing, to provide for the payment of the costs of closure and/or post-closure care of the facilities covered by this Agreement. The Trustee will reimburse the Grantor or other persons as specified by the Director or the Regional Administrator from the Fund for closure and post-closure expenditures in such amounts as the Director or the Regional Administrator will direct, in writing. In addition, the Trustee will refund to the Grantor such amounts as the Director or the Regional Administrator specifies in writing. Upon refund, such funds will no longer constitute part of the Fund as defined herein.

Section 5. Payments Comprising the Fund. Payments made to the Trustee for the Fund will consist of cash or securities acceptable to the Trustee.

Section 6. Trustee Management. The Trustee will invest and reinvest the principal and income of the Fund and keep the Fund invested as a single fund, without distinction between principal and income, in accordance with general investment policies and guidelines which the Grantor may communicate in writing to the Trustee from time to time, subject, however, to the provisions of this Section. In investing, reinvesting, exchanging, selling and managing the Fund, the Trustee will discharge his duties with respect to the trust fund solely in the interest of the beneficiary and with the care, skill, prudence, and diligence under the circumstances then prevailing which persons of prudence, acting in a like capacity and familiar with such matters, would use in the conduct of an enterprise of a like character and with like aims; except that:

(a) Securities or other obligations of the Grantor, or any other owner or operator of the facilities, or any of their affiliates as defined in the Investment Company Act of 1940, as amended, 15 USC §80a-2(a), will not be acquired or held, unless they are securities or other obligations of the Federal or a State government;

(b) The Trustee is authorized to invest the Fund in time or demand deposits of the Trustee, to the extent insured by an agency of the Federal or State government; and

(c) The Trustee is authorized to hold cash awaiting investment or distribution uninvested for a reasonable time and without liability for the payment of interest thereon.

Section 7. Commingling and Investment. The Trustee is expressly authorized in its discretion:

(a) To transfer from time to time any or all of the assets of the Fund to any common, commingled or collective trust fund created by the Trustee in which the Fund is eligible to participate, subject to all of the provisions thereof, to be commingled with the assets of other trusts participating therein; and

(b) To purchase shares in any investment company registered under the Investment Company Act of 1940, 15 U.S.C. §80a-1 et seq., including one which may be created, managed, underwritten, or to which investment advice is rendered or the shares of which are sold by the Trustee. The Trustee may vote such shares in its discretion.

Section 8. Express Powers of Trustee. Without in any way limiting the powers and discretions conferred upon the Trustee by the other provisions of this Agreement or by law, the Trustee is expressly authorized and empowered:

(a) To sell, exchange, convey, transfer or otherwise dispose of any property held by it, by public or

private sale. No person dealing with the Trustee will be bound to see to the application of the purchase money or to inquire into the validity or expediency of any such sale or other disposition;

(b) To make, execute, acknowledge and deliver any and all documents of transfer and conveyance and any and all other instruments that may be necessary or appropriate to carry out the powers herein granted;

(c) To register any securities held in the Fund in its own name or in the name of a nominee and to hold any security in bearer form or in book entry, or to combine certificates representing such securities with certificates of the same issue held by the Trustee in other fiduciary capacities, or to deposit or arrange for the deposit of such securities in a qualified central depositary even though, when so deposited, such securities may be merged and held in bulk in the name of the nominee of such depositary with other securities deposited therein by another person, or to deposit or arrange for the deposit of any securities issued by the United States Government, or any agency or instrumentality thereof, with a Federal Reserve bank, but the books and records of the Trustee will at all times show that all such securities are part of the Fund;

(d) To deposit any cash in the Fund in interest-bearing accounts maintained or savings certificates

issued by the Trustee, in its separate corporate capacity, or in any other banking institution affiliated with the Trustee, to the extent insured by an agency of the Federal or State government; and

(e) To compromise or otherwise adjust all claims in favor of or against the Fund.

Section 9. Taxes and Expenses. All taxes of any kind that may be assessed or levied against or in respect of the Fund and all brokerage commissions incurred by the Fund will be paid from the Fund. All other expenses incurred by the Trustee in connection with the administration of this Trust, including fees for legal services rendered to the Trustee, the compensation of the Trustee to the extent not paid directly by the Grantor, and all other proper charges and disbursements of the Trustee will be paid from the Fund.

Section 10. Annual Valuation. The Trustee will annually, at least thirty days prior to the anniversary date of establishment of the Fund furnish to the Grantor and to the Director and the Regional Administrator a statement confirming the value of the Trust. Any securities in the Fund will be valued at market value as of no more than sixty days prior to the anniversary date of establishment of the Fund. The failure of the Grantor to object in writing to the Trustee within ninety days after the statement has been furnished to the Grantor and the Director and the Regional

or does not act in the event of the resignation of the Trustee, the Trustee may apply to a court of competent jurisdiction for the appointment of a successor trustee or for instructions. The successor trustee shall specify the date on which it assumes administration of the trust in a writing sent to the Grantor, the Director and the Regional Administrator, and the present Trustee by certified mail ten days before such change becomes effective. Any expenses incurred by the Trustee as a result of any of the acts contemplated by this Section will be paid as provided in Section 9.

Section 14. Instructions to the Trustee. All orders, requests and instructions by the Grantor to the Trustee will be in writing, signed by such persons as are designated in the attached Exhibit A or such other designees as the Grantor may designate by amendment to Exhibit A. The Trustee will be fully protected in acting without inquiry in accordance with the Grantor's orders, requests and instructions. All orders, requests, and instructions by the Director or the Regional Administrator to the Trustee will be in writing, signed by the Director or the Regional Administrator, and the Trustee will act and will be fully protected in acting in accordance with such orders, requests and instructions. The Trustee will have the right to assume, in the absence of written notice to the contrary, that no

event constituting a change or a termination of the authority of any person to act on behalf of the Grantor or the Director or the Regional Administrator hereunder has occurred. The Trustee will have no duty to act in the absence of such orders, requests and instructions from the Grantor and/or the Director or the Regional Administrator except as provided for herein.

Section 15. Notice of Nonpayment. The Trustee will notify the Grantor and the Director and the Regional Administrator, by certified mail within ten days following the expiration of the thirty-day period after the anniversary of the establishment of the Trust, if no payment is received from the Grantor during that period. After the pay-in period is completed the Trustee is not required to send a notice of nonpayment.

Section 16. Amendment of Agreement. This Agreement may be amended by an instrument in writing executed by the Grantor, the Trustee, and the Director or the Regional Administrator, or by the Trustee and the Director or the Regional Administrator if the Grantor ceases to exist.

Section 17. Irrevocability and Termination. Subject to the right of the parties to amend this Agreement as provided in Section 16, this Trust will be irrevocable and will continue until terminated at the written agreement of the Grantor, the Trustee, and the Director or the Regional

Administrator or by the Trustee and the Director or the Regional Administrator if the Grantor ceases to exist. Upon termination of the Trust, all remaining trust property, less final trust administration expenses, will be delivered to the Grantor.

Section 18. Immunity and Indemnification. The Trustee will not incur personal liability of any nature in connection with any act or omission, made in good faith, in the administration of this Trust, or in carrying out any directions by the Grantor or the Director or the Regional Administrator issued in accordance with this Agreement. The Trustee will be indemnified and saved harmless by the Grantor or from the Trust Fund, or both, from and against any personal liability to which the Trustee may be subjected by reason of any act or conduct in its official capacity, including all expenses reasonably incurred in its defense in the event the Grantor fails to provide such defense.

Section 19. Choice of Law. This Agreement will be administered, construed and enforced according to the laws of the State of Ohio.

Section 20. Interpretation. As used in this Agreement, words in the singular include the plural and words in the plural include the singular. The descriptive headings for each Section of this Agreement will not affect the interpretation or the legal efficacy of this Agreement.

IN WITNESS WHEREOF, the parties have caused this Agreement to be executed by their respective officers duly authorized and their corporate seals to be hereunto affixed and attested as of the date first above written: The parties below certify that the wording of this Agreement is substantially identical to the wording specified in paragraph (A)(1) of Rule 3745-55-51 of the Ohio Administrative Code and paragraph (a)(1) of Section 264.151 of the Code of Federal Regulations as such regulations were constituted on the date first above written.

Master Metals, Inc.

by: _____
Douglas K. Mickey

Title: President

Central Trust Company of
Northeastern Ohio

by: _____

Title: Senior Trust Officer

State of Ohio)
) ss:
County of Medina)

On this 1 day of August, 1990, before me personally came Douglas K. Mickey to me known, who, being by me duly sworn, did depose and say that he resides at 70 Fairway Trail, that he is President of the corporation described in and which executed the above instrument; that he knows the seal of said corporation; that the seal affixed to such instrument is such corporate seal; that it was so affixed by order

of the Board of Directors of said corporation; and that he signed his name thereto by like order.

Paula A. Cook
Notary Public

PAULA COOK, Notary Public
State of Ohio
My Commission Expires May 3, 1994

Schedule A

Master Metals, Inc.
2850 West Third Street
Cleveland, Ohio 44113

USEPA I.D. No. OHD 097613871

Facility Closure Cost Estimate
(as of May 17, 1990):
$92,810.00

Pay-in Period:
20 years

Initial Payment:
$4,640.50

Designation of Authorized Agents
for Master Metals, Inc.:

Douglas K. Mickey, President

Jerry Moody, Vice President

Schedule B

Initial Fund Payment:
$4,640.50 U.S. Funds

Date: February 13, 1990
Report #: 90-1051

Client Name: MASTER METALS INC

Sample Description: #1: FURNACE BRICK #2:

Date Sampled: 1/22/90
Location: #1: REMOVED FURNACE BRICK #2:

Extraction Procedure Toxicity Analytical Results

Sample Description:>	1	2
Parameter:		
Metals-		
Arsenic(As)	0.7 ppm	
Barium(Ba)	0.50 ppm	
Cadmium(Cd)	1.0 ppm	
Chromium(Cr)	0.08 ppm	
Lead(Pb)	230 ppm	
Mercury(Hg)	< 0.05 ppm	
Selenium(Se)	< 0.05 ppm	
Silver(Ag)	< 0.05 ppm	

ppm = parts per million = milligrams per Liter(aq)

Federal Regulation Limits (40 CFR 261.24)

Arsenic(As)	5.0 ppm
Barium(Ba)	100.0 ppm
Cadmium(Cd)	1.0 ppm
Chromium	5.0 ppm
Lead(Pb)	5.0 ppm
Mercury(Hg)	0.2 ppm
Selenium(Se)	1.0 ppm
Silver(Ag)	5.0 ppm

Envisage
Environmental
Incorporated

5. On February 13, 1990, I contacted the National Union Insurance Company, ("AIG") and Environmental Compliances Services, Inc. ("ECS"), the underwriting and engineering arm of Planet Insurance Company, a subsidiary of Reliance Insurance Group, in an effort to obtain EIL insurance for Master Metals, Inc. The application provided to both companies is attached hereto as Attachment A.

6. I have submitted a completed application to National Union Insurance Company, AIG's insurance carrier on February 13, 1990, and to Planet Insurance Company, on February 13, 1990. The same application was provided to both companies.

7. Both underwriters are waiting for the completed environmental risk assessment surveys, including extensive soil and groundwater sampling, to determine acceptability of risk and pricing.

8. Once the survey is completed, my general experience has been that the applicable process should conclude in four to six weeks.

FURTHER AFFIANT SAYETH NAUGHT.

R.O. Churchill

SWORN TO BEFORE ME and subscribed in my presence at Cleveland, Ohio, this 5th day of October, 1990.

Notary Public

MARY ELLEN SCHMITT, Notary Public
State of Ohio
My commission expires Jan. 26, 1993

J.E. Moenkhaus & Associates
Insurance Agency, Inc.
Bond Court Building, Suite 1600
1300 East Ninth Street, Cleveland, Ohio 44114
(216) 861-5444
FAX (216) 861-6126

Mr. Douglas Mickey
President
Master Metals, Inc.
2850 West Third Street
Cleveland, Ohio 44113

March 13, 1990

Dear Doug:

In accordance with your request, we have have submitted complete applications for Pollution Liability Insurance to the following companies:

1) Planet Insurance Co. (Reliance Insurance Group)

2) National Union Insurance Co. (AIG Group)

As comments and/or questions arise from the underwriters, we will be in contact with you so that we may expedite our quotation.

Very truly yours,

Dick

R.O. Churchill

ROC:dy

PLANET INSURANCE COMPANY
MADISON, WISCONSIN

APPLICATION FOR POLLUTION LEGAL LIABILITY INSURANCE
(Include 10K report, annual report, and flow chart of process if available.)

THIS IS AN APPLICATION FOR A **CLAIMS MADE** POLICY

1. NAMED INSURED: (Include All Subsidiary Companies to be Covered) Master Metals Inc.

   EPA IDENTIFICATION NUMBER(S): OHD 097613871

   POST OFFICE ADDRESS: 2850 W. 3rd Street
   Cleveland, Ohio 44113

   LOCATIONS TO BE COVERED: 2850 W. 3rd Street
   Cleveland, Ohio 44113

2. NAMED INSURED IS:
   ___ Partnership X Corporation ___ Joint Venture ___ Other ___

3. HOW LONG HAS THE NAMED INSURED BEEN IN BUSINESS? ___

4. SALES:

   A) ESTIMATED (Ensuing Year): $8,000,000

   B) LAST 5 YEARS: 19 ___ 19 ___ 19 87 $4,616,022 19 88 $7,146,039 19 89 $8,033,807

5. DESCRIBE THE PAST USES OF THE LOCATION(S), INCLUDING ANY INACTIVE OR CLOSED LANDFILLS OR SURFACE IMPOUNDMENTS:

   Site has been a secondary lead smelting and refining operation since 1932.

6. DESCRIBE THE FACILITY OPERATIONS, INCLUDING MANUFACTURING OR PRODUCTION PROCESSES AND ANY WASTE TREATMENT OR DISPOSAL ACTIVITIES. (ATTACH A SITE DIAGRAM OUTLINING BUILDINGS, STORAGE AREAS, TANKS, ETC.): Secondary lead smelting operation. Two rotary kilns smelt lead-bearing scrap and waste material. Smelted material is refined in pots. All hazardous waste from the operation is recycled on site. Acid from spent batteries is neutralized on site.

7. PLEASE LIST: A. RAW MATERIALS USED AT LOCATION See Attached
B. PROCESS MATERIALS USED AT LOCATION:
(Plating agents, degreasers, heat treating agents, cleaning solvents, etc.)
(Please use additional sheet if space provided is insufficient.)

	QUANTITY OF MATERIAL			METHOD OF STORAGE	
DESCRIPTION	PER YEAR	ANY ONE TIME	DRUM	UNDERGROUND TANK	ABOVEGROUND TANK

8. HAS THERE BEEN ANY CHANGE IN PROCESS DURING THE LAST 5 YEARS THAT HAS ALTERED (LESSENED OR INCREASED) THE RISK OF POLLUTION LIABILITY? ___ YES X NO

IF SO, GIVE DETAILS: _____

9. DO YOU HAVE AN ENVIRONMENTAL SAFETY COMMITTEE OR ANY EMPLOYEES VESTED WITH SPECIFIC RESPONSIBILITY FOR ENVIRONMENTAL CONTROL? X YES ___ NO

IF SO, DESCRIBE THEIR DUTIES AND TO WHOM THEY REPORT: Thomas Helms:

Responsible individual for material tracking; facility and equipment inspections; and maintaining OSHA and RCRA training records. Individual reports to Douglas Micke President.

10. ARE THERE ANY STATUTES, STANDARDS, OR OTHER CITY, STATE AND FEDERAL REGULATIONS RELATING TO THE PROTECTION OF THE ENVIRONMENT WHICH APPLY TO ANY LOCATION WITH WHICH YOU CANNOT AT PRESENT COMPLY? ___ YES X NO

IF SO, GIVE DETAILS: _____

11. EFFLUENT TREATMENT AND DISCHARGE:

COMPOSITION	TREATMENT PROCESS	DISCHARGE TO	HOW MANY YEARS	QTY/YR
Battery acids	Neutralization	Sewer/POTW	½	

12. SEMI-SOLID AND SOLID WASTE DISPOSAL: N/A
A. ON-SITE DISPOSAL (LANDFILL, SURFACE IMPOUNDMENT, DEEPWELL INJECTION, ETC.)

COMPOSITION	QTY/YR	DISPOSAL METHOD	EPA/STATE PERMITTED

BFI EPA ID# OHD 066053752

Gray EPA ID# OHD 017828104

FOR LANDFILLS OR SURFACE IMPOUNDMENTS, INDICATE SIZE, TYPE OF LINER, ANY MONITORING WELLS, LEACHATE COLLECTION.

B. OFF-SITE DISPOSAL Note: No hazardous waste shipped off-site.

COMPOSITION	ON-SITE STORAGE METHOD	LENGTH OF STORAGE	QTY/YR	DISPOSAL FACILITY
Slag	Piles	Various	4000 tons	Sanitary landfill
Drums	Stacked	Various	50,000	Scrap/recycle
Refuse/garbage	Containers	Various	2000 yd³	Sanitary landfill

13. TRANSPORTER INFORMATION:

	1	2	3	4
NAME OF WASTE HAULER	BFI	Harvard Refuse	Shaw Barrel	Lou Gray
EPA ID #		—	—	—
STATE ID #		—	—	—

14. AIR EMISSIONS:

NATURE:		COMPOSITION:
TOXIC GASES & VAPORS		
IRRITANT GASES		
MALODOROUS GASES & VAPORS	X	Sulfur oxides, products of combustion.
ASPHYXIANTS		
AEROSOLS		
DUST & ASH	X	Lead and metallic oxides, carbon, products of combustion.

VOLUME PER YEAR (WHERE KNOWN):

DESCRIBE METHODS AND EQUIPMENT USED FOR COLLECTION AND TREATMENT OF POLLUTING AIR EMISSIONS:

Air emissions controlled by a 15,000 ACFM baghouse and 38,000 ACFM baghouse.

15. THE LOCATION'S SURROUNDING ENVIRONMENT:

A. PLEASE DESCRIBE THE PROPERTIES IMMEDIATELY ADJACENT TO THE LOCATION(S) TO BE COVERED:

Properties immediately adjacent to the facility include an integrated steel mill and railroad repair and car transfer facility.

B. PLEASE DESCRIBE THE NATURE OF OTHER INDUSTRIES LOCATED WITHIN A RADIUS OF 3 MILES:

Heavy industrial

16. ADDITIONAL INFORMATION:

A. PLEASE ATTACH THE LATEST MONITORING RESULTS FOR FACILITY EFFLUENT DISCHARGES, AIR EMISSIONS, LANDFILLS OR SURFACE IMPOUNDMENTS.

B. PLEASE ATTACH A SCHEDULE OF ALL STORAGE TANKS INCLUDING THE FOLLOWING INFORMATION: CAPACITY, AGE, ABOVE OR BELOW GROUND, SPILL CONTAINMENT METHODS, CONTENTS, STEEL OR FIBERGLASS, TYPE OF INVENTORY CONTROL, TESTING METHODS.

17. RECORD:

A. HAVE YOU DURING THE LAST 5 YEARS BEEN PROSECUTED FOR CONTRAVENTION OF ANY STANDARD OR LAW RELATING TO THE RELEASE FROM THE LOCATION OF A SUBSTANCE INTO SEWERS, RIVERS, SEA, AIR OR INTO LAND? X YES ___ NO

IF SO, GIVE DETAILS: Company has been cited for the following: Sewer discharge - See attached Notice of Violation. Air Discharge - See attaced Findings and Orders. RCRA Violations - See Consent Decree attached.

B. PLEASE DESCRIBE ANY POLLUTION CLAIMS DURING THE LAST 5 YEARS (IF NONE, PLEASE SO STATE): None

C. AT THE TIME OF SIGNING THIS APPLICATION, ARE YOU AWARE OF ANY CIRCUMSTANCES WHICH MAY REASONABLY BE EXPECTED TO GIVE RISE TO A CLAIM UNDER THIS POLICY? ___ YES X NO

IF SO, GIVE DETAILS: _____

THE APPLICANT REPRESENTS THAT THE ABOVE STATEMENTS AND FACTS ARE TRUE AND THAT NO MATERIAL FACTS HAVE BEEN SUPPRESSED OR MISSTATED.

*NOTICE TO NY APPLICANTS:

Any person who knowingly and with intent to defraud any Insurance Company or other person files an application for insurance containing any false information, or conceals for the purpose of misleading, information concerning any false material thereto, commits a fraudulent insurance act, which is a crime.

COMPLETION OF THIS FORM DOES NOT BIND COVERAGE. APPLICANT'S ACCEPTANCE OF COMPANY'S QUOTATION IS REQUIRED PRIOR TO BINDING COVERAGE AND POLICY ISSUANCE. IT IS AGREED THAT THIS FORM SHALL BE THE BASIS OF THE CONTRACT SHOULD A POLICY BE ISSUED, AND IT WILL BE ATTACHED TO THE POLICY.

Applicant: MASTER METALS INC

By: [signature] Pres (Title) Date: 2/13/90

Agent/Broker: Moenkhaus & Associates

Address: J.E. Moenkhaus & Assoc. Insurance Agency, Inc.
Bond Court Building, 1300 East Ninth Street
Cleveland, Ohio 44114

IF AN ORDER IS RECEIVED, THE APPLICATION IS ATTACHED TO THE POLICY SO IT IS NECESSARY THAT ALL QUESTIONS BE ANSWERED IN DETAIL.

ECS

721 East Lancaster Avenue
Downingtown, PA 19335
(215) 269-6731
FAX (215) 873-1605
(800) ECS-1414
(outside Pennsylvania)

ENVIRONMENTAL
COMPLIANCE
SERVICES, INC.

SUPPLEMENTAL APPLICATION

IMPORTANT NOTICE: All questions must be answered. If "none" or "not applicable", so indicate.

PART I: INTRODUCTION/MANAGEMENT/ADMINISTRATION

1. Company Name Mater Metals, Inc.

☐ Partnership ☒ Corporation ☐ Joint Venture Other _____

Mailing Address 2850 W. 3rd Street

City Cleveland State Ohio Zip Code 44111

Phone (216) 621-2361

2. Length of time in business Since September, 1979.

Identify previous owners and describe the past uses of the location(s), including any inactive or closed landfills or surface impoundments (attach additional sheet if necessary).

1932-1979 N L Industries Inc.

Site has been a secondary lead smelting facility since 1932.

No inactive or closed landfills or surface impundments exist.

3. Person(s) responding to survey:

Name Doug Mickey Title President

Name _____ Title _____

4. Attach Resume or statement of qualifications of Key Personnel.

List all Memberships in Trade Associations.

Resume of Douglas Mickey, President attached.

5. Locations to be covered Masters Metals, Inc.

2850 W. 3rd St.

Cleveland, Ohio 44113

6. Provide Number of Employees by Category:

A. Management 2

B. Administration 4

C. Supervisors 6

D. Foremen/Leadmen _____

E. Clerical 1

F. Drivers _____

G. Driver Helpers _____

H. Operators _____

I. Laborers _____

J. Mechanics _____

K. Recovery Technicians _____

L. Technicians _____

M. Technical Specialists _____

N. Other (Describe) See additional job classifications attached.

TOTAL 40

7. Attach past three years financial statements, including balance sheets and income statements.

SENIORITY LIST 11/15/89

Date of Hire	Clock No.	Job Classification	Name
10/13/54	52	Alloy & Refining	Ballard, Wenners
5/20/55	42	"	Campbell, Lee
8/19/68	63	Press Operator	Hickerson, Ellsworth
4/22/71	26	"	Hilton, Tyrone
5/17/73	77	"	Smith, Robert
9/10/84	3	Rotary Furnace Operator	Brown, Ray
3/31/86	6	"	Walker, John
11/10/86	16	"	Robinson, Robert
11/10/86	30	Clean Up	Wright, Joseph
12/22/86	14	Rotary Furnace Operator	Large, Robert
3/16/87	8	Maintenance	Jenkins, Fredrich
4/20/87	33	Shipping & Receiving	Pulley, Lawrence
5/9/88	5	Maintenance	Blazetic, Kevin
1/2/89	11	Rotary Furnace Operator	Larkin, Monroe
1/9/89	18	"	Holmes, Renzie
1/9/89	15	"	Billingsley, Kevin
9/11/89	19	"	Stump, Henry
9/11/89	34	Shipping & Receiving	Thrower, Reginald
9/25/89	22	Alloying & Refining	Williams, James
9/25/89	21	Rotary Furnace Operator	Williams, Frank
10/4/89	28	Rotary Furnace Operator	Brown Curtis
10/9/89	31	"	Ronney, James
10/13/89	25	"	Smith, Ronald
10/23/89	35	"	Sims, Elvis
10/26/89	32	"	Hicks, Ronald

Leave of Absence

1/9/89	12	Rotary Furnace Operator	Hankish, Dennis

8. Record:

A. Have you during the last 5 years been cited for contravention of any standard or law relating to the release from the location of a substance into sewers, rivers, sea, air, or onto land? ☒ Yes ☐ No

If so, give details See attaced Notice of Violation - Sewer Discharge. See attached Findings and Orders - Air Emissions. See attached Consent Decree - RCRA Requirements.

B. Please describe any incidents during the last 5 years (if none, please so state)

None, other than listed in A. above.

C. At the time of signing this application, are you aware of any circumstances which may reasonably be expected to give rise to a claim? ☐ Yes ☒ No

If so, give details

9. Is your company operating under a Consent Agreement with any Federal, State or Local Government? If so, give date and reason for Consent Agreement ☒ Yes ☐ No

Consent Decree attached.

Date: January 16, 1990

Reason: To comply with Federal and State hazardous waste regulations. (RCRA)

PART II: NATURE OF OPERATIONS

1. Utilizing the categories below, what are the company's business activities?
Note: Sums of columns A & B across must equal 100%.

Category	A % In-House	+ B % Sub-Contracted = 100%
A. Transportation: Hazardous Waste		
Non Haz Waste		
Waste Oil		
Other		
Back-Haul		
B. Treatment/Solidification		
C. Recycling/Recovery	100	0
D. Storage		
E. Disposal		
F. Cleanup		
G. Consulting		
H. Laboatory Testing & Analysis		
I. Chemical Cleaning		
J. Pipeline Cleaning		
K. Sewer/Septic Cleaning		
L. Boiler/Cooling Tower Cleaning		
M. Refinery Tank Cleaning		
N. Other Tank Cleaning		
O. Hydro Reconditioning		
P. Drum Reconditioning		
Q. Soil & Water Testing		
R. Virgin Chemical Wholesale Storage		
S. Truck Washing		
T. Other (specify) _____		

2. Utilizing the categories below, what are the company's business activities?
Note: Sums of columns A or B down must equal 100%.

Category	% Gross Sales	% Business Activity (Payroll)
A. Transportation: Hazardous Waste		
Non Haz Waste		
Waste Oil		
Other		
Back-Haul		
B. Treatment/Solidification		
C. Recycling/Recovery	100	100
D. Storage		
E. Disposal		
F. Cleanup		
G. Consulting		
H. Laboratory Testing & Analysis		
I. Chemical Cleaning		
J. Pipeline Cleaning		
K. Sewer/Septic Cleaning		
L. Boiler/Cooling Tower Cleaning		
M. Refinery Tank Cleaning		
N. Other Tank Cleaning		
O. Hydro Reconditioning		
P. Drum Reconditioning		
Q. Soil & Water Testing		
R. Virgin Chemical Wholesale Storage		
S. Truck Washing		
T. Other (specify) _____		
	100%	100%

3. Provide complete physical description of plant, building, grounds, and appurtenances:

A. Location 1 See attached Plot Plan.

Length of time at this location Since 1979

B. Location 2 _____

Length of time at this location _____

Attach site plans, previous insurance surveys or other materials describing physical features of the operation.

4. Please List: See attached

A. Raw Materials used at location

B. Process Materials used at location

(Plating agents, degreasers, heat treating agents, cleaning solvents, etc.)

C. Gasoline, Diesel, Fuel Oil, Kerosene, etc.

(Please use additional sheet if space provided is insufficient.)

QUANTITY OF MATERIAL			METHOD OF STORAGE		
Description	Per Year	Any One Time	Drum	Underground Tank	Aboveground Tank

ECS-1 (5/88)

5. Describe owned or leased storage/treatment/disposal/transportation facility:

Size: 4.3 Acres _____ Plant Area (square footage)

Storage Capacity: _____ Bulk: 2336 cubic yards # Drums: 2220

Description of Containment/Storage Area; Bulk material stored on impermeable base and in 3-sided bin containers. Drums are set on pallets.

Storage Tanks: # 4 Size(s): (2) 520 gallons (1) 300 gallons (1) 9000GAL

6. If company operates a treatment/recycling facility, indicate type of process utilized and percentage of operations.

Process	Percentage
A. Stills	
B. Distillation	
C. Thermal Separation	100
D. Filtration	
E. Separation	
F. Clarifications	
G. Ion Exchange	
H. Solidifications	
I. Other (describe fully) _____	

7. List all permits held with Federal, State, County or Municipal Governments, including permit numbers and expiration dates. Permits attached

Permit	Permit Number	Expiration Date

Attach additional sheet if necessary.

Attach copy of your EPA permit application Part A. attached

ECS-1 (5/88)

8. List all ICC and PUC docket numbers.

N/A

9. What percentage of the sub-contractors that you hire:

A. Work under their own permits, rights or authority? 100%

B. Work under your permits, rights or authority? 0%

C. Do you check required permits for sub-contractors? ☐ Yes ☒ No

10. A. Are updated certificates of insurance from sub-contractors kept on file? ☐ Yes ☒ No

B. Are certificates of insurance reviewed? ☐ Yes ☒ No

C. What are the minimum limits of liability you require for your sub-contractors?

Workers' Compensation: Sub-contractor's responsibility to comply with State of Ohio requirements

General Liability: $300,000

Automobile Liability: $300,000

D. Are all sub-contractors hired under a written contract? ☐ Yes ☒ No

E. Do your contracts with sub-contractors contain an indemnification provision? ☐ Yes ☒ No
If so, attach copy. Attached

F. Does your company enter into written contracts where you assume liability? ☐ Yes ☒ No
If so, attach copy of all insurance requirements and indemnification clauses.

G. Describe the nature of work you sub-contract to others:

Janitorial, drivers, electricians, and any other skilled labor that is required on site and not on payroll.

PART III: OPERATIONS REQUIREMENTS

1. What materials are you permitted to transport? N/A

Materials	Form: Liquid	Form: Solid	Container: Bulk	Container: Drums
A. Flammable Liquid				
B. Flammable Gas				
C. Flammable Solids				
D. Combustible Liquid				
E. Combustible Gas				
F. Combustible Solid				
G. Oxidizers				
H. Explosives A B C				
I. Lab Chemicals				
J. Lab Packs				
K. Etiologic Agents				
L. Corrosive Acid				
M. Corrosive Base				
N. Insecticides				
O. Air Reactives				
P. Water Reactives				
Q. Poisons "A"				
R. Poisons "B"				
S. Toxic				
T. Gas Cylinders				
U. Cyanides				
V. Sulfides				

Continued

Materials	Form: Liquid	Form: Solid	Container: Bulk	Container: Drums
W. Radioactives				
X. Waste Oil				
Y. Salt Water, Brine, Drilling Mud etc.				
Z. Other (Describe) _____				

Attach a complete list of all materials transported, treated, stored or disposed.

2. List all TSD facilities and provide permit numbers/locations for those facilities currently used by your company. Separately indicate any other facilities you have used since 1980. Attach separate list if necessary.

N/A

3. Does your company **select** site of disposal for hazardous waste? ☐ Yes ☐ No

N/A

4. List address where records, manifests, inspection reports and personnel records are maintained.

Master Metals, Inc.
2850 W. 3rd Street
Cleveland, Ohio 44113

5. Who is authorized to sign hazardous waste manifests?

PAULA COOK; OTTO LAWRENCE; KATHY ZENKERT

A. Is this part of the employee's regular job description? ☒ Yes ☐ No

6. Does company comply with DOT rules with regard to placarding and labeling to properly identify hazardous waste? N/A ☐ Yes ☐ No

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PART IV: SAFETY

1. Does company have a safety person(s)? ☒ Yes ☐ No

Name: Douglas Mickey and Thomas Helms

Address: 2850 W. 3rd Street, Cleveland, Ohio 44113

Telephone Number: (216) 621-2361

List qualifications and certifications. Note: HowSafe Environmental conducts OSHA and Fire training. Envisage Environmental conducts RCRA training.

2. Under what condition is personal protective equipment used by your company personnel?

A. SCBA

B. Cartridge or Canister (dust mask) on-site outdoors or near smelting operations

C. Respirators

D. Protective Suits smelting operations

E. Boots smelting operations

F. Safety Glasses on-site (sheilds used around smelting operations)

G. Aprons smelting operations

H. Gloves smelting operations

I. Hoods smelting operations

3. Are personnel trained in the use of personal protective equipment? ☒ Yes ☐ No

4. Does your company conduct on a regular basis, the following seminars?

			Conducted By Whom
A. Right to Know	☒ Yes	☐ No	HowSafe Environmental
B. OSHA	☒ Yes	☐ No	HowSafe Enviornmental
C. RCRA Compliance	☒ Yes	☐ No	Envisage Environmental

5. Does company have a medical monitoring program? ☒ Yes ☐ No

A. Company Doctor: Lutheran Medical Center or Hilliard Medical Assocs.

Address: 2609 Franklin Blvd. Cleveland, Ohio;

1415 W. 9th Street, Cleveland, Ohio

Telephone Number: (216) 696-4300; (216) 241-3900

6. Does company institute the following medical procedures?

A. Pre-employment physicals (conducted within 60 days of start date) ☒ Yes ☐ No

B. DOT physical for drivers Drivers are sub-contracted ☐ Yes ☐ No

C. Baseline physicals for hazardous materials handling ☒ Yes ☐ No

D. Routine follow-up physicals ☐ Yes ☐ No

State intervals: Every 6 months

E. Exposure reports ☒ Yes ☐ No

F. Incident follow-up physicals ☒ Yes ☐ No

G. Exit physicals ☐ Yes ☒ No

7. Indicate the type and length of training given to employees who will be working with hazardous materials for new employees and ongoing employee programs.

Training Interval (hours, days, etc.)

☐ None

☒ In-house Seminars RCRA training - every 6 months, OSHA and Fire training - every mont

☐ Outside Seminars

☒ On-the-Job Training On-going

☐ Other (specify)

8. Does company have a confined space entry protocol? ☐ Yes ☒ No

9. Does company issue permits to gas free tanks:

A. Prior to welding ☐ Yes ☒ No

B. Prior to entry by individual ☐ Yes ☒ No

Include copy of employee safety and training procedures.

PART V: SPILL CONTINGENCY PLAN

1. Does company have a Notification Plan/Emergency Plan, or other Contingency Plan?

   ☒ Disaster Plan ☐ Evacuation Plan

   ☒ SPCC Plan ☐ Response Plan

   List the address where plans are filed.

   Master Metals, Inc. 2850 W. 3rd Street, Cleveland, Ohio 44113

2. When was the last time the plan was updated? August, 1988

3. Has plan been provided to local support groups (e.g. police, fire, hospital)? ☒ Yes ☐ No

4. Has plan been reviewed and approved by management? ☒ Yes ☐ No

   If so, indicate name of person approving: Douglas Mickey, President

Attach copy of Plan(s).

PART VI: VEHICLE MAINTENANCE

1. List locations where company vehicles are decontaminated: N/A

   Location 1: _____

   Location 2: _____

   (Attach additional sheet is necessary.)

2. Describe method of decontamination: N/A

3. Does company complete pre-trip and post-trip inspection reports? N/A ☐ Yes ☐ No

   Attach samples of these reports.

   A. Who reviews these reports?

4. How does company handle, store and dispose of used motor oils and other fluids necessary to the operation of your vehicles? Describe fully.

   Waste oils are deposited in waste oil drum. Research Oil Company, a waste oil recycler, picks up waste oil when drum is filled.

5. Describe any general repair and maintenance performed on your equipment by in-house mechanics.

All work on vehicles conducted in-house

By outside garages: None

6. Describe in full the company's routine and preventative vehicle maintenance program. (Attach additional sheets if necessary.)

Inspect daily

7. Are written records kept in regard to routine and preventative vehicle maintenance? ☐ Yes ☒ No

Attach samples of complete records.

Include copy of vehicle maintenance program.

PART VII: DRIVER SELECTION AND TRAINING N/A (Drivers are sub-contracted)

1. Indicate driver training and orientation program, including whether program is handled through in-house or outside seminars, on-the-job training, and length of training:

Training Intervals (hours, days, etc.)

- ☐ None
- ☐ In-House Seminars _____
- ☐ Outside Seminars _____
- ☐ On-the-job Training _____
- ☐ Other (specify) _____

2. List the minimum qualifications under which new drivers are hired.

_____

_____

_____

3. A. Do you obtain Motor Vehicle Reports (MVRs) on all drivers? ☐ Yes ☐ No

   B. How frequently are MVRs re-checked? _____

   _____

4. Do you keep DOT files on all drivers? ☐ Yes ☐ No

5. Describe regular driving safety program. Include copy of regular agenda.

_____

_____

_____

Include full copy of driver training procedure manual.

PART VIII: CONTRACTOR OPERATIONS N/A

Describe in detail past cleanup work in which you were involved (attach additional sheets if necessary). Include the following for all work:

1. Describe nature of long term (90 days or over) projects during the past three years:

   A. Private or Government Projects _____

   B. Bonded? ☐ Yes ☐ No

   If so, Insurance Company _____ Amount of Bond $ _____

   C. Length of time you spent on project _____

   D. Capacity: General Contractor _____

   Sub-Contractor _____ ; Transporter _____

   Other, describe _____

   E. Did you use Sub-Contractors?
   Explain in detail: _____

   F. Explain in detail Safety Protocol including who developed it: _____

G. Do you ever make use of casual labor? ☐ Yes ☐ No

If so, give details: _____

_____

H. Did your work progress on schedule? ☐ Yes ☐ No

If not, why? _____

_____

2. Describe nature of short term (under 90 days) projects: _____

_____

_____

_____

A. Emergency cleanup _____

_____

% of total work performed _____

B. If you perform jobs other than Emergency Spill cleanup answer same questions in 1. A-H. _____

_____

C. Are you under a long term emergency spill cleanup contract? ☐ Yes ☐ No

If yes, with whom is contract—include copy _____

If no, do you bid jobs? Explain _____

_____

_____

_____

D. For whom are you listed as a qualified Emergency Response firm? _____

_____

3. Describe in detail Employee Safety Program _____

_____

_____

_____

_____

4. Have you ever or do you expect to perform work on any Superfund Sites? ☐ Yes ☐ No

If yes, explain in detail _____

_____

_____

_____

_____

5. Do you ever rent out equipment? ☐Yes ☐ No

If yes, give type of equipment and if it will be with or without operator. Explain in detail _____

_____

_____

_____

_____

6. Include a copy of your standard operating procedure.

7. Include a copy of your company statement of qualifications.

8. A. Have you been insured for Workers' Compensation, General Liability, and Auto Liability during all your jobs? ☐ Yes ☐ No

If yes, with whom? _____

B. Describe all claims, losses, or incidents which have or may give rise to a claim related to your performance in a cleanup project: _____

_____

_____

_____

_____

9. Please provide us with any additional information you feel is needed regarding your operation. _____

_____

_____

_____

_____

NOTICE TO NEW YORK APPLICANTS

Any person who knowingly and with intent to defraud any insurance Company or other person files an application for insurance containing any false information, or conceals for the purpose of misleading, information concerning any false material thereto, commits a fraudulent insurance act, which is a crime.

WARRANTY:

The purpose of the Supplemental Application is to assist the underwriting process and related loss-control activities. Information contained herein is specifically relied upon in determination of insurability. The undersigned, therefore, warrants that the information contained herein is true and accurate to the best of his knowledge, information and belief. It is the responsibility of the undersigned/insured to notify agent or broker in the event of any changes in the information in this application.

Signed: Douglas F. Mickey

Date: 1/31/90

Please check to see that all required attachments are enclosed.

1.	Financial Statements	☑
2.	Resume of Key Personnel	☑ DOUG MICKEY
3.	Part A Application	☑
4.	Indemnity Agreements	☐ N/A
5.	List of Materials	☑
6.	Employee Safety/Training Manual	☑ OSHA MANUAL
7.	Spill Plan (Contingency Plan)	☐
8.	Copy of Maintenance Program	☐ N/A
9.	Driver Training Manual	☐ N/A

Additional Attachments:

- ✓ Job Classifications
- ✓ Air Violation
- ✓ Sewer Violation
- ✓ Consent Decree
- ✓ Permits
- ✓ Plot Plan (in Contingency Plan)
- ✓ Workman's Compensation Payroll Report

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..ER METALS INC.

BALANCE SHEET
LIABILITIES

LINE NO.		(1) (Unaudited)	(2)	(3) 7/31/90
1		CURRENT LIABILITIES		
2		Cash overdraft		
3		Current maturities of subordinated notes		
4		payable		
5		Demand note payable		973149
6		Accounts payable		703677
7		Accrued expenses		126100
8		CUST DEPOSIT		222100
9				
10		Total current liabilities		2025026
11				
12				
13				
14		SUBORDINATED NOTES PAYABLE		
15		Term notes payable		190946
16		Shareholders' notes payable		
17		Less current maturities of subordinated		
18		notes payable		
19				190946
20				
21				
22		COMMITMENTS		
23				
24				
25				
26				
27		STOCKHOLDERS' EQUITY		230000
28		Common stock - authorized 750 shares		
29		without par value; issued and		
30		outstanding 460 shares		5000
31		Retained earnings		2181896-
32				
33				
34				
35				4632868
36				
37				
38				
39				
40				

FORM 7-574 N. POST RITE SYSTEMS (TMD IN U.S.A.)

1 2 3

16

Hazen Research, Inc.
4601 Indiana St. • Golden, Colo. 80403
Tel: (303) 279-4501 • Telex 45-860
FAX: (303) 278-1528

DATE	August 7, 1990
HRI PROJECT	7103
HRI SERIES NO.	
DATE RECD.	7/25/90
CUST P.O.#	

Mr. James Ammons
Master Metals, Inc.
2850 West Third Street
Cleveland, Ohio 44113

SUMP MUD

REPORT OF ANALYSIS

Toxicity Characteristic Leaching Procedure

Sample Identification	Lead, mg/l
R-17763	49.3
R-17999	8160
R-18105	8650
R-18139	7630
R-18143	20600
R-18145	9370
R-18156	7960
R-18158	6970
R-18187	18100
R-18583	1160
R-18611	8890
R-18619	17500
R-18636	1.01
Head A 259	6250
Limit Concentration	5.0

By: Robert Rostad
Laboratory Manager

NOTE: The leach was done according to the procedure specified in 40 CFR Part 261 Appendix II. All subsequent analyses were done according to procedures specified in Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, EPA publication SW-846, 3rd ed.

2/28/9

Master Metals Environmental Samples
Chemical Composition (continued)

		Analyses, Wt %											
Sample ID	Sample Description	MnO	P2O5	ZnO	BaO	NiO	CuO	As2O3	SnO	C	Sb2O3	H2O	Total
R-17763	Solder Dross	<0.1	<0.5	1.0	<0.2	<0.02	<.02	<0.05	5.0	0.5	NA	NA	97.5
R-17999	Lead Dross	<0.1	<0.5	1.8	<0.2	<0.02	0.1	<0.05	<0.1	32.1	NA	NA	100.4
R-18105	~~Fine Dust~~ Sump Mud	<0.1	<0.5	0.0	<0.2	<0.02	<.02	<0.05	<0.1	*1.0*	NA	NA	92.9
R-18139	Lead Dross	<0.1	<0.5	<0.02	<0.2	0.6	1.7	0.3	1.4	*2.0*	12.9	NA	91.0
R-18143	Wet Mud	<0.1	<0.5	<0.02	0.3	<0.02	<.02	<0.05	<0.1	NA	NA	*20.0*	103.6
R-18145	Lead Dross	<0.1	<0.5	<0.02	<0.2	<0.02	<.02	<0.05	<0.1	2.0	NA	NA	100.3
R-18156	Prime Oxide	<0.1	<0.5	<0.02	<0.2	<0.02	<.02	<0.05	<0.1	NA	1.0	NA	97.6
R-18158	Furnace Slag	<0.1	<0.5	<0.02	0.3	<0.02	<.02	<0.05	<0.1	NA	NA	NA	93.7
R-18187	Baghouse Dust	<0.1	<0.5	<0.02	<0.2	<0.02	<.02	<0.05	<0.1	NA	NA	NA	94.0
R-18583	Lead Dross	<0.1	<0.5	12.4	<0.2	<0.02	<.02	<0.05	10.0	0.2	NA	*10.0*	98.9
R-18611	Used Coal	<0.1	<0.5	0.2	<0.2	<0.02	0.1	<0.05	<0.1	31.2	NA	NA	100.1
R-18619	Lead Dross	<0.1	<0.5	13.3	1.7	<0.02	<.02	<0.05	<0.1	0.7	NA	*12.0*	98.2
R-18636	Metal Grids/lead	<0.1	<0.5	NA	NA	0.12	NA	NA	NA	*5.0*	NA		95.7

Italics are estimated values

[illegible] Hazardous Waste Samples Received from Master Metals

Source of Sample	Sample Name	SnO %	Sb2O3 %	Co %	W %	Mo %	Sr %	U %	Th %	Nb %	Zr %	Rb %	Y %	N-O-H %
Johnson Cont.	Leaded Trash	<0.1	<0.005	<0.010	<0.070	<0.020	<0.020	<0.020	<0.050	<0.020	0.035	<0.02	0.035	46.
Central Can	Low Sn Solder	0.20	<0.005	<0.010	<0.070	<0.020	<0.020	<0.020	<0.050	<0.020	<0.030	<0.02	0.058	6.7
Am.SpringWi.	Lead Waste	<0.1	<0.005	<0.010	<0.070	0.056	<0.020	<0.020	<0.050	<0.020	<0.030	<0.02	0.054	*0.0*
K.W. Battery	Lead Waste	<0.1	<0.005	<0.010	<0.070	<0.020	<0.020	<0.020	<0.050	<0.020	0.033	<0.02	0.108	*0.0*
Seneca Wire	Used Coal	<0.1	<0.005	<0.010	<0.070	<0.020	<0.020	<0.020	<0.050	<0.020	<0.030	<0.02	0.033	*0.03*
E.I. Du Pont	Furnace Slag	<0.1	1.62	<0.010	<0.070	<0.020	<0.020	<0.020	<0.050	<0.020	<0.030	<0.02	0.035	*0.0*
E.I. Du Pont	~~Flue Dust~~ Sump Mud	<0.1	<0.005	<0.010	<0.070	<0.020	<0.020	<0.020	<0.050	<0.020	<0.030	<0.02	0.049	*0.0*
Johnson Cont.	WasteWatSlug	<0.1	<0.005	<0.010	<0.070	<0.020	<0.020	<0.020	<0.050	<0.020	<0.030	<0.02	0.052	*5.9*
Gould Inc.	Lead Dross	0.70	<0.005	<0.010	<0.070	<0.020	<0.020	<0.020	<0.050	<0.020	<0.030	<0.02	0.070	*1.5*
Johnson Cont.	Baghouse Dust													*0.0*
E.I. Du Pont	LeadPressCake	<0.1	<0.005	<0.010	<0.070	<0.020	<0.020	<0.020	<0.050	<0.020	0.030	<0.02	0.099	*1.20*
Owens Illinois	Lead Dross	<0.1	<0.005	0.011	<0.070	<0.020	<0.020	<0.020	<0.050	<0.020	0.233	<0.02	0.205	*0.0*

Source of Sample	Sample Name	CO2 %	C(fix) %	SiO2 %	Cd ppm	Hg ppm	Se ppm	Ag ppm	H2Ox1 %	Further Description of the Material	Σ, Wt. %
Johnson Cont.	Leaded Trash	0.0	28.	3.6	*<10*	*<0.1*	*<0.1*	*<1.5*	9.0	Wood chips	100.1
Central Can	Low Sn Solder	0.0	*12.8*	4.3	20.	<0.1	<1	1.5	0.0	Ammonium chloride-based flux	101.3
Am.SpringWi.	Lead Waste	*0.0*	38.	4.4	10.	<0.1	<1	12.0	0.0	Dry, black, like pumice	101.5
K.W. Battery	Lead Waste	0.0	1.4	<0.50	<10	<0.1	<1	5.6	1.6	Grids Waste - Battery Manuf.	99.0
Seneca Wire	Used Coal	*0.008*	26.	15.8	10	<0.1	<1	8.1	*0.15*	Coke and Pb prill	99.7
E.I. Du Pont	Furnace Slag	0.0	*14.0*	10.	<10	<0.1	<1	20.1	*12.0*	Slag - TEL waste combustion	99.6
E.I. Du Pont	~~Flue Dust~~ Sump Mud	0.01	15.	0.5	10.	<0.1	<1	109.	0.0	FlueDust - TEL waste Combust.	103.9
Johnson Cont.	WasteWatSlug	0.0	1.3	<0.50	*<10*	*<0.1*	*<1*	*<0.5*	*2.8*	H2OpIntSlage,Bat.Man.ColorPbO	103.7
Gould Inc.	Lead Dross	0.0	0.0	1.3	20	<0.1	2.	<1.5	50.	Dross-battery manuf.; soft	98.6
Johnson Cont.	Baghouse Dust	0.0								Wet black slurry	0.0
E.I. Du Pont	LeadPressCake	*6.0*	*12.0*	9.7	20.	0.2	<1	100.	*12.0*	TEL waste water treatment cake	102.1
Owens Illinois	Lead Dross	0.0	*0.3*	1.4	10.	<0.1	<1	16.0	*0.0*	Sandy,dry,uniform; color=PbO	100.6

Sample #	Sample Name	Date on Sample	Source of Sample	Pb* %	PbO %	Al2O3 %	MgO %	Cr2O3 %	FeO %	SO3 %	CaO %	Cl %
R14570	Leaded Trash	Rec.10/10/89	Johnson Cont.	0.0	7.99	<0.5	<0.5	<0.02	1.2	1.3	0.9	<0.1
R17583	Low Sn Solder	Rec.10/10/89	Central Can	0.0	25.2	<0.5	<0.5	<0.02	<0.1	0.5	0.1	22.9
R17587	Lead Waste	Rec.10/10/89	Am.SpringWi.	0.0	30.0	1.70	<0.5	<0.02	11.2	2.5	4.0	0.2
R14617	Lead Waste	Rec.10/10/89	K.W. Battery	16.0	70.3	<0.5	<0.5	<0.02	<0.1	7.3	<0.1	0.1
R14726	Used Coal	Rec.10/10/89	Seneca Wire	0.0	37.6	7.2	<0.5	<0.02	4.0	3.8	1.5	<0.1
R17615	Furnace Slag	Rec.10/10/89	E.I. Du Pont	4.6	33.5	7.8	2.0	0.1	6.7	1.3	3.0	<0.1
R17616	Flue Dust	Rec.10/10/89	E.I. Du Pont	0.0	81.2	<0.5	<0.5	0.970	1.2	0.75	0.3	1.6
R17600bhd	WasteWatSlug	Rec.10/10/89	Johnson Cont.	0.0	88.5	<0.5	<0.5	<0.02	<0.1	2.8	<0.1	0.2
R17633	Lead Dross	Rec.10/10/89	Gould Inc.	0.0	20.6	<0.5	<0.5	<0.02	0.10	10.0	8.6	0.20
R17600wws	Baghouse Dust	Rec.10/10/89	Johnson Cont.	0.0								
R17637	LeadPressCake	Rec.10/10/89	E.I. Du Pont	0.0	43.8	<0.5	5.3	2.71	3.1	1.25	0.9	0.90
R17674	Lead Dross	Rec.10/10/89	Owens Illinois	0.0	77.4	5.80	<0.5	<0.02	<0.1	0.8	<0.1	<0.1

Analyses are expressed as oxide or element in wt. % or ppm. Assays in italics are derived from analyses of prior samples of the same type as received from the same source. Second oxygen in PbO2 is included in N-O-H column.

Source of Sample	Passed EP Tox. Test?	Pb, ppm in EP Test	"Metallic Chunks"	TiO2 %	NaK2O %	MnO %	P2O5 %	ZnO %	BaO %	NiO %	CuO %	As2O3 %
Johnson Cont.	No	478.	0.0%	<0.1	<0.50	0.20	<0.50	0.090	<0.2	<0.02	0.07	<0.05
Central Can	No	1130	0.0%	<0.1	2.10	<0.10	<0.50	25.3	<0.2	<0.02	<0.02	<0.05
Am.SpringWi.	No	4,640.	0.0%	0.20	<0.50	0.30	0.60	7.2	<0.2	<0.00	<0.02	<0.05
K.W. Battery	No	14,920.	16.0%	<0.1	<0.50	<0.10	<0.50	<0.02	<0.2	<0.02	<0.02	<0.05
Seneca Wire	No	1,750.	0.0%	0.70	<0.50	<0.10	<0.50	1.2	<0.2	<0.02	<0.02	<0.05
E.I. Du Pont	No	1,000.	4.7%	0.60	1.00	<0.10	<0.50	0.1	<0.2	<0.02	<0.02	<0.05
E.I. Du Pont	No	11,000.	0.0%	<0.1	1.10	<0.10	<0.50	<0.02	<0.2	<0.02	<0.02	<0.05
Johnson Cont.	No	22,200.	0.00%	<0.1	<0.50	<0.10	<0.50	<0.02	<0.2	<0.02	<0.02	<0.05
Gould Inc.	No	1,730.	0.0%	0.20	<0.50	<0.10	<0.50	<0.02	<0.2	<0.02	3.73	<0.05
Johnson Cont.	No	5.1										
E.I. Du Pont	No	2,900.	0.0%	0.10	<0.50	<0.10	<0.50	1.4	<0.2	<0.02	<0.02	<0.05
Owens Illinois	No	19,100.	0.0%	<0.3	<0.50	<0.10	<0.50	10.	2.9	<0.02	<0.02	<0.05

8. List all ICC and PUC docket numbers.

N/A

9. What percentage of the sub-contractors that you hire:

A. Work under their own permits, rights or authority? 100%

B. Work under your permits, rights or authority? 0%

C. Do you check required permits for sub-contractors? ☐ Yes ☒ No

10. A. Are updated certificates of insurance from sub-contractors kept on file? ☐ Yes ☒ No

B. Are certificates of insurance reviewed? ☐ Yes ☒ No

C. What are the minimum limits of liability you require for your sub-contractors?

Workers' Compensation: Sub-contractor's responsibility to comply with State of Ohio requirements

General Liability: $300,000

Automobile Liability: $300,000

D. Are all sub-contractors hired under a written contract? ☐ Yes ☒ No

E. Do your contracts with sub-contractors contain an indemnification provision? ☐ Yes ☒ No
If so, attach copy. Attached

F. Does your company enter into written contracts where you assume liability? ☐ Yes ☒ No
If so, attach copy of all insurance requirements and indemnification clauses.

G. Describe the nature of work you sub-contract to others:

Janitorial, drivers, electricians, and any other skilled labor that is required on site and not on payroll.

PART III: OPERATIONS REQUIREMENTS

1. What materials are you permitted to transport? N/A

Materials	Form: Liquid	Form: Solid	Container: Bulk	Container: Drums
A. Flammable Liquid				
B. Flammable Gas				
C. Flammable Solids				
D. Combustible Liquid				
E. Combustible Gas				
F. Combustible Solid				
G. Oxidizers				
H. Explosives A B C				
I. Lab Chemicals				
J. Lab Packs				
K. Etiologic Agents				
L. Corrosive Acid				
M. Corrosive Base				
N. Insecticides				
O. Air Reactives				
P. Water Reactives				
Q. Poisons "A"				
R. Poisons "B"				
S. Toxic				
T. Gas Cylinders				
U. Cyanides				
V. Sulfides				

Continued

Materials	Form: Liquid	Form: Solid	Container: Bulk	Container: Drums
W. Radioactives				
X. Waste Oil				
Y. Salt Water, Brine, Drilling Mud etc.				
Z. Other (Describe) _____				

Attach a complete list of all materials transported, treated, stored or disposed.

2. List all TSD facilities and provide permit numbers/locations for those facilities currently used by your company. Separately indicate any other facilities you have used since 1980. Attach separate list if necessary.

N/A

3. Does your company select site of disposal for hazardous waste? ☐ Yes ☐ No

N/A

4. List address where records, manifests, inspection reports and personnel records are maintained.

Master Metals, Inc.
2850 W. 3rd Street
Cleveland, Ohio 44113

5. Who is authorized to sign hazardous waste manifests?

PAULA COOK; OTTO LAWRENCE; KATHY ZENKERT

A. Is this part of the employee's regular job description? ☒ Yes ☐ No

6. Does company comply with DOT rules with regard to placarding and labeling to properly identify hazardous waste? N/A ☐ Yes ☐ No

ECS-1 (5/88)

PART VI: VEHICLE MAINTENANCE

1. List locations where company vehicles are decontaminated: N/A

   Location 1: _____

   Location 2: _____

   (Attach additional sheet is necessary.)

2. Describe method of decontamination: N/A

3. Does company complete pre-trip and post-trip inspection reports? N/A ☐ Yes ☐ No

   Attach samples of these reports.

   A. Who reviews these reports?

4. How does company handle, store and dispose of used motor oils and other fluids necessary to the operation of your vehicles? Describe fully.

   Waste oils are deposited in waste oil drum. Research Oil Company, a waste oil recycler, picks up waste oil when drum is filled.

7/9/90 ~~K. Pierard~~ S. Bianchin

Sheri: make sure STU knows about this

OhioEPA
State of Ohio Environmental Protection Agency
P.O. Box 1049, 1800 WaterMark Dr.
Columbus, Ohio 43266-0149

Richard F. Celeste
Governor

June 29, 1990

Re: **Master Metals**
OHD097613871
Financial Assurance

RECEIVED
JUL 5 - 1990
OFFICE OF RCRA
WASTE MANAGEMENT DIVISION
EPA, REGION V

William E. Muno, Chief
RCRA Enforcement Section
U.S. EPA, Region V
230 S. Dearborn Street
Chicago, Illinois 60604

Dear Mr. Muno:

Master Metals, Inc. in Cleveland, Ohio entered into a Consent Decree on January 15, 1990 with U.S. EPA, Region V. The Consent Decree required, among other things, Master Metals, Inc. to submit documentation of compliance with the financial responsibility requirements for liability coverage and closure/post-closure care within sixty and one-hundred and twenty days, respectively, after entry of the Consent Decree. This letter serves as written notice to U.S. EPA, Region V that according to Ohio EPA records, Master Metals, Inc. has failed to establish such financial assurance pursuant to Section V(G) of the Consent Decree.

The Consent Decree further specifies that if Master Metals, Inc. fails to obtain liability insurance within one-hundred eighty days after entry of the Consent Decree, then the facility must take appropriate action to close all hazardous waste units or to petition the court to grant alternate relief regarding the requirement to obtain liability coverage. Therefore, the facility must secure acceptable liability coverage by July 14, 1990, or follow the stipulated schedule for alternate action.

Master Metals, Inc. has been notified of financial assurance violations via Ohio EPA letters dated September 30, 1988 and September 29, 1989 (attached). According to Ohio EPA records, the facility has never established financial assurance pursuant to Ohio Administrative Code rules 3745-66-40 through 3745-66-48 for its hazardous waste units.

Ohio EPA will notify U.S. EPA, Region V under separate cover if Master Metals has not met other compliance requirements set forth in the Decree and as required by applicable rules of the Ohio Administrative Code.

If you have any questions or would like to discuss this matter, please call me at (614) 644-2944.

Sincerely,

Michael A. Savage

Michael A. Savage, Manager
RCRA Enforcement Section
Division of Solid and Hazardous Waste Management

Sp.MS.CR.lcn

cc: Pamela Allen, RES
Dave Wertz, NEDO
Kevin Pierard, U.S. EPA, Region V
Catherine McCord, U.S. EPA, Region V
Sheri L. Bianchin, U.S. EPA, Region V

Attachments

OHFL
ISS
LDF

OhioEPA
State of Ohio Environmental Protection Agency
P.O. Box 1049, 1800 WaterMark Dr.
Columbus, Ohio 43266-0149

Richard F. Celeste
Governor

September 29, 1989

Re: Master Metals
OHD097613871
Financial Assurance

Mr. Douglas K. Mickey, President
Master Metals, Inc.
2850 West 3rd Street
Cleveland, Ohio 44113

Dear Mr. Mickey:

On September 29, 1989, I conducted an annual financial record review for Master Metals, Inc., evaluating its compliance with the financial assurance requirements set forth in Ohio Administrative Code (OAC) rules 3745-66-42 through 3745-66-47. Under these rules, Master Metals must have and maintain cost estimates for hazardous waste facility closure and post-closure care, financial assurance for closure and post-closure care, and liability coverage for sudden and nonsudden accidental occurrences.

As a result of my review, I find that Master Metals has not established such financial assurance, in violation of OAC rules 3745-66-42 through 3745-66-47.

I note that these and other violations of hazardous waste laws are currently the subject of enforcement action by USEPA, Region V against Master Metals.

Please submit sufficient documentation correcting the above violations within thirty (30) days of the date of this letter. If you have any questions, please call me at (614) 644-2944.

Sincerely,

Carolyn J. Reierson
RCRA Enforcement Section
Division of Solid and Hazardous Waste Management

CJR:pm
1829S/58

cc: Mike Savage, DSHWM
Catherine McCord, USEPA, Region V
Mark Bergman, NEDO

OhioEPA
State of Ohio Environmental Protection Agency
heast District Office
2110 E. Aurora Road
Twinsburg, Ohio 44087-1969
(216) 425-9171

Toward A Cleaner Environment
15 Year Anniversary 1972 - 1987

Richard F. Celeste
Governor

September 30, 1988

RE: [redacted]METALS
[redacted] COUNTY
OHD 097-613-871
GEN-TSD

CERTIFIED MAIL

Mr. Doug Mickey
Master Metals
2850 West 3rd Street
Cleveland, Ohio 44113

Dear Mr. Mickey:

On 26 August 1988, I conducted a hazardous waste inspection of your Master Metals facility located at 2850 West 3rd Street in Cleveland, Ohio. Mr. Seda Ergun of Envisage and you represented this facility during my inspection. The facility was inspected for compliance with Ohio Hazardous Waste Regulations. A copy of the RCRA Inspection Report is enclosed for your information. These following violations and concerns noted in my report will require prompt attention:

Descriptions

1. Waste Stream Analysis - OAC 3745-65-13 - 40 CFR 265.13

   Master Metals must have detailed waste analysis available on each waste stream accepted by your facility. This documentation must be available for review on-site.

2. Waste Analysis Plan - OAC 3745-65-13 - 40 CFR 265.13

   Master Metal's waste analysis plan must be revised to better address incoming hazardous waste streams. The current plan does not require enough information to maintain adequate knowledge and controls on these hazardous waste streams.

3. Contingency Plan - OAC 3745-65-52 - 40 CFR 265.52

   The Contingency Plan must contain documented agreements with all local and State emergency authorities which will respond in the event of an emergency.

4. Operating Record - OAC 3745-65-73 - 40 CFR 265.73

Master Metals current operating record addresses the incoming inventory, however, does not address the materials which are fed into the furnaces. An accurate on-site inventory could not be provided during this inspection. The operating record is to be revised to satisfy this requirement.

5. Annual Operating Report - OAC 3745-65-75 - 40 CFR 265.75

The facility was unable to provide documentation during my inspection that the 1987 Annual Report was submitted to the Ohio EPA before March 1, 1988. Please submit this required report if it has not yet been submitted.

6. Closure Plan - OAC 3745-66-12 - 40 CFR 265.112

Master Metals must have a complete closure plan which addresses partial closure and full closure of all hazardous waste units. The maximum inventory in the current Part "A" does not agree with the closure plan. The closure plan needs to be revised and closure of the battery cracking/ storage areas plus the removed waste piles should have been submitted to the Regional Administrator/Director 180 days prior to closing these ares. Obviously, we are beyond that point, so please submit appropriate closure plans as soon as possible.

7. Closure Trust Fund - OAC 3745-66-43 - 40 CFR 265.143

A partial closure trust fund has been established for $21,000.00 under a U.S. EPA agreement. Master Metals should up-date this amount to cover a full closure. The cost estimate must continue to be revised on an annual basis, which will accurately reflect the cost of a full closure. Documentation showing correction of this violation should also be submitted to Jennifer Kwasniewski (DSHWM) of our Columbus Office .

8. Container Storage - OAC 3745-66-71 and OAC 3745-66-73, 40 CFR 265.171 and 40 CFR 265.173

Numerous drums contained hazardous waste materials which did not have lids. Some of these drums were covered with large sheets of plastic. Some of the plastic covered drums were not preventing rainwater from entering the drums. The plastic had blown away from some of the drums and other drums did not have any coverings. Numerous drums were noted in poor and leaking condition. Several cardboard boxes containing hazardous waste materials were spilled and leaking solid materials.

9. Aisle Space - OAC 3745-65-35 - 40 CFR 265.35

A large area of drums at the rear of the facility were double stacked on skids. The limited aisle space was inadequate to allow proper inspection of all drums. The drums should not be more than two deep between aisles.

10. Inspections and Personnel Training - OAC 3745-66-74 - 40 CFR 265.174
OAC 7345-65-16 - 40 CFR 265.16

The documented inspections conducted on the storage areas did not indicate spills, leaks, inadequate aisle space, uncovered drums, blowing plastic covers, etc. The inspection forms should include these problems and the date of remediation. The inspector needs to be better trained to properly record the inspection results. Leaving sections of the form blank is not appropriate when a specific block (acceptable or not acceptable) is to be checked.

11. Waste Piles - OAC 3745-67-53 - 40 CFR 265.253
OAC 3745-67-51 - 40 CFR 265.251

The waste piles had plastic sheets with weights holding them down. The base of the piles had some exposed waste materials. These methods are not adequate to meet the requirements of these rules (i.e. protection from wind disperial and precipitation). Removal and formal closure of these waste pile areas is the best solution to this problem.

12. Part "A"

The Part "A" on file with the Ohio EPA does not accurately describe the current Master Metals facility operation. An up-dated Part "A" must be filed with the Director of the Ohio EPA.

13. Lead Furnace Slag Pile

The nonhazardous lead slag pile is immediately beside a pile of lead feed stock. The two piles intermix along one side. This could easily cause the nonhazardous slag waste to exceed the E.P. Toxic standards for lead. These two piles must be kept separated to prevent erroneous testing results. Where the materials have commingled, Master Metals should manage the mixed materials as hazardous waste.

14. Storage Bins

The three-sided storage bins were originally scheduled to have tarped tops to prevent wind dispersal and precipitation complications. Your current methods of draping thin gauge plastic over the pile within the bin seems very inefficient. Eventually the workers will leave the piles uncovered for short or long periods of time and the winds or rains will cause problems. Please consider a more efficient methods to keep the materials in the bins protected. Each bin must be labeled adequately to indicate that it contains hazardous waste so that it is clearly identified from other wastestreams.

15. Flammable Waste Stream - Ohio Revised Code 3734.02(F) - OAC 3745-66-71/40 CFR 265.171

Master Metals does not have a permit allowing acceptance of D001 (FLAMMABLE WASTES). Dozens of drums from a company named Alcolac in Sedalla, Missouri were labeled D001. Several of these drums were leaking a liquid material onto the ground. You were unable to tell me if the D001 was properly labeled. These drums could pose a very serious threat to your facility and employees. If these drums were mislabeled,, then they must be correctly labeled. If the material is flammable, then the waste material be securely containerized, properly labeled and removed to a facility licensed to handle this waste stream. It is of great concern to me that your facility accepted these drums without question. It is of further concern that they are stored in such a haphazard fashion.

16. Labeling on Containers

Several of the hazardous waste containers in storage had no labeling to indicate the contents. The wording "Hazardous Waste" was not maintained on these containers. The U.S. EPA identification number of the waste material or the name of the waste was not indicated on several of the drums.

17. Security Fence - OAC 3745-65-14 - 40 CFR 265.14

The chainlinked fence along the railroad tracks has a few areas where a child could easily crawl underneath. One area had about an 18 inch gap between the ground and the bottom of the fence. This situation should be rectified to provide better security.

18. Spillage - OAC 3745-52-11 - 40 CFR 262.11

A puddle of liquid material was noted on the ground. It was adjacent to the waste pile returned by Marks Cement. Introduction of pH paper showed a pH of at least 10 (MAXIMUM INDICATION COLOR OF THIS pH PAPER). Contact with this alkaline puddle could cause burns or blisters to on-site personnel. The source of this puddle needs to be determined and rectified to prevent future problems. The liquid also must be properly characterized and handled in accordance with applicable rules.

19. Underground Tank

A plastic lined underground cement tank was recently installed to collect acid run-off from the new battery cracking operation. I advised you to refer to the new underground tank regulations, because you appear to be in violation of secondary containment requirements. You may also need a leak detection system. U.S. EPA Region V could give you more specific guidance on the new underground tank regulations.

In summary, the Master Metals facility has shown some improvement in the past year, however, some very serious violations were found during this inspection. A copy of this letter and the RCRA Interim Status Inspection Form is being forwarded to the U.S. EPA so they may work with you in resolving your compliance problems. I advise you to correct the above listed concerns as soon as possible. If I may be of further assistance you can contact me at (216) 425-9171. Currently there is still on issue as to the regulatory status of the 3-sided bins as potential "waste piles". This issue will be addressed as part of the U.S. EPA negotiations.

Sincerely,

Mark Bergman by DBerg

Mark Bergman, R.S.
Environmental Scientist
Division of Solid and Hazardous Waste
Management

MB/sp

Enclosure

cc: Dave Sholtis, DSHWM, Central Office
Catherine McCord, U.S. EPA, Region V
Ollie Zahorodny, Cleveland Fire Department
Cleveland Air Agency
Ms. Rachael Fish, OSHA

TRUST AGREEMENT

Trust agreement. The "Agreement," entered into as of MAY 15, 1990 by and between Master Metals, Inc., a corporation, the "Grantor," and Central Trust Company of Northeastern Ohio, a national bank, the "Trustee."

WHEREAS, the United States Environmental Protection Agency ("U.S. EPA"), and the Ohio Environmental Protection Agency ("Ohio EPA") have established certain rules applicable to the Grantor, requiring that the owner or operator of a hazardous waste management facility must provide assurance that funds will be available when needed for closure and/or post-closure care of the facility.

WHEREAS, the Grantor has elected to establish a trust to provide all or part of such financial assurance for the facilities identified herein.

WHEREAS, the Grantor, acting through its duly authorized officers, has selected the Trustee to be the trustee under this agreement, and the Trustee is willing to act as trustee.

NOW, THEREFORE, the Grantor and the Trustee agree as follows:

Section 1. Definitions. As used in this Agreement:

(a) The term "Grantor" means the owner or operator who enters into this Agreement and any successors or assigns of the Grantor.

(b) The term "Trustee" means the Trustee who enters into this Agreement and any successor Trustee.

(c) The term "Director" means the Director of the Ohio EPA, or his designee.

(d) The term "Regional Administrator" means the Regional Administrator of Region V of the U.S. EPA, or his designee.

Section 2. Identification of Facilities and Cost Estimates. This Agreement pertains to the facilities and cost estimates identified on attached Schedule A.

Section 3. Establishment of Fund. The Grantor and the Trustee hereby establish a trust fund, the "Fund" for the benefit of the U.S. EPA and Ohio EPA. The Grantor and the Trustee intend that no third party have access to the Fund except as herein provided. The Fund is established initially as consisting of the property, which is acceptable to the Trustee, described in Schedule B attached hereto. Such property and any other property subsequently transferred to the Trustee is referred to as the Fund, together with all earnings and profits thereon, less any

payments or distributions made by the Trustee pursuant to this Agreement. The Fund will be held by the Trustee, in trust, as hereinafter provided. The Trustee shall not be responsible nor shall it undertake any responsibility for the amount or adequacy of, nor any duty to collect from the Grantor, any payments necessary to discharge any liabilities of the Grantor established by the U.S. EPA or Ohio EPA.

Section 4. Payment for Closure and Post-Closure Care. The Trustee will make such payments from the Fund as the Director or the Regional Administrator will direct, in writing, to provide for the payment of the costs of closure and/or post-closure care of the facilities covered by this Agreement. The Trustee will reimburse the Grantor or other persons as specified by the Director or the Regional Administrator from the Fund for closure and post-closure expenditures in such amounts as the Director or the Regional Administrator will direct, in writing. In addition, the Trustee will refund to the Grantor such amounts as the Director or the Regional Administrator specifies in writing. Upon refund, such funds will no longer constitute part of the Fund as defined herein.

Section 5. Payments Comprising the Fund. Payments made to the Trustee for the Fund will consist of cash or securities acceptable to the Trustee.

Section 6. Trustee Management. The Trustee will invest and reinvest the principal and income of the Fund and keep the Fund invested as a single fund, without distinction between principal and income, in accordance with general investment policies and guidelines which the Grantor may communicate in writing to the Trustee from time to time, subject, however, to the provisions of this Section. In investing, reinvesting, exchanging, selling and managing the Fund, the Trustee will discharge his duties with respect to the trust fund solely in the interest of the beneficiary and with the care, skill, prudence, and diligence under the circumstances then prevailing which persons of prudence, acting in a like capacity and familiar with such matters, would use in the conduct of an enterprise of a like character and with like aims; except that:

(a) Securities or other obligations of the Grantor, or any other owner or operator of the facilities, or any of their affiliates as defined in the Investment Company Act of 1940, as amended, 15 USC §80a-2(a), will not be acquired or held, unless they are securities or other obligations of the Federal or a State government;

(b) The Trustee is authorized to invest the Fund in time or demand deposits of the Trustee, to the extent insured by an agency of the Federal or State government; and

(c) The Trustee is authorized to hold cash awaiting investment or distribution uninvested for a reasonable time and without liability for the payment of interest thereon.

Section 7. Commingling and Investment. The Trustee is expressly authorized in its discretion:

(a) To transfer from time to time any or all of the assets of the Fund to any common, commingled or collective trust fund created by the Trustee in which the Fund is eligible to participate, subject to all of the provisions thereof, to be commingled with the assets of other trusts participating therein; and

(b) To purchase shares in any investment company registered under the Investment Company Act of 1940, 15 U.S.C. §80a-1 et seq., including one which may be created, managed, underwritten, or to which investment advice is rendered or the shares of which are sold by the Trustee. The Trustee may vote such shares in its discretion.

Section 8. Express Powers of Trustee. Without in any way limiting the powers and discretions conferred upon the Trustee by the other provisions of this Agreement or by law, the Trustee is expressly authorized and empowered:

(a) To sell, exchange, convey, transfer or otherwise dispose of any property held by it, by public or

private sale. No person dealing with the Trustee will be bound to see to the application of the purchase money or to inquire into the validity or expediency of any such sale or other disposition;

(b) To make, execute, acknowledge and deliver any and all documents of transfer and conveyance and any and all other instruments that may be necessary or appropriate to carry out the powers herein granted;

(c) To register any securities held in the Fund in its own name or in the name of a nominee and to hold any security in bearer form or in book entry, or to combine certificates representing such securities with certificates of the same issue held by the Trustee in other fiduciary capacities, or to deposit or arrange for the deposit of such securities in a qualified central depositary even though, when so deposited, such securities may be merged and held in bulk in the name of the nominee of such depositary with other securities deposited therein by another person, or to deposit or arrange for the deposit of any securities issued by the United States Government, or any agency or instrumentality thereof, with a Federal Reserve bank, but the books and records of the Trustee will at all times show that all such securities are part of the Fund;

(d) To deposit any cash in the Fund in interest-bearing accounts maintained or savings certificates

issued by the Trustee, in its separate corporate capacity, or in any other banking institution affiliated with the Trustee, to the extent insured by an agency of the Federal or State government; and

(e) To compromise or otherwise adjust all claims in favor of or against the Fund.

Section 9. Taxes and Expenses. All taxes of any kind that may be assessed or levied against or in respect of the Fund and all brokerage commissions incurred by the Fund will be paid from the Fund. All other expenses incurred by the Trustee in connection with the administration of this Trust, including fees for legal services rendered to the Trustee, the compensation of the Trustee to the extent not paid directly by the Grantor, and all other proper charges and disbursements of the Trustee will be paid from the Fund.

Section 10. Annual Valuation. The Trustee will annually, at least thirty days prior to the anniversary date of establishment of the Fund furnish to the Grantor and to the Director and the Regional Administrator a statement confirming the value of the Trust. Any securities in the Fund will be valued at market value as of no more than sixty days prior to the anniversary date of establishment of the Fund. The failure of the Grantor to object in writing to the Trustee within ninety days after the statement has been furnished to the Grantor and the Director and the Regional

Administrator will constitute a conclusively binding assent by the Grantor, barring the Grantor from asserting any claim or liability against the Trustee with respect to matters disclosed in the statement.

Section 11. Advice of Counsel. The Trustee may from time to time consult with counsel, who may be counsel to the Grantor, with respect to any question arising as to the construction of this Agreement or any action to be taken hereunder. The Trustee will be fully protected, to the extent permitted by law, in acting upon the advice of counsel.

Section 12. Trustee Compensation. The Trustee will be entitled to reasonable compensation for its service as agreed upon in writing from time to time with the Grantor.

Section 13. Successor Trustee. The Trustee may resign or the Grantor may replace the Trustee, but such resignation or replacement shall not be effective until the Grantor has appointed a successor Trustee and this successor accepts the appointment. The successor Trustee will have the same powers and duties as those conferred upon the Trustee hereunder. Upon the successor Trustee's acceptance of the appointment, the Trustee will assign, transfer and pay over to the successor trustee the funds and properties then constituting the Fund. If for any reason the Grantor cannot

or does not act in the event of the resignation of the Trustee, the Trustee may apply to a court of competent jurisdiction for the appointment of a successor trustee or for instructions. The successor trustee shall specify the date on which it assumes administration of the trust in a writing sent to the Grantor, the Director and the Regional Administrator, and the present Trustee by certified mail ten days before such change becomes effective. Any expenses incurred by the Trustee as a result of any of the acts contemplated by this Section will be paid as provided in Section 9.

Section 14. Instructions to the Trustee. All orders, requests and instructions by the Grantor to the Trustee will be in writing, signed by such persons as are designated in the attached Exhibit A or such other designees as the Grantor may designate by amendment to Exhibit A. The Trustee will be fully protected in acting without inquiry in accordance with the Grantor's orders, requests and instructions. All orders, requests, and instructions by the Director or the Regional Administrator to the Trustee will be in writing, signed by the Director or the Regional Administrator, and the Trustee will act and will be fully protected in acting in accordance with such orders, requests and instructions. The Trustee will have the right to assume, in the absence of written notice to the contrary, that no

event constituting a change or a termination of the authority of any person to act on behalf of the Grantor or the Director or the Regional Administrator hereunder has occurred. The Trustee will have no duty to act in the absence of such orders, requests and instructions from the Grantor and/or the Director or the Regional Administrator except as provided for herein.

Section 15. Notice of Nonpayment. The Trustee will notify the Grantor and the Director and the Regional Administrator, by certified mail within ten days following the expiration of the thirty-day period after the anniversary of the establishment of the Trust, if no payment is received from the Grantor during that period. After the pay-in period is completed the Trustee is not required to send a notice of nonpayment.

Section 16. Amendment of Agreement. This Agreement may be amended by an instrument in writing executed by the Grantor, the Trustee, and the Director or the Regional Administrator, or by the Trustee and the Director or the Regional Administrator if the Grantor ceases to exist.

Section 17. Irrevocability and Termination. Subject to the right of the parties to amend this Agreement as provided in Section 16, this Trust will be irrevocable and will continue until terminated at the written agreement of the Grantor, the Trustee, and the Director or the Regional

Administrator or by the Trustee and the Director or the Regional Administrator if the Grantor ceases to exist. Upon termination of the Trust, all remaining trust property, less final trust administration expenses, will be delivered to the Grantor.

Section 18. Immunity and Indemnification. The Trustee will not incur personal liability of any nature in connection with any act or omission, made in good faith, in the administration of this Trust, or in carrying out any directions by the Grantor or the Director or the Regional Administrator issued in accordance with this Agreement. The Trustee will be indemnified and saved harmless by the Grantor or from the Trust Fund, or both, from and against any personal liability to which the Trustee may be subjected by reason of any act or conduct in its official capacity, including all expenses reasonably incurred in its defense in the event the Grantor fails to provide such defense.

Section 19. Choice of Law. This Agreement will be administered, construed and enforced according to the laws of the State of Ohio.

Section 20. Interpretation. As used in this Agreement, words in the singular include the plural and words in the plural include the singular. The descriptive headings for each Section of this Agreement will not affect the interpretation or the legal efficacy of this Agreement.

IN WITNESS WHEREOF, the parties have caused this Agreement to be executed by their respective officers duly authorized and their corporate seals to be hereunto affixed and attested as of the date first above written: The parties below certify that the wording of this Agreement is substantially identical to the wording specified in paragraph (A)(1) of Rule 3745-55-51 of the Ohio Administrative Code and paragraph (a)(1) of Section 264.151 of the Code of Federal Regulations as such regulations were constituted on the date first above written.

Master Metals, Inc.

by: _____
Douglas K. Mickey

Title: President

Central Trust Company of
Northeastern Ohio

by: Robert C. Stark

Title: Senior Trust Officer

State of Ohio)
) ss:
County of Medina)

On this 1 day of August, 1990, before me personally came Douglas K. Mickey to me known, who, being by me duly sworn, did depose and say that he resides at 70 Fairway Trail, that he is President of the corporation described in and which executed the above instrument; that he knows the seal of said corporation; that the seal affixed to such instrument is such corporate seal; that it was so affixed by order

of the Board of Directors of said corporation; and that he signed his name thereto by like order.

Paula A. Cook

Notary Public

PAULA COOK, Notary Public
State of Ohio
My Commission Expires May 3, 1994

Schedule A

Master Metals, Inc.
2850 West Third Street
Cleveland, Ohio 44113

USEPA I.D. No. OHD 097613871

Facility Closure Cost Estimate
(as of May 17, 1990):
$92,810.00

Pay-in Period:
20 years

Initial Payment:
$4,640.50

Designation of Authorized Agents
for Master Metals, Inc.:

Douglas K. Mickey, President

Jerry Moody, Vice President

Schedule B

Initial Fund Payment:
$4,640.50 U.S. Funds

NOT NEGOTIABLE — NONTRANSFERABLE

BRANCH 203

SOCIETY NATIONAL BANK

14-213076-d

47

NAME AND ADDRESS OF DEPOSITOR(S)

MASTER METALS INC
EPA ACCOUNT

2850 W 3RD ST

CLEVELAND OH 44113

SSN OR ID #

341-28-6685

☐ Joint—Right of Survivorship Certificate is owned jointly and is payable to any or either at any time before death, and upon death of any or either, balance shall become absolute property of survivor(s).

THE BANK CERTIFIES THAT THE DEPOSITOR(S) HAS DEPOSITED WITH IT THE SUM OF

($ 15,000.00)

FIFTEEN THOUSAND Dollars

Issue Date 04/05/90 Rate 7.820 Term M 12

First Maturity Date 04/05/91 First Interest Date 7/05/90

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CONTINGENT CLOSURE AND POST-CLOSURE COST ESTIMATE

MASTER METALS INCORPORATED
CLEVELAND, OHIO

Sep 5, 1992

Prepared for
U.S. Environmental Protection Agency
Office of Waste Programs Enforcement
Washington, D.C. 20460

Work Assignment	:	R05053
EPA Region	:	5
Site No.	:	OHD 097 613 871
Date Prepared	:	September 5, 1992
Prepared by	:	PRC Environmental Management, Inc.
Contract No.	:	68-W9-0006
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1.0 SCOPE

On April 13, 1992, Master Metals Incorporated (Master Metals) submitted to the U.S. Environmental Protection Agency (EPA) closure plans and closure cost estimates for hazardous waste management units at its Cleveland, Ohio facility. EPA reviewed the closure cost estimates and determined them to be inaccurate (PRC, 1992a). As a result, EPA prepared a more accurate estimate of closure costs for the Master Metals facility (PRC, 1992b). This document presents contingent closure and post-closure cost estimates for the entire Master Metals facility. The cost estimates reported herein are based on closing the entire geographic extent of the facility as a landfill.

2.0 METHODOLOGY

A work breakdown structure (WBS) was formulated to reflect envisioned groups of units and sequences of activities within those groups during the contingent closure and post-closure processes. The WBS is presented in Table 1.

A series of assumptions were made to facilitate the preparation of the cost estimates. These assumptions are listed in Table 2.

A detailed contingent closure and post-closure cost estimate was prepared based on background data provided in several facility documents, the WBS presented in Table 1, the assumptions presented in Table 2, and worksheets from EPA guidance (MM, 1992a, MM, 1992b, CTI, 1991, ESC, 1991, EPA, 1986, EPA, 1987). Completed worksheets are provided in the Appendix. Costs are summarized in Table 3.

3.0 RESULTS

The total estimated cost of contingent closure and post-closure of the Master Metal facility is $ 7,111,349.

TABLE 1

WORK BREAKDOWN STRUCTURE

WBS-100	INITIAL AND CONTINUING SITE-WIDE ACTIVITIES
WBS-110	Preparation of Engineering Drawings and Construction QA Plan
WBS-120	Groundwater Monitoring
WBS-130	Storm Sewer Excavation
WBS-140	Construction and Operation of Run-Off Control System
WBS-150	Repair of Perimeter Fencing
WBS-160	Air Dispersal Monitoring
WBS-170	Inspections and Certifications by Independent Professional Engineer
WBS-200	RECEIVING BIN CLOSURE
WBS-210	Inventory Management
WBS-220	Decontamination
WBS-230	Disposal of Bin
WBS-300	BIN 1 CLOSURE
WBS-310	Inventory Management
WBS-320	Decontamination
WBS-330	Disposal of Bin
WBS-400	BIN 2 CLOSURE
WBS-410	Inventory Management
WBS-420	Decontamination
WBS-430	Disposal of Bin
WBS-500	BINS 3, 4, and 5 CLOSURE
WBS-510	Inventory Management
WBS-520	Decontamination
WBS-530	Disposal of Bins
WBS-600	BINS 6, 7, and 8 CLOSURE
WBS-610	Inventory Management
WBS-620	Decontamination
WBS-630	Disposal of Bins
WBS-700	BINS 10 and 11 CLOSURE
WBS-710	Inventory Management
WBS-720	Decontamination
WBS-730	Disposal of Bins
WBS-800	BINS 9, 15, 16, and 17 CLOSURE
WBS-810	Inventory Management
WBS-820	Decontamination
WBS-830	Disposal of Bins

TABLE 1

WORK BREAKDOWN STRUCTURE (continued)

WBS-900	CONTAINER STORAGE UNIT CLOSURE
WBS-910	Inventory Management
WBS-920	Decontamination and Disposal of Containers
WBS-1000	ROLL-OFF BOX AREA CLOSURE
WBS-1010	Inventory Management
WBS-1020	Decontamination and Disposal of Roll-Off Boxes
WBS-1100	UNDERGROUND STORAGE TANK CLOSURE
WBS-1110	Inventory Management
WBS-1120	Tank Removal and Disposal
WBS-1200	FINAL SITE-WIDE CLOSURE ACTIVITIES
WBS-1210	Decontamination and Demolition of Process Equipment and Structures
WBS-1220	Demolition of Paved Surfaces
WBS-1230	Installation of Final Cover
WBS-1240	Decontamination of Equipment
WBS-1250	Survey Plat and Notice to Land Authority
WBS-1300	POST-CLOSURE ACTIVITIES
WBS-1310	Facility Inspections
WBS-1320	Routine Maintenance
WBS-1330	Groundwater Monitoring
WBS-1340	Certification of Post-Closure

TABLE 2

ASSUMPTIONS

1. The entire Master Metals property will be closed as a landfill after the hazardous waste inventory is removed and aboveground structures are demolished. A landfill cover will be installed over the entire Master Metals site.

2. Bin inventories will be as stated in Table 1 of the closure plan (MM, 1992).

3. The 17 roll-off boxes will have inventories of 40 cubic yards each.

4. The container storage area will have an inventory of 11,900 55-gallon drums.

5. Bin, drum, and roll-off box inventories will be processed in the on-site furnaces at costs of $250 per cubic yard bulk and $75 per drum. All inventories will be completely characterized before closure starts and will meet the acceptance criteria for the furnaces.

6. All metal surfaces of bins, roll-off boxes, drums, and structures will be effectively decontaminated.

7. All concrete slabs and pavement, curbs, and tanks will be removed and disposed of off-site as hazardous waste.

8. All run-off and decontamination solutions will be disposed of off-site as hazardous wastes.

9. All process equipment (i.e., furnaces and baghouses) will be decontaminated and disposed of off-site as nonhazardous solid waste.

10. Disposal sites will be as follows:

Hazardous liquids	--	Envirite of Canton, Ohio (approximately 50 miles from the site).
Hazardous Solids	--	Envirosafe of Oregon, Ohio (approximately 100 miles from the site)
Nonhazardous Solids	--	BFI of Lorain, Ohio (approximately 50 miles from the site)

11. Disposal costs will be as follows:

    Envirite - $0.38 per gallon
    Envirosafe - $275 per cubic yard
    BFI - $10.73 per cubic yard

12. The four wells comprising the existing groundwater monitoring network will be abandoned and will be replaced with 5 new wells.

13. Subsurface soil and groundwater contamination will be completely characterized before the start of closure.

14. No contaminated soil will be removed from the site.

TABLE 2 (continued)
ASSUMPTIONS

15. The closure activities will be completed in 12 months.

16. The post-closure care period will be 30 years.

17. The roundhouse, office structure, S & R building, white metal building , and PTR building will not require decontamination.

TABLE 3
COST SUMMARY

WBS Element	Activity	Cost
100	INITIAL AND CONTINUING SITE-WIDE ACTIVITIES	
110	Preparation of Engineering Drawings and Construction QA Plan	$ 31,564
120	Groundwater Monitoring	82,978
130	Excavation of Storm Sewer	7,836
140	Construction and Operation of Run-Off Controls	1,644,254
150	Repair of Perimeter Fencing	8,777
160	Air Dispersal Monitoring	15,112
170	Inspections and Certification by Independent Professional Engineer	31,538
Subtotal	**Initial and Continuing Site-Wide Activities**	**1,822,059**
200	RECEIVING BIN CLOSURE	
210	Inventory Management	$ 12,664
220	Decontamination	11,422
230	Disposal of Bin	819
Subtotal	**Receiving Bin Closure**	**24,905**
300	BIN 1 CLOSURE	
310	Inventory Management	22,703
320	Decontamination	13,102
330	Disposal of Bin	933
Subtotal	**Bin 1 Closure**	**$ 36,738**

TABLE 3
COST SUMMARY (Continued)

WBS Element	Activity	Cost
400	BIN 2 CLOSURE	
410	Inventory Management	$ 22,703
420	Decontamination	13,102
430	Disposal of Bin	933
Subtotal	**Bin 2 Closure**	**$36,738**
500	BINS 3, 4, and 5 CLOSURE	
510	Inventory Management	$ 67,880
520	Decontamination	31,582
530	Disposal of Bins	2,236
Subtotal	**Bins 3, 4, and 5 Closure**	**$ 101,698**
600	BINS 6, 7, and 8 CLOSURE	
610	Inventory Management	$ 67,880
620	Decontamination	31,582
630	Disposal of bins	2,236
Subtotal	**Bins 6, 7, and 8 Closure**	**$ 101, 698**
700	BINS 10 and 11 CLOSURE	
710	Inventory Management	$ 90,468
720	Decontamination	22,662
730	Disposal of Bins	1,597
Subtotal	**Bins 10 and 11 Closure**	**$ 114,727**

TABLE 3
COST SUMMARY (Continued)

WBS Element		Activity	Cost
800		BINS 9, 15, 16, and 17	
	810	Inventory Management	$ 52,821
	820	Decontamination	34,750
	830	Disposal of Bins	2,425
Subtotal		**Bins 9, 15, 16, and 17 Closure**	**$ 89,996**
900		CONTAINER STORAGE UNIT CLOSURE	
	910	Inventory Management	940,636
	920	Decontamination and Disposal of Containers	97,487
Subtotal		**Container Storage Unit Closure**	**$ 1,038,123**
1000		ROLL-OFF BOX AREA CLOSURE	
	1010	Inventory Management	$170,666
	1020	Decontaminated Disposal of Roll-Off Boxes	42,817
Subtotal		**Roll-Off Box Area Closure**	**$ 213,483**
1100		UNDERGROUND STORAGE TANK CLOSURE	
	1110	Inventory Management	$ 4,761
	1120	Tank Removal and Disposal	4,751
Subtotal		**Underground Storage Tank Closure**	**$ 9,512**

TABLE 3
COST SUMMARY (Continued)

1200	FINAL SITE-WIDE CLOSURE ACTIVITIES	
1210	Demolition of Process Equipment and Structures	$359,025
1220	Demolition of Paved Surfaces	1,164,158
1230	Installation of Final Cover	859,668
1240	Decontamination of Equipment	10,337
1250	Survey Plat and Notice to Land Authority	1,625
Subtotal	**Final Site-wide Closure Activities**	**$ 2,394,813**
1300	POST-CLOSURE ACTIVITIES	
1310	Facility Inspections	24,000
1320	Routine Maintenance	167,085
1330	Groundwater Monitoring	923,410
1340	Certification of Post-Closure	12,364
Subtotal	**Post-Closure Activities**	**$ 1,126,859**
TOTAL:		**$7,111,349**

REFERENCES

CTI, 1991. Compliance Technologies, Inc. Subsurface Investigation Report for Master Metals, Incorporated. January 21, 1991.

EPA, 1986. U.S. Environmental Protection Agency. Final Report/Guidance Manual: Cost Estimates for Closure and Post-Closure Plans (Subpart G and H) Volumes I through IV, OSWER Policy Directive # 9476.00-6.

EPA, 1987. U.S. Environmental Protection Agency. RCRA Guidance Manual for Subpart G Closure and Post-Closure Care Standards and Subpart H Cost Estimation, Requirements, OSWER Policy Directive # 9476.00-5.

ESC, 1991. Environmental Strategies Corporation. Environmental Risk Assessment Final Report. February 15, 1991.

Means, 1990. R.S. Means Co., Inc. Building Construction Cost Data 1990.

MM, 1992a. Master Metals, Inc. Facility Closure Plan, Master Metals, Inc. April 13, 1992.

MM, 1992b. Master Metals, Inc. Partial Closure Plan, Master Metals, Inc. April 13, 1992.

PRC, 1992a. PRC Environmental Management, Inc. Technical Evaluation of Facility Closure Plan. July 7, 1992.

PRC, 1992b. PRC Environmental Management, Inc. Closure Cost Estimate. July 28, 1992.

APPENDIX

COST ESTIMATE WORKSHEETS

WBS-110 Prepare Engineering Drawings and Construction QA Plan

Assume:

- 1 Construction QA Plan
- 1 Set of Specifications
- 1 Site Map
- 1 Demolition Plan
- 1 Grading Plan
- 1 Grading Section
- 1 Cover Plan
- 1 Cover Section
- 1 Membrane Panel Plan

Construction QA Plan

	Rate	Cost
Engineer	80 hours @ $45.50	$3,640
Clerical	24 hours @ $18.00	432
	Subtotal:	$ 4,072

Specifications

	Rate	Cost
Engineer	120 hours @ $45.50	$5,460
Clerical	40 hours @ $18.00	720
	Subtotal:	$ 6,180

All Drawings

Rate (per sheet)		Quantity	Cost
Engineer	16 hours each @ $45.50	9 sheets	$ 6,552
Draftsman	80 hours each @ $20.50	9 sheet	14,760
	Subtotal:		$ 21,312

Total **$ 31,564**

WBS - 120
Groundwater Monitoring

OSWER Policy Directive
#9476.00-6

WORKSHEET G-4, PART 265 ONLY

Groundwater Monitoring

1. Groundwater Quality Analysis

a.	Number of wells	5	(minimum of 4; p. 2-1)
b.	Number of samples collected per well (samples/well)	1	
c.	Number of replicate analyses per sample (replicates/sample)	0.1	
d.	Number of analyses Line 1a x Line 1b x Line 1c	6	
e.	Sample collection and preparation time required (hrs/well)	4	(4 hrs/well; p. 2-4)
f.	Transportation time to and from site (hrs)	2	
g.	Contract lab technician unit labor cost ($/hr)	20.50	($20.50/hr; p. 9-3)
h.	Sample collection time (hrs) (Line 1a x Line 1e) + Line 1f	22	
i.	Sampling cost ($) Line 1g x Line 1h	451	ICP - $152 AA Hg - $37 GC (PCBs, Pest) - $200 GC/MS (VOC) - $500 GC/MS (BNA) - $1560
j.	Contract lab fee ($/analysis)	2449	($85/analysis; p. 2-5)
k.	Contract lab cost ($) Line 1d x Line 1j	14694	
l.	Number of times groundwater quality samples are collected during closure	4	quarterly for one year
m.	Groundwater quality sampling cost ($) (Line 1i + Line 1k) x Line 1l		60580

2. Groundwater Contamination Analysis

a.	Number of wells	0	(minimum of 4; p. 2-1)
b.	Number of samples collected per well (samples/well)	0	

WBS -120

WORKSHEET G-4, PART 265 ONLY (page 2)

c. Number of replicate analyses per sample (replicates/sample) ___0___ (4 replicates/sample; p. 2-2)

d. Number of analyses
Line 2a x Line 2b x Line 2c ___0___

e. Sample collection and preparation time required (hrs/well) ___0___ (4 hrs/well; p. 2-6)

f. Transportation time to and from site (hrs) ___0___

g. Contract lab technician unit labor cost ($/hr) ___0___ ($20.50/hr; p. 9-3)

h. Sample collection time (hrs)
(Line 2a x Line 2e) + Line 2f ___0___

i. Sampling cost ($)
Line 2g x Line 2h ___0___

j. Contract lab fee ($/analysis) ___0___ ($120/analysis; p. 2-7)

k. Contract lab cost ($)
Line 2d x Line 2j ___0___

l. Number of times groundwater contamination samples are collected during closure ___0___

m. Groundwater contamination sampling cost ($)
(Line 2i + Line 2k) x Line 2l ___0___

3. Administrative (Reporting)

a. Total number of analyses
(Line 1d x Line 1l) +
(Line 2d x Line 2l) ___16___

b. Contract lab technician time required (hrs/analysis) ___0.5___

c. Technician unit labor cost ($/hr) ___20.50___ ($20.50/hr; p. 9-3)

d. Technician cost ($)
Line 3a x Line 3b x Line 3c ___164___

e. Clerical time required (hrs/set of analysis) ___0.1___

WORKSHEET G-4, PART 265 ONLY (page 3)

f.	Clerical unit labor cost ($/hr)	18	($18/hr; p. 9-3)
g.	Clerical cost ($) Line 3a x Line 3e x Line 3f	28.80	
h.	Administration subtotal ($) Line 3d + Line 3g		192.80

4. Monitoring Well Maintenance and Replacement

a.	Total number of wells	5	
b.	Maintenance time required (hrs/well)	2	
c.	Unit labor cost ($/hr)	23	($23/hr; p. 9-3)
d.	Monitoring well maintenance cost ($) Line 4a x Line 4b x Line 4c	230	
e.	Number of wells needing replacement	5	
f.	Existing monitoring well sealing unit cost ($/well)	300	close 4 wells ($300/well; p. 3-5)*
g.	New monitoring well construction unit cost ($/well)	4125	5 new wells ($4125/well; p. 3-5)*
h.	Mobilization/demobilization ($)	150	($150; p. 3-5)
i.	Monitoring well replacement cost ($) [Line 4e x (Line 4f + Line 4g)] + Line 4h	21975	sealing 4 wells only
j.	Number of pumps needing replacement	0	(p. 3-5)
k.	Pump unit cost ($/pump)	0	
l.	Pump cost ($) Line 4j x Line 4k	0	
m.	Number of wells needing tubing replacement	0	
n.	Length of tubing (ft/well)	0	

* Based on a depth of 100 vertical lineal feet.

WBS-120

WORKSHEET G-4, PART 265 ONLY (page 4)

o. Tubing unit cost ($/ft) 0 (p. 3-5)

p. Tubing replacement cost ($)
Line 4m x Line 4n x Line 4o 0

q. Number of wells needing cap replacement 0

r. Well cap unit cost ($/cap) 0

s. Well cap replacement cost ($)
Line 4q x Line 4r 0

t. Monitoring well maintenance and replacement cost ($)
Line 4d + [redacted] + Line 4i + Line 4l + Line 4p + Line 4s 22205

5. Groundwater Monitoring Subtotal ($)
Line 1m + Line 2m + Line 3h + Line 4t 82978

WBS-130. Excavation of Storm Sewer

Assume 1440 L. F. of storm sewer to be excavated. Assume trenching to be 3 feet wide by 6 feet deep and that excavated materials will be landfilled on-site.

1.	Volume of Excavation (yd3)	960
2.	Unit cost of excavation ($/yd3)	7.36
3.	Excavation cost	7,066
4.	Working days required	5
5.	Personnel required	2
6.	Daily protective equipment cost	77
7.	Protective equipment cost	770
8.	Total cost (Lines 3 and 7)	7,836

WBS-140 Installation of Run-Off Controls

Assume system to consist of 2100 LF of trapezoidal ditch and a 200,000 gal (100yd3) impoundment.

1.	Unit Cost of Ditch Construction ($/L.F.)	3.25
2.	Length of Ditch (LF)	2,100
3.	Cost of Ditch Construction	6,825
4.	Unit Cost of Impoundment Excavation ($/yd3)	7.36
5.	Amount of Soil to be Excavated (yd3)	1,000
6.	Cost of Impoundment Construction	7,360
7.	Total Cost of Construction (Lines 3 and 6)	14,185

WBS-140 Operation of Run-Off Controls

WORKSHEET G-2

Leachate and/or Run-Off Management

1. ~~Leachate and/or~~ Run-Off Collection

a.	Leachate and/or run-off volume collected during closure (gal)	3,700,000	Assume 30 inches run-off over 4.5 acres
b.	Time required for pumping (hrs) Line 1a ÷ 8000 (round up to nearest integer)	463	
c.	Pumping unit cost ($/hr)	23	($23/hr; p. 4-11)
d.	Pump rental cost, optional ($/hr)	2.7	($2.70/hr; p. 4-11)
e.	Pumping cost ($) Line 1b x (Line 1c + Line 1d)		11899

2. On-Site Treatment of Leachate/Run-Off

a.	Quantity of leachate/run-off to be treated (gal)	0	
b.	Chemicals required for treatment (lb/gal leachate/run-off or gal/gal leachate/run-off)		(pp. 4-12 - 4-13)
c.	Chemicals unit cost ($/lb or $/gal)		
d.	Chemicals cost ($) Line 2a x Line 2b x Line 2c		
e.	Electricity required for treatment (kwh/gal leachate/run-off)		(pp. 4-12 - 4-13)
f.	Electricity unit cost ($/kwh)		($0.05/kwh; p. 4-2)
g.	Electricity cost ($) Line 2a x Line 2e x Line 2f		
h.	Water required for treatment (gal/gal leachate/run-off)		(pp. 4-12 - 4-13)
i.	Water unit cost ($/1000 gal)		($1.22/1000 gal; p. 4-2)
j.	Water cost ($) [(Line 2a x Line 2h) ÷ 1000] x Line 2i		
k.	Fuel required for treatment (MMBtu/gal leachate/run-off)		(pp. 4-12 - 4-13)

WORKSHEET G-2 (page 2)

l. Fuel unit cost ($MMBtu) _____ (p. 4-2)

m. Fuel cost ($)
Line 2a x Line 2k x Line 2l _____

n. Labor required for treatment
(hrs/gallon leachate/run-off) _____ (pp. 4-12 - 4-13)

o. Process operator unit labor
cost ($/hr) _____ ($26.50/hr; p. 9-3)

p. Labor cost ($)
Line 2a x Line 2n x Line 2o _____

q. On-site treatment cost ($)
Line 2d + Line 2g + Line 2j +
Line 2m + Line 2p 0

r. Residue generated from treatment
(gal) _____

3. Treated Leachate/Run-Off Discharge to Sewer

a. Quantity discharged (gal) 0

b. Sewer discharge unit cost
($/1000 gal) _____ ($1.50/1000 gal; p. 4-2)

c. Sewer discharge cost ($)
(Line 3a ÷ 1000) x Line 3b 0

4. Off-Site Management of Leachate/Run-Off
and/or Treatment Residue

a. Amount to be managed off-site (~~tons~~ gal) 3,700,000 *

b. Truck capacity (~~tons~~ gal) 5000

c. Number of loads
Line 4a ÷ Line 4b
(round up to nearest integer) 740

d. One-way distance (mi/load) 50

e. Transportation unit cost ($/mi) 5.61 ($4.50/mi; p. 4-15)**

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* Conversion factors are provided in the Volume III appendix.
** Based on a 250-mile one-way distance.

WBS-140

WORKSHEET G-2 (page 3)

f. Transportation cost ($)
Line 4c x Line 4d x Line 4e — 207570

g. Off-site management unit cost
($/~~ton~~ gal) — 0.38 (pp. 4-13 - 4-20)

h. Off-site management cost ($)
Line 4a x Line 4g — 1,406,000

i. Off-site management subtotal ($)
Line 4f + Line 4h — 1,613,570

5. Solidification Prior to On-Site Landfill Disposal

a. Quantity to be solidified (tons) — 0 *

b. Type of solidification material _____

c. Solidification unit cost ($/ton) _____ (p. 4-11)

d. Solidification cost ($)
Line 5a x Line 5c — 0

e. Change in waste quantity
(factor $\geq$ 1) _____ (1.0; p. 4-11)

f. Final solidified wate
quantity (tons)
Line 5a x (1 + Line 5e) _____

6. On-Site Disposal

Include volume on one or more worksheets:
Landfill Inventory - Line 1b, Line 1f, Line 1g, Line 1p
Incinerator Inventory - Line 1j, Line 1k, Line 1m, Line 1n
Land Treatment Inventory - Line 1h, Line 1m, Line 1n, Line 1o

7. Leachate Collection System Maintenance (if applicable)

a. Maintenance time required (hrs) — 200

b. Unit labor cost ($/hr) — 23 ($23/hr; p. 9-3)

* Conversion factors are provided in the Volume III appendix.

WBS-140

WORKSHEET G-2 (page 4)

c. Maintenance labor cost ($)
Line 7a x Line 7b — 4600

d. Number of pumps needing replacement — 0

e. Pump unit cost ($/pump) — 0 (p. 3-4)

f. Pump cost ($)
Line 7d x Line 7e — 0

g. Total maintenance cost ($)
Line 7c + Line 7f — 4600

8. Leak Detection System Maintenance (if applicable)

a. Maintenance time required (hrs) — NA

b. Unit labor cost ($/hr) — ($23/hr; p. 9-3)

c. Maintenance labor cost ($)
Line 8a x Line 8b —

d. Number of pumps needing replacement —

e. Pump unit cost ($/pump) — (p. 3-4)

f. Pump cost ($)
Line 8d x Line 8e —

g. Total maintenance cost ($)
Line 8c + Line 8f — 0

9. Leachate and/or Run-Off Management Subtotal ($)
Line 1e + Line 2q + Line 3c + Line 4i + Line 5d + Line 7g + Line 8g — 1,630,069

COST SUMMARY

CONSTRUCTION	$14,185
OPERATION	$1,630,069
	$1,644,254

WBS- 150 Repair of Perimeter Fencing

WORKSHEET G-5

Inspection and Repairs

1. Inspection

a.	Time required for inspection by technician (hrs)	4	
b.	Technician unit labor cost ($/hr)	20.50	($20.50/hr; p. 9-3)
c.	Technician cost ($) Line 1a x Line 1b	82	
d.	Engineer time required (hrs)	0	
e.	Engineer unit labor cost ($/hr)	0	($45.50/hr; p. 9-3)
f.	Engineer cost ($) Line 1d x Line 1e	0	
g.	Clerical time required (hrs)	0	
h.	Clerical unit labor cost ($/hr)	0	($18/hr; p. 9-3)
i.	Clerical cost ($) Line 1g x Line 1h	0	
j.	Inspection subtotal ($) Line 1c + Line 1f + Line 1i		82

2. Fence Installation or Repair

a.	Amount of fence to be installed or replaced (L.F.)	500	assumed
b.	Fencing unit cost ($/L.F.)	10.55	($10.55/L.F.; p. 3-8)
c.	Fence cost ($) Line 2a x Line 2b	5275	
d.	Number of gates needed	0	
e.	Gate unit cost ($/gate)	0	($80/gate; p. 3-8)
f.	Gate cost ($) Line 2d x Line 2e	0	
g.	Number of fence posts needed	60	assumed
h.	Fence post unit cost ($/post)	57	($57/post; p. 3-8)

WBS-150

WORKSHEET G-5 (page 2)

i. Fence post cost ($)
Line 2g x Line 2h 3420

j. Fence installation/repair cost ($)
Line 2c + Line 2f + Line 2i 8695

3. Other Security Equipment Repair

a. Types of equipment needing repair or replacement NONE

b. Number of items needing replacement _____

c. Replacement unit cost ($/item) _____ (p. 3-8)

d. Security equipment replacement cost ($)
Line 3b x Line 3c 0

4. Inspection and Repairs Subtotal ($)
Line 1j + Line 2j + Line 3d 8777

WBS-160 AIR DISPERSAL MONITORING

Basis: 4 Hi-Vol Samplers Operated for One Year. Lead Samples Collected and Analyzed Monthly.

1.	Sampler Rental Unit Cost ($/wk each)	55
2.	Sampler Decontamination and Calibration ($ each)	15
3.	Sampler Cost (4 units for 52 weeks) ($)	11,500
4.	Sample Collection Time (hrs/sample)	0.5
5.	Sample Labor Time (4 x 12 samples x Line 4) (hrs)	24
6.	Labor Unit Cost ($/hr)	20.50
7.	Labor Cost ($)	492
8.	Analysis Unit Cost, Including Preparation ($)	65
9.	Analysis Cost (Line #8 x 48) ($)	3,120
10.	Total Cost (Lines 3,7, and 9) ($)	15,112

WBS-170. Inspections and Certifications by Independent Professional Engineer

WORKSHEET G-13

Certification of Final Closure

1. Independent Registered Professional Engineer

a.	Initial review of closure plan (hrs)	24	(8 hrs; p. 8-4)
b.	Inspection frequency (inspections/wk)	3	(p. 8-3)
c.	Inspection time required (hrs/inspection)	4	(p. 8-3)
d.	Number of weeks for closure (wks)	52	
e.	Inspection time required (hrs) Line 1b x Line 1c x Line 1d	624	
f.	Prepare final documentation (hrs)	4	(4 hrs; p. 8-4)
g.	Total professional engineer time required (hrs) Line 1a + Line 1e + Line 1f	652	
h.	Professional engineer unit labor cost ($/hr)	45.50	($45.50/hr; p. 8-3)
i.	Professional engineer cost ($) Line 1g x Line 1h		29666

2. Clerical*

a.	Clerical time required (hrs/wk)	2	(2 hrs/wk; p. 8-3)
b.	Clerical unit labor cost ($/hr)	18	($18/hr; p. 8-3)
c.	Clerical cost ($) Line 1d x Line 2a x Line 2b		1872

3. Certification of Closure Subtotal ($)
Line 1i + Line 2c

31538

* Clerical time should be included only if the Professional Engineer is operating independently in a single-person business.

WBS-210. Inventory Management

WORKSHEET D-1

Inventory Management

1. Removing Waste Pile Inventory (Maximum)

   a. Maximum waste pile volume (yd^3) 50

   b. Moving/loading unit cost ($/$yd^3$) 0.98 (p. 4-7)

   c. Mobilization/demobilization cost ($) 115 (p. 4-7)

   d. Waste pile inventory removal cost ($) (Line 1a x Line 1b) + Line 1c 164

2. Containerization of Bulk Waste

   a. Quantity of waste to be containerized (gal) NA *

   b. Container capacity (gal/container) _____ (55 gal/container; p. 4-6)

   c. Number of containers needed Line 2a ÷ Line 2b _____

   d. Containerization unit cost ($/container) _____ (pp. 4-6 and 4-8)

   e. Containerization cost ($) Line 2c x Line 2d 0

3. Container Loading

   a. Number of pallets Line 2c ÷ 4 (round up to nearest integer) NA

   b. Loading unit cost ($/pallet) _____ ($4.66/pallet; p. 4-8)

   c. Container loading cost ($) Line 3a x Line 3b 0

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* Conversion factors are provided in the Volume III appendix.

WBS-210

WORKSHEET D-1 (page 2)

4. Off-Site Management of Inventory

   a. Quantity to be managed off-site (tons) ___NA___*

   b. Off-site management method _____

   c. Transportation unit cost ($/mi) _____ ($4.50/mi; p. 4-15)**

   d. One-way travel distance (mi/load) _____

   e. Truck capacity (tons) _____

   f. Number of loads
      Line 4a ÷ Line 4e
      (round up to nearest integer) _____

   g. Transportation cost ($)
      Line 4c x Line 4d x Line 4f _____

   h. Off-site management unit cost ($/ton) _____ (pp. 4-13 - 4-20)

   i. Off-site management cost ($)
      Line 4g + (Line 4a x Line 4h) ___0___

5. On-Site Disposal

   Include volume on one or more worksheets:
   - Landfill Inventory - Line 1e — $250/yd3
   - Incinerator Inventory - Line 1c
   - Land Treatment Inventory - Line 1a, Line 1c — $12,500

6. Waste Pile Inventory Management Subtotal ($)
   Line 1d + Line 2e + Line 3c + Line 4i — $12,664

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* Conversion factors are provided in the Volume III appendix.

** Based on a 250-mile one-way distance.

WBS-220, Decontamination

WORKSHEET D-5

Decontamination

1. Protective Clothing and Safety Equipment for Facility Personnel

   a. Number of personnel requiring protective clothing and safety equipment for decontamination ___2___

   b. Safety equipment and protective clothing unit cost ($/person) ___80___ ($80/person; p. 5-6)

   c. Safety equipment and protective clothing cost ($)
      Line 1a x Line 1b ___160___

2. Equipment Decontamination

   a. Equipment needing decontamination:

      - pumps and feed lines
      - heavy equipment (e.g., fork lifts, dozers, etc.)
      - other equipment (list) NONE, ALL DECON'D AT END OF PROJECT

   b. Number of pumps and lines ___

   c. Pumps and lines decontamination cost ($) ___ (p. 5-4)

   d. Residual generation rate for pump and line decontamination ___ (50 gal/pump and line; p. 5-1)

   e. Residual generated from pump and line decontamination (gal)
      Line 2b x Line 2d ___

   f. Heavy equipment decontamination cost ($) ___ (p. 5-2)

   g. Total heavy equipment decontamination time (hrs) ___ (p. 5-2)

   h. Residual generation rate for heavy equipment decontamination (gal/hr) ___ (100 gal/hr; p. 5-1)

WORKSHEET D-5 (page 2)

i. Residual generated from heavy equipment decontamination (gal)
Line 2g x Line 2h _____

j. Equipment decontamination cost ($)
Line 2c + Line 2f _____ 0

k. Contaminated fluid and/or residues generated (gal)
Line 2e + Line 2i _____

3. ~~Tank Decontamination~~ (Bin Decon)

a. Number of personnel entering tanks 2

b. Additional personnel safety equipment unit cost ($/person) 0 ($172/person; p. 5-6)

c. Additional personnel safety equipment cost ($)
Line 3a x Line 3b 0

d. Method of tank decontamination High Pressure

e. Tank area to be decontaminated (ft^2) 1792

f. Tank decontamination unit cost ($\$/ft^2$) 0.88 (p. 5-3)

g. Tank decontamination cost ($)
Line 3e x Line 3f 1577

h. Tank decontamination subtotal before surcharge ($)
Line 3c + Line 3g 1577

i. Surcharge factor (factor ≥ 1) 0 (2.0; p. 5-6)

j. Tank decontamination subtotal ($)
Line 3h x (1 + Line 3i) 1577

k. Volume of tank(s) to be filled with sand (gal) 0

WORKSHEET D-5 (page 3)

l. Sand purchase and placement unit cost ($/gal) ___0___ ($0.10/gal; p. 5-7)

m. Tank decontamination and sand filling cost ($)
Line 3j + (Line 3k x Line 3l) ___1577___

n. Residual generation rate for tank decontamination (gal/ft^2) ___4___ (p. 5-3)

o. Contaminated fluid and/or residues generated (gal)
Line 3e x Line 3n ___7168___

4. Pad or Foundation Decontamination

a. Method of pad decontamination ___NONE___

b. Pad area to be decontaminated (ft^2) ___

c. Pad decontamination unit cost ($/ft^2) ___ (p. 5-3)

d. Pad decontamination subtotal ($)
Line 4b x Line 4c ___0___

e. Residual generation rate for pad/foundation decontamination (gal/ft^2) ___ (p. 5-3)

f. Contaminated fluid and/or residues generated (gal)
Line 4b x Line 4e ___

5. Sump Decontamination, Temporary

a. Method of sump decontamination ___High Pressure Wash___

b. Volume to be pumped from sump(s) (gal) ___7168___

c. Time required for pumping (hrs)
Line 5b ÷ 8000
(round up to nearest integer) ___1___

d. Pumping unit cost ($/hr) ___23___ ($23/hr; p. 4-11)

WORKSHEET D-5 (page 4)

e. Pump rental cost, optional ($/hr) 2.70 ($2.70/hr; p. 4-11)

f. Pumping cost ($) (Line 5c x Line 5d) + Line 5e 25.70

g. Sump area to be decontaminated (ft^2) 750

h. Sump decontamination unit cost ($/$ft^2$) 0.88 (p. 5-3)

i. Sump decontamination cost ($) Line 5g x Line 5h 660

j. Sump decontamination subtotal ($) Line 5f + Line 5i 686

k. Residual generation rate for sump decontamination (gal/ft^2) 4 (p. 5-3)

l. Contaminated fluid and/or residues generated (gal) Line 5b + (Line 5g x Line 5k) 10168

6. Container Rinsing

a. Number of containers 0

b. Container rinsing time required (hrs) 0.083 x Line 6a _____

c. Container rinsing unit cost ($/hr) _____ ($32.75/hr; p. 5-10)

d. Container rinsing subtotal ($) Line 6b x Line 6c 0

e. Residual generation rate for container rinsing (gal/drum) _____ (10 gal/drum; p. 5-10)

f. Contaminated fluid/residual generated (gal) Line 6a x Line 6e _____

7. Other Items Needing Decontamination

a. List items NONE

WBS-220

WORKSHEET D-5 (page 5)

b. Method of decontamination for other items NONE

c. Surface area of other items to be decontaminated (ft^2) _____

d. Decontamination unit cost ($/$ft^2$) _____ (p. 5-3)

e. Decontamination of other items subtotal ($)
Line 7c x Line 7d 0

f. Residual generation rate for decontamination of other items (gal/ft^2) _____ (p. 5-3)

g. Contaminated fluid and/or residues generated (gal)
Line 7c x Line 7f _____

8. On-Site Treatment of Decontamination Residues

a. Quantity of residue to be treated (gal) 0

b. Chemicals required for treatment (lb/gal residue or gal/gal residue) _____ (pp. 4-12 - 4-13)

c. Chemicals unit cost ($/lb or $/gal) _____

d. Chemicals cost ($)
Line 8a x Line 8b x Line 8c _____

e. Electricity required for treatment (kwh/gal residue) _____ (pp. 4-12 - 4-13)

f. Electricity unit cost ($/kwh) _____ ($0.05/kwh; p. 4-2)

g. Electricity cost ($)
Line 8a x Line 8e x Line 8f _____

h. Water required for treatment (gal/gal residue) _____ (pp. 4-12 - 4-13)

i. Water unit cost ($/1000 gal) _____ ($1.22/1000 gal; p. 4-2)

j. Water cost ($)
[(Line 8a x Line 8h) ÷ 1000] x Line 8i _____

WORKSHEET D-5 (page 6)

k. Fuel required for treatment (MMBtu/gal residue) _____ (pp. 4-12 - 4-13)

l. Fuel unit cost ($/MMBtu) _____ (p. 4-2)

m. Fuel cost ($)
Line 8a x Line 8k x Line 8l _____

n. Labor required for treatment (hrs/gallon residue) _____ (pp. 4-12 - 4-13)

o. Process operator unit labor cost ($/hr) _____ ($26.50/hr; p. 9-3)

p. Labor cost ($)
Line 8a x Line 8n x Line 8o _____

q. On-site treatment cost ($)
Line 8d + Line 8g + Line 8j + Line 8m + Line 8p 0

r. Residue generated from treatment (gal) _____

9. Testing for Success of Decontamination

a. Number of Samples 26 1 per 100 ft²

b. Sample collection time required (hrs/sample) 0.5

c. Technician unit labor cost ($/hr) 20.50 ($20-50/hr; p. 9-3)

d. Sample collection time (hrs)
Line 9a x Line 9b 13

e. Sampling cost ($)
Line 9c x Line 9d 266.50

f. Cost to test each sample ($/sample) 152 (pp. 5-10 - 5-11) ICP metals

g. Testing cost ($)
Line 9a x Line 9f 3952

h. Testing for success of decontamination cost ($)
Line 9e + Line 9g 4219

i. Sample Transportation 75.00

Total 4294

WORKSHEET D-5 (page 7)

10. Treated Residue Discharge to Sewer

a. Volume of liquid discharged (gal) 0

b. Sewer discharge unit cost ($/1000 gal) _____ ($1.50/1000 gal; p. 4-2)

c. Sewer discharge cost ($) (Line 10a ÷ 1000) x Line 10b 0

11. Off-Site Management of Decontamination Fluid/Residues and/or Treatment Residue

a. Off-site management method Precipitation

b. Quantity to be managed off-site (tons) 10168 *

c. Truck capacity (tons) 5000

d. Number of loads Line 11b ÷ Line 11c (round up to nearest integer) 3

e. One-way distance (mi/load) 50

f. Transportation unit cost ($/mi) 5.61 ($4.50/mi; p. 4-15)**

g. Transportation cost ($) Line 11d x Line 11e x Line 11f 841

h. Off-site management unit cost ($/~~ton~~ gal) 0.38 (pp. 4-13 - 4-20)

i. Off-site management cost ($) Line 11b x Line 11h 3864

j. Contaminated fluid and residue disposal subtotal ($) Line 11g + Line 11i 4705

12. On-Site Disposal

Include volume on one or more worksheets:
Landfill Inventory - Line 1n, Line 1p
Incinerator Inventory - Line 1l, Line 1n
Land Treatment Inventory - Line 1k, Line 1o

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* Conversion factors are provided in the Volume III appendix.
** Based on a 250-mile one-way distance.

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WORKSHEET D-5 (page 8)

13. Facility Decontamination Subtotal ($)
    Line 1c + Line 2j + Line 3m + Line 4d +
    Line 5j + Line 6d + Line 7e + Line 8q +
    Line 9h + Line 10c + Line 11j

11422

WBS-230 Disposal of Bin # Receiving

BIN DISPOSAL

1. Square feet of sheet stock	900
2. Gauge of sheet stock	Assume 11
3. Pounds per square foot of sheet stock	5
4. Pounds of sheet stock	4500
5. Pounds of structural steel (20% of sheet)	900
6. Total pounds of metal	5400
7. Tons of metal	2.7
8. Dismantlement unit cost ($ per ~~ton~~ ft²)	0.52
9. Dismantlement cost	468
10. Loading unit cost ($ per ton)	
11. Loading cost (15% of Dismantlement)	70
12. Transport vehicle capacity (tons)	40
13. Number of transport vehicles	1
14. Distance to salvage yard	50
15. Transport unit cost ($/vehicle/loaded mi)	5.61
16. Transport cost	281
17. Salvage cost ($ per ton)	0
18. Total disposal cost (lines 9,11,16,17)	819

Source of Dismantlement and Loading Costs

R.S. Means Co., Inc

Building Construction Cost Data 1990

WBS- 310. Inventory Management

WORKSHEET D-1

Inventory Management

1. Removing Waste Pile Inventory (Maximum)

   a. Maximum waste pile volume (yd^3) 90

   b. Moving/loading unit cost ($/$yd^3$) 0.98 (p. 4-7)

   c. Mobilization/demobilization cost ($) 115 (p. 4-7)

   d. Waste pile inventory removal cost ($) (Line 1a x Line 1b) + Line 1c 203

2. Containerization of Bulk Waste

   a. Quantity of waste to be containerized (gal) 0 *

   b. Container capacity (gal/container) _____ (55 gal/container; p. 4-6)

   c. Number of containers needed Line 2a ÷ Line 2b _____

   d. Containerization unit cost ($/container) _____ (pp. 4-6 and 4-8)

   e. Containerization cost ($) Line 2c x Line 2d 0

3. Container Loading

   a. Number of pallets Line 2c ÷ 4 (round up to nearest integer) 0

   b. Loading unit cost ($/pallet) _____ ($4.66/pallet; p. 4-8)

   c. Container loading cost ($) Line 3a x Line 3b 0

* Conversion factors are provided in the Volume III appendix.

WBS-310

WORKSHEET D-1 (page 2)

4. Off-Site Management of Inventory

   a. Quantity to be managed off-site (tons) ____0____*

   b. Off-site management method _____

   c. Transportation unit cost ($/mi) _____ ($4.50/mi; p. 4-15)**

   d. One-way travel distance (mi/load) _____

   e. Truck capacity (tons) _____

   f. Number of loads
      Line 4a ÷ Line 4e
      (round up to nearest integer) _____

   g. Transportation cost ($)
      Line 4c x Line 4d x Line 4f _____

   h. Off-site management unit cost ($/ton) _____ (pp. 4-13 - 4-20)

   i. Off-site management cost ($)
      Line 4g + (Line 4a x Line 4h) ____0____

5. On-Site Disposal

   Include volume on one or more worksheets:
   - Landfill Inventory - Line 1e — $250/yd³
   - Incinerator Inventory - Line 1c
   - Land Treatment Inventory - Line 1a, Line 1c — $22,500

6. Waste Pile Inventory Management Subtotal ($)
   Line 1d + Line 2e + Line 3c + Line 4i — 22703

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* Conversion factors are provided in the Volume III appendix.

** Based on a 250-mile one-way distance.

WORKSHEET D-5

Decontamination

1. Protective Clothing and Safety Equipment for Facility Personnel

   a. Number of personnel requiring protective clothing and safety equipment for decontamination ___2___

   b. Safety equipment and protective clothing unit cost ($/person) ___80___ ($80/person; p. 5-6)

   c. Safety equipment and protective clothing cost ($)
      Line 1a x Line 1b ___160___

2. Equipment Decontamination

   a. Equipment needing decontamination:

      - pumps and feed lines
      - heavy equipment (e.g., fork lifts, dozers, etc.)
      - other equipment (list) ___NONE___

   b. Number of pumps and lines ___

   c. Pumps and lines decontamination cost ($) ___ (p. 5-4)

   d. Residual generation rate for pump and line decontamination ___ (50 gal/pump and line; p. 5-1)

   e. Residual generated from pump and line decontamination (gal)
      Line 2b x Line 2d ___

   f. Heavy equipment decontamination cost ($) ___ (p. 5-2)

   g. Total heavy equipment decontamination time (hrs) ___ (p. 5-2)

   h. Residual generation rate for heavy equipment decontamination (gal/hr) ___ (100 gal/hr; p. 5-1)

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WORKSHEET D-5 (page 2)

i. Residual generated from heavy equipment decontamination (gal) Line 2g x Line 2h _____

j. Equipment decontamination cost ($) Line 2c + Line 2f 0

k. Contaminated fluid and/or residues generated (gal) Line 2e + Line 2i _____

3. ~~Tank Decontamination~~ Bin Decon

a. Number of personnel entering tanks 2

b. Additional personnel safety equipment unit cost ($/person) 0 ($172/person; p. 5-6)

c. Additional personnel safety equipment cost ($) Line 3a x Line 3b 0

d. Method of tank decontamination High Pressure Wash

e. Tank area to be decontaminated (ft^2) 2180

f. Tank decontamination unit cost ($\$/ft^2$) 0.88 (p. 5-3)

g. Tank decontamination cost ($) Line 3e x Line 3f 1918

h. Tank decontamination subtotal before surcharge ($) Line 3c + Line 3g 1918

i. Surcharge factor (factor ≥ 1) 0 (2.0; p. 5-6)

j. Tank decontamination subtotal ($) Line 3h x (1 + Line 3i) 1918

k. Volume of tank(s) to be filled with sand (gal) 0

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WORKSHEET D-5 (page 3)

l. Sand purchase and placement unit cost ($/gal) ___0___ ($0.10/gal; p. 5-7)

m. Tank decontamination and sand filling cost ($)
Line 3j + (Line 3k x Line 3l) ___1918___

n. Residual generation rate for tank decontamination (gal/ft^2) ___4___ (p. 5-3)

o. Contaminated fluid and/or residues generated (gal)
Line 3e x Line 3n ___8720___

4. Pad or Foundation Decontamination

a. Method of pad decontamination ___NA___

b. Pad area to be decontaminated (ft^2) _____

c. Pad decontamination unit cost ($/ft^2) _____ (p. 5-3)

d. Pad decontamination subtotal ($)
Line 4b x Line 4c ___0___

e. Residual generation rate for pad/foundation decontamination (gal/ft^2) _____ (p. 5-3)

f. Contaminated fluid and/or residues generated (gal)
Line 4b x Line 4e _____

5. Sump Decontamination, Temporary

a. Method of sump decontamination ___High Pressure Wash___

b. Volume to be pumped from sump(s) (gal) ___8720___

c. Time required for pumping (hrs)
Line 5b ÷ 8000
(round up to nearest integer) ___2___

d. Pumping unit cost ($/hr) ___23___ ($23/hr; p. 4-11)

WORKSHEET D-5 (page 4)

e. Pump rental cost, optional ($/hr) 2.70 ($2.70/hr; p. 4-11)

f. Pumping cost ($) (Line 5c x Line 5d) + Line 5e 51.40

g. Sump area to be decontaminated (ft^2) 750

h. Sump decontamination unit cost ($/$ft^2$) 0.88 (p. 5-3)

i. Sump decontamination cost ($) Line 5g x Line 5h 660

j. Sump decontamination subtotal ($) Line 5f + Line 5i 711

k. Residual generation rate for sump decontamination (gal/ft^2) 4 (p. 5-3)

l. Contaminated fluid and/or residues generated (gal) Line 5b + (Line 5g x Line 5k) 11720

6. Container Rinsing

a. Number of containers 0

b. Container rinsing time required (hrs) 0.083 x Line 6a _____

c. Container rinsing unit cost ($/hr) _____ ($32.75/hr; p. 5-10)

d. Container rinsing subtotal ($) Line 6b x Line 6c 0

e. Residual generation rate for container rinsing (gal/drum) _____ (10 gal/drum; p. 5-10)

f. Contaminated fluid/residual generated (gal) Line 6a x Line 6e _____

7. Other Items Needing Decontamination

a. List items None

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WORKSHEET D-5 (page 5)

b. Method of decontamination for other items NONE

c. Surface area of other items to be decontaminated (ft^2) _____

d. Decontamination unit cost ($\$/ft^2$) _____ (p. 5-3)

e. Decontamination of other items subtotal ($)
Line 7c x Line 7d 0

f. Residual generation rate for decontamination of other items (gal/ft^2) _____ (p. 5-3)

g. Contaminated fluid and/or residues generated (gal)
Line 7c x Line 7f _____

8. On-Site Treatment of Decontamination Residues

a. Quantity of residue to be treated (gal) 0

b. Chemicals required for treatment (lb/gal residue or gal/gal residue) _____ (pp. 4-12 - 4-13)

c. Chemicals unit cost ($/lb or $/gal) _____

d. Chemicals cost ($)
Line 8a x Line 8b x Line 8c _____

e. Electricity required for treatment (kwh/gal residue) _____ (pp. 4-12 - 4-13)

f. Electricity unit cost ($/kwh) _____ ($0.05/kwh; p. 4-2)

g. Electricity cost ($)
Line 8a x Line 8e x Line 8f _____

h. Water required for treatment (gal/gal residue) _____ (pp. 4-12 - 4-13)

i. Water unit cost ($/1000 gal) _____ ($1.22/1000 gal; p. 4-2)

j. Water cost ($)
[(Line 8a x Line 8h) ÷ 1000] x Line 8i _____

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WORKSHEET D-5 (page 6)

k. Fuel required for treatment (MMBtu/gal residue) _____ (pp. 4-12 - 4-13)

l. Fuel unit cost ($/MMBtu) _____ (p. 4-2)

m. Fuel cost ($)
Line 8a x Line 8k x Line 8l _____

n. Labor required for treatment (hrs/gallon residue) _____ (pp. 4-12 - 4-13)

o. Process operator unit labor cost ($/hr) _____ ($26.50/hr; p. 9-3)

p. Labor cost ($)
Line 8a x Line 8n x Line 8o _____

q. On-site treatment cost ($)
Line 8d + Line 8g + Line 8j + Line 8m + Line 8p _____ 0

r. Residue generated from treatment (gal) _____

9. Testing for Success of Decontamination

a. Number of Samples 30 1 per 100 ft²

b. Sample collection time required (hrs/sample) 0.5

c. Technician unit labor cost ($/hr) 20.50 ($20-50/hr; p. 9-3)

d. Sample collection time (hrs)
Line 9a x Line 9b 15

e. Sampling cost ($)
Line 9c x Line 9d 307.50

f. Cost to test each sample ($/sample) $152 (pp. 5-10 - 5-11) ICP ONLY

g. Testing cost ($)
Line 9a x Line 9f 4560

h. Testing for success of decontamination cost ($)
Line 9e + Line 9g 4868

2. Sample Transportation 150

5018

WORKSHEET D-5 (page 7)

10. Treated Residue Discharge to Sewer

a. Volume of liquid discharged (gal) 0

b. Sewer discharge unit cost ($/1000 gal) _____ ($1.50/1000 gal; p. 4-2)

c. Sewer discharge cost ($) (Line 10a ÷ 1000) x Line 10b 0

11. Off-Site Management of Decontamination Fluid/Residues and/or Treatment Residue

a. Off-site management method Precipitation

b. Quantity to be managed off-site (~~tons~~) gal 11720 *

c. Truck capacity (~~tons~~) gal 5000

d. Number of loads Line 11b ÷ Line 11c (round up to nearest integer) 3

e. One-way distance (mi/load) 50

f. Transportation unit cost ($/mi) 5.61 ($4.50/mi; p. 4-15)**

g. Transportation cost ($) Line 11d x Line 11e x Line 11f 841

h. Off-site management unit cost ($/~~ton~~ gal) 0.38 (pp. 4-13 - 4-20)

i. Off-site management cost ($) Line 11b x Line 11h 4454

j. Contaminated fluid and residue disposal subtotal ($) Line 11g + Line 11i 5295

12. On-Site Disposal

Include volume on one or more worksheets:
Landfill Inventory - Line 1n, Line 1p
Incinerator Inventory - Line 1l, Line 1n
Land Treatment Inventory - Line 1k, Line 1o

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* Conversion factors are provided in the Volume III appendix.
** Based on a 250-mile one-way distance.

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WORKSHEET D-5 (page 8)

13. Facility Decontamination Subtotal ($)
Line 1c + Line 2j + Line 3m + Line 4d +
Line 5j + Line 6d + Line 7e + Line 8q +
Line 9h + Line 10c + Line 11j

13102

WBS-330 Disposal of Bin #1

BIN DISPOSAL

1. Square feet of sheet stock	1090
2. Gauge of sheet stock	assume 11
3. Pounds per square foot of sheet stock	5
4. Pounds of sheet stock	5450
5. Pounds of structural steel (20% of sheet)	1090
6. Total pounds of metal	6540
7. Tons of metal	3.27
8. Dismantlement unit cost ($ per ~~ton~~ ft^2)	0.52
9. Dismantlement cost	567
10. Loading unit cost ($ per ton)	
11. Loading cost (Assume 15% of Dismantlement)	85
12. Transport vehicle capacity (tons)	40
13. Number of transport vehicles	1
14. Distance to salvage yard	50
15. Transport unit cost ($/vehicle/loaded mi)	5.61
16. Transport cost	281
17. Salvage cost ($ per ton)	0
18. Total disposal cost (lines 9,11,16,17)	933

WBS- 410. Inventory Management

WORKSHEET D-1

Inventory Management

1. Removing Waste Pile Inventory (Maximum)

   a. Maximum waste pile volume (yd^3) 90

   b. Moving/loading unit cost ($/$yd^3$) 0.98 (p. 4-7)

   c. Mobilization/demobilization cost ($) 115 (p. 4-7)

   d. Waste pile inventory removal cost ($) (Line 1a x Line 1b) + Line 1c 203

2. Containerization of Bulk Waste

   a. Quantity of waste to be containerized (gal) 0 *

   b. Container capacity (gal/container) _____ (55 gal/container; p. 4-6)

   c. Number of containers needed Line 2a ÷ Line 2b _____

   d. Containerization unit cost ($/container) _____ (pp. 4-6 and 4-8)

   e. Containerization cost ($) Line 2c x Line 2d 0

3. Container Loading

   a. Number of pallets Line 2c ÷ 4 (round up to nearest integer) 0

   b. Loading unit cost ($/pallet) _____ ($4.66/pallet; p. 4-8)

   c. Container loading cost ($) Line 3a x Line 3b 0

* Conversion factors are provided in the Volume III appendix.

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WORKSHEET D-1 (page 2)

4. Off-Site Management of Inventory

a. Quantity to be managed off-site (tons) 0 *

b. Off-site management method _____

c. Transportation unit cost ($/mi) _____ ($4.50/mi; p. 4-15)**

d. One-way travel distance (mi/load) _____

e. Truck capacity (tons) _____

f. Number of loads
Line 4a ÷ Line 4e
(round up to nearest integer) _____

g. Transportation cost ($)
Line 4c x Line 4d x Line 4f _____

h. Off-site management unit cost ($/ton) _____ (pp. 4-13 - 4-20)

i. Off-site management cost ($)
Line 4g + (Line 4a x Line 4h) 0

5. On-Site Disposal

Include volume on one or more worksheets:
Landfill Inventory - Line 1e $250/yd3
Incinerator Inventory - Line 1c
Land Treatment Inventory - Line 1a, Line 1c $22,500

6. Waste Pile Inventory Management Subtotal ($)
Line 1d + Line 2e + Line 3c + Line 4i 22,703

* Conversion factors are provided in the Volume III appendix.

** Based on a 250-mile one-way distance.

WORKSHEET D-5

Decontamination

1. Protective Clothing and Safety Equipment for Facility Personnel

   a. Number of personnel requiring protective clothing and safety equipment for decontamination ___2___

   b. Safety equipment and protective clothing unit cost ($/person) ___80___ ($80/person; p. 5-6)

   c. Safety equipment and protective clothing cost ($)
      Line 1a x Line 1b ___160___

2. Equipment Decontamination

   a. Equipment needing decontamination:

      - pumps and feed lines
      - heavy equipment (e.g., fork lifts, dozers, etc.)
      - other equipment (list) ___NONE___

   b. Number of pumps and lines ___

   c. Pumps and lines decontamination cost ($) ___ (p. 5-4)

   d. Residual generation rate for pump and line decontamination ___ (50 gal/pump and line; p. 5-1)

   e. Residual generated from pump and line decontamination (gal)
      Line 2b x Line 2d ___

   f. Heavy equipment decontamination cost ($) ___ (p. 5-2)

   g. Total heavy equipment decontamination time (hrs) ___ (p. 5-2)

   h. Residual generation rate for heavy equipment decontamination (gal/hr) ___ (100 gal/hr; p. 5-1)

WBS- 420

WORKSHEET D-5 (page 2)

i. Residual generated from heavy equipment decontamination (gal)
Line 2g x Line 2h _____

j. Equipment decontamination cost ($)
Line 2c + Line 2f 0

k. Contaminated fluid and/or residues generated (gal)
Line 2e + Line 2i _____

3. ~~Tank~~ Bin Decontamination

a. Number of personnel entering tanks 2

b. Additional personnel safety equipment unit cost ($/person) 0 ($172/person; p. 5-6)

c. Additional personnel safety equipment cost ($)
Line 3a x Line 3b 0

d. Method of tank decontamination High Pressure Wash

e. Tank area to be decontaminated (ft^2) 2180

f. Tank decontamination unit cost ($/$ft^2$) 0.88 (p. 5-3)

g. Tank decontamination cost ($)
Line 3e x Line 3f 1918

h. Tank decontamination subtotal before surcharge ($)
Line 3c + Line 3g 1918

i. Surcharge factor (factor ≥ 1) 0 (2.0; p. 5-6)

j. Tank decontamination subtotal ($)
Line 3h x (1 + Line 3i) 1918

k. Volume of tank(s) to be filled with sand (gal) 0

WORKSHEET D-5 (page 3)

l. Sand purchase and placement unit cost ($/gal) ___0___ ($0.10/gal; p. 5-7)

m. Tank decontamination and sand filling cost ($)
Line 3j + (Line 3k x Line 3l) ___1918___

n. Residual generation rate for tank decontamination (gal/ft^2) ___4___ (p. 5-3)

o. Contaminated fluid and/or residues generated (gal)
Line 3e x Line 3n ___8720___

4. Pad or Foundation Decontamination

a. Method of pad decontamination ___NA___

b. Pad area to be decontaminated (ft^2) _____

c. Pad decontamination unit cost ($/ft^2) _____ (p. 5-3)

d. Pad decontamination subtotal ($)
Line 4b x Line 4c ___0___

e. Residual generation rate for pad/foundation decontamination (gal/ft^2) _____ (p. 5-3)

f. Contaminated fluid and/or residues generated (gal)
Line 4b x Line 4e _____

5. Sump Decontamination, Temporary

a. Method of sump decontamination ___High Pressure Wash___

b. Volume to be pumped from sump(s) (gal) ___8720___

c. Time required for pumping (hrs)
Line 5b ÷ 8000
(round up to nearest integer) ___2___

d. Pumping unit cost ($/hr) ___23___ ($23/hr; p. 4-11)

WBS-420

WORKSHEET D-5 (page 4)

e. Pump rental cost, optional ($/hr) 2.70 ($2.70/hr; p. 4-11)

f. Pumping cost ($) (Line 5c x Line 5d) + Line 5e 51.40

g. Sump area to be decontaminated (ft^2) 750

h. Sump decontamination unit cost ($/$ft^2$) 0.88 (p. 5-3)

i. Sump decontamination cost ($) Line 5g x Line 5h 660

j. Sump decontamination subtotal ($) Line 5f + Line 5i 711

k. Residual generation rate for sump decontamination (gal/ft^2) 4 (p. 5-3)

l. Contaminated fluid and/or residues generated (gal) Line 5b + (Line 5g x Line 5k) 1720

6. Container Rinsing

a. Number of containers 0

b. Container rinsing time required (hrs) 0.083 x Line 6a _____

c. Container rinsing unit cost ($/hr) _____ ($32.75/hr; p. 5-10)

d. Container rinsing subtotal ($) Line 6b x Line 6c 0

e. Residual generation rate for container rinsing (gal/drum) _____ (10 gal/drum; p. 5-10)

f. Contaminated fluid/residual generated (gal) Line 6a x Line 6e _____

7. Other Items Needing Decontamination

a. List items NONE

WORKSHEET D-5 (page 5)

b. Method of decontamination for other items NONE

c. Surface area of other items to be decontaminated (ft^2) _____

d. Decontamination unit cost ($/$ft^2$) _____ (p. 5-3)

e. Decontamination of other items subtotal ($)
Line 7c x Line 7d 0

f. Residual generation rate for decontamination of other items (gal/ft^2) _____ (p. 5-3)

g. Contaminated fluid and/or residues generated (gal)
Line 7c x Line 7f _____

8. On-Site Treatment of Decontamination Residues

a. Quantity of residue to be treated (gal) 0

b. Chemicals required for treatment (lb/gal residue or gal/gal residue) _____ (pp. 4-12 - 4-13)

c. Chemicals unit cost ($/lb or $/gal) _____

d. Chemicals cost ($)
Line 8a x Line 8b x Line 8c _____

e. Electricity required for treatment (kwh/gal residue) _____ (pp. 4-12 - 4-13)

f. Electricity unit cost ($/kwh) _____ ($0.05/kwh; p. 4-2)

g. Electricity cost ($)
Line 8a x Line 8e x Line 8f _____

h. Water required for treatment (gal/gal residue) _____ (pp. 4-12 - 4-13)

i. Water unit cost ($/1000 gal) _____ ($1.22/1000 gal; p. 4-2)

j. Water cost ($)
[(Line 8a x Line 8h) ÷ 1000] x Line 8i _____

WBS-420

WORKSHEET D-5 (page 6)

k.	Fuel required for treatment (MMBtu/gal residue)	_____	(pp. 4-12 - 4-13)
l.	Fuel unit cost ($/MMBtu)	_____	(p. 4-2)
m.	Fuel cost ($) Line 8a x Line 8k x Line 8l	_____	
n.	Labor required for treatment (hrs/gallon residue)	_____	(pp. 4-12 - 4-13)
o.	Process operator unit labor cost ($/hr)	_____	($26.50/hr; p. 9-3)
p.	Labor cost ($) Line 8a x Line 8n x Line 8o	_____	
q.	On-site treatment cost ($) Line 8d + Line 8g + Line 8j + Line 8m + Line 8p		0
r.	Residue generated from treatment (gal)	_____	

9. Testing for Success of Decontamination

a.	Number of Samples	30	1 per 100 ft²
b.	Sample collection time required (hrs/sample)	0.5	
c.	Technician unit labor cost ($/hr)	20.50	($20-50/hr; p. 9-3)
d.	Sample collection time (hrs) Line 9a x Line 9b	15	
e.	Sampling cost ($) Line 9c x Line 9d	307.50	
f.	Cost to test each sample ($/sample)	$152	(pp. 5-10 - 5-11) ICP
g.	Testing cost ($) Line 9a x Line 9f	4560	
h.	Testing for success of decontamination cost ($) Line 9e + Line 9g		4868
i.	Sample Transportation		150
			5018

WBS-420

WORKSHEET D-5 (page 7)

10. Treated Residue Discharge to Sewer

a. Volume of liquid discharged (gal) 0

b. Sewer discharge unit cost ($/1000 gal) _____ ($1.50/1000 gal; p. 4-2)

c. Sewer discharge cost ($) (Line 10a ÷ 1000) x Line 10b 0

11. Off-Site Management of Decontamination Fluid/Residues and/or Treatment Residue

a. Off-site management method Precipitation

b. Quantity to be managed off-site (tons) 11720 *

c. Truck capacity (tons) 5000

d. Number of loads Line 11b ÷ Line 11c (round up to nearest integer) 3

e. One-way distance (mi/load) 50

f. Transportation unit cost ($/mi) 5.61 ($4.50/mi; p. 4-15)**

g. Transportation cost ($) Line 11d x Line 11e x Line 11f 841

h. Off-site management unit cost ($/~~ton~~ gal) 0.38 (pp. 4-13 - 4-20)

i. Off-site management cost ($) Line 11b x Line 11h 4454

j. Contaminated fluid and residue disposal subtotal ($) Line 11g + Line 11i 5295

12. On-Site Disposal

Include volume on one or more worksheets:
Landfill Inventory - Line 1n, Line 1p
Incinerator Inventory - Line 1l, Line 1n
Land Treatment Inventory - Line 1k, Line 1o

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* Conversion factors are provided in the Volume III appendix.
** Based on a 250-mile one-way distance.

WBS-420

WORKSHEET D-5 (page 8)

13. Facility Decontamination Subtotal ($)
    Line 1c + Line 2j + Line 3m + Line 4d +
    Line 5j + Line 6d + Line 7e + Line 8q +
    Line 9h + Line 10c + Line 11j

13102

WBS-430 Disposal of Bin #2

BIN DISPOSAL

1. Square feet of sheet stock	1090
2. Gauge of sheet stock	Assume 11
3. Pounds per square foot of sheet stock	5
4. Pounds of sheet stock	5450
5. Pounds of structural steel (20% of sheet)	1090
6. Total pounds of metal	6540
7. Tons of metal	3.27
8. Dismantlement unit cost ($ per ~~ton~~ ft^2)	0.52
9. Dismantlement cost	567
10. Loading unit cost ($ per ton)	
11. Loading cost (Assume 15% of Dismantlement)	85
12. Transport vehicle capacity (tons)	40
13. Number of transport vehicles	1
14. Distance to salvage yard	50
15. Transport unit cost ($/vehicle/loaded mi)	5.61
16. Transport cost	281
17. Salvage cost ($ per ton)	0
18. Total disposal cost (lines 9,11,16,17)	933

WBS-510
Inventory Management

WORKSHEET D-1

Inventory Management

1. Removing Waste Pile Inventory (Maximum)

   a. Maximum waste pile volume (yd^3) 270

   b. Moving/loading unit cost ($/$yd^3$) 0.98 (p. 4-7)

   c. Mobilization/demobilization cost ($) 115 (p. 4-7)

   d. Waste pile inventory removal cost ($)
   (Line 1a x Line 1b) + Line 1c 380

2. Containerization of Bulk Waste

   a. Quantity of waste to be containerized (gal) NA *

   b. Container capacity (gal/container) _____ (55 gal/container; p. 4-6)

   c. Number of containers needed
   Line 2a ÷ Line 2b _____

   d. Containerization unit cost
   ($/container) _____ (pp. 4-6 and 4-8)

   e. Containerization cost ($)
   Line 2c x Line 2d 0

3. Container Loading

   a. Number of pallets
   Line 2c ÷ 4
   (round up to nearest integer) NA

   b. Loading unit cost
   ($/pallet) _____ ($4.66/pallet; p. 4-8)

   c. Container loading cost ($)
   Line 3a x Line 3b 0

---

* Conversion factors are provided in the Volume III appendix.

WBS-510

WORKSHEET D-1 (page 2)

4. Off-Site Management of Inventory

a. Quantity to be managed off-site (tons) NA *

b. Off-site management method _____

c. Transportation unit cost ($/mi) _____ ($4.50/mi; p. 4-15)**

d. One-way travel distance (mi/load) _____

e. Truck capacity (tons) _____

f. Number of loads
Line 4a ÷ Line 4e
(round up to nearest integer) _____

g. Transportation cost ($)
Line 4c x Line 4d x Line 4f _____

h. Off-site management unit cost ($/ton) _____ (pp. 4-13 - 4-20)

i. Off-site management cost ($)
Line 4g + (Line 4a x Line 4h) 0

5. On-Site Disposal

Include volume on one or more worksheets:
Landfill Inventory - Line 1e $250/yd3
Incinerator Inventory - Line 1c
Land Treatment Inventory - Line 1a, Line 1c $ 67,500

6. Waste Pile Inventory Management Subtotal ($)
Line 1d + Line 2e + Line 3c + Line 4i 67,880

* Conversion factors are provided in the Volume III appendix.

** Based on a 250-mile one-way distance.

WBS-520
Decontamination

WORKSHEET D-5

Decontamination

1. Protective Clothing and Safety Equipment for Facility Personnel

   a. Number of personnel requiring protective clothing and safety equipment for decontamination ___2___

   b. Safety equipment and protective clothing unit cost ($/person) ___80___ ($80/person; p. 5-6)

   c. Safety equipment and protective clothing cost ($)
   Line 1a x Line 1b ___160___

2. Equipment Decontamination

   a. Equipment needing decontamination:

   - pumps and feed lines
   - heavy equipment (e.g., fork lifts, dozers, etc.)
   - other equipment (list) ___NONE___

   b. Number of pumps and lines ___

   c. Pumps and lines decontamination cost ($) ___ (p. 5-4)

   d. Residual generation rate for pump and line decontamination ___ (50 gal/pump and line; p. 5-1)

   e. Residual generated from pump and line decontamination (gal)
   Line 2b x Line 2d ___

   f. Heavy equipment decontamination cost ($) ___ (p. 5-2)

   g. Total heavy equipment decontamination time (hrs) ___ (p. 5-2)

   h. Residual generation rate for heavy equipment decontamination (gal/hr) ___ (100 gal/hr; p. 5-1)

WBS-520

WORKSHEET D-5 (page 2)

i. Residual generated from heavy equipment decontamination (gal) Line 2g x Line 2h — 0

j. Equipment decontamination cost ($) Line 2c + Line 2f — 0

k. Contaminated fluid and/or residues generated (gal) Line 2e + Line 2i — _____

3. Tank Decontamination

a. Number of personnel entering tanks — 2

b. Additional personnel safety equipment unit cost ($/person) — 0 ($172/person; p. 5-6)

c. Additional personnel safety equipment cost ($) Line 3a x Line 3b — 0

d. Method of tank decontamination — High Pressure Wash

e. Tank area to be decontaminated (ft^2) — 6538

f. Tank decontamination unit cost ($\$/ft^2$) — 0.88 (p. 5-3)

g. Tank decontamination cost ($) Line 3e x Line 3f — 5754

h. Tank decontamination subtotal before surcharge ($) Line 3c + Line 3g — 5754

i. Surcharge factor (factor ≥ 1) — 0 (2.0; p. 5-6)

j. Tank decontamination subtotal ($) Line 3h x (1 + Line 3i) — 5754

k. Volume of tank(s) to be filled with sand (gal) — 0

WBS-520

WORKSHEET D-5 (page 3)

l. Sand purchase and placement unit cost ($/gal) ___0___ ($0.10/gal; p. 5-7)

m. Tank decontamination and sand filling cost ($)
Line 3j + (Line 3k x Line 3l) ___5754___

n. Residual generation rate for tank decontamination (gal/ft^2) ___4___ (p. 5-3)

o. Contaminated fluid and/or residues generated (gal)
Line 3e x Line 3n ___26152___

4. Pad or Foundation Decontamination

a. Method of pad decontamination ___NA___

b. Pad area to be decontaminated (ft^2) _____

c. Pad decontamination unit cost ($/ft^2) _____ (p. 5-3)

d. Pad decontamination subtotal ($)
Line 4b x Line 4c ___0___

e. Residual generation rate for pad/foundation decontamination (gal/ft^2) _____ (p. 5-3)

f. Contaminated fluid and/or residues generated (gal)
Line 4b x Line 4e _____

5. Sump Decontamination

a. Method of sump decontamination ___High Pressure Wash___

b. Volume to be pumped from sump(s) (gal) ___26152___

c. Time required for pumping (hrs)
Line 5b ÷ 8000
(round up to nearest integer) ___4___

d. Pumping unit cost ($/hr) ___23___ ($23/hr; p. 4-11)

WBS-520

WORKSHEET D-5 (page 4)

e. Pump rental cost, optional ($/hr) 2.70 ($2.70/hr; p. 4-11)

f. Pumping cost ($) (Line 5c x Line 5d) + Line 5e 103

g. Sump area to be decontaminated (ft^2) 750

h. Sump decontamination unit cost ($/$ft^2$) 0.88 (p. 5-3)

i. Sump decontamination cost ($) Line 5g x Line 5h 660

j. Sump decontamination subtotal ($) Line 5f + Line 5i 763

k. Residual generation rate for sump decontamination (gal/ft^2) 4 (p. 5-3)

l. Contaminated fluid and/or residues generated (gal) Line 5b + (Line 5g x Line 5k) 29152

6. Container Rinsing

a. Number of containers 0

b. Container rinsing time required (hrs) 0.083 x Line 6a _____

c. Container rinsing unit cost ($/hr) _____ ($32.75/hr; p. 5-10)

d. Container rinsing subtotal ($) Line 6b x Line 6c 0

e. Residual generation rate for container rinsing (gal/drum) _____ (10 gal/drum; p. 5-10)

f. Contaminated fluid/residual generated (gal) Line 6a x Line 6e _____

7. Other Items Needing Decontamination

a. List items NONE

WBS-520

WORKSHEET D-5 (page 5)

b. Method of decontamination for other items NONE

c. Surface area of other items to be decontaminated (ft^2) _____

d. Decontamination unit cost ($\$/ft^2$) _____ (p. 5-3)

e. Decontamination of other items subtotal ($)
Line 7c x Line 7d 0

f. Residual generation rate for decontamination of other items (gal/ft^2) _____ (p. 5-3)

g. Contaminated fluid and/or residues generated (gal)
Line 7c x Line 7f _____

8. On-Site Treatment of Decontamination Residues

a. Quantity of residue to be treated (gal) 0

b. Chemicals required for treatment (lb/gal residue or gal/gal residue) _____ (pp. 4-12 - 4-13)

c. Chemicals unit cost ($/lb or $/gal) _____

d. Chemicals cost ($)
Line 8a x Line 8b x Line 8c _____

e. Electricity required for treatment (kwh/gal residue) _____ (pp. 4-12 - 4-13)

f. Electricity unit cost ($/kwh) _____ ($0.05/kwh; p. 4-2)

g. Electricity cost ($)
Line 8a x Line 8e x Line 8f _____

h. Water required for treatment (gal/gal residue) _____ (pp. 4-12 - 4-13)

i. Water unit cost ($/1000 gal) _____ ($1.22/1000 gal; p. 4-2)

j. Water cost ($)
[(Line 8a x Line 8h) ÷ 1000] x Line 8i _____

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WORKSHEET D-5 (page 6)

k.	Fuel required for treatment (MMBtu/gal residue)	_____	(pp. 4-12 - 4-13)
l.	Fuel unit cost ($/MMBtu)	_____	(p. 4-2)
m.	Fuel cost ($) Line 8a x Line 8k x Line 8l	_____	
n.	Labor required for treatment (hrs/gallon residue)	_____	(pp. 4-12 - 4-13)
o.	Process operator unit labor cost ($/hr)	_____	($26.50/hr; p. 9-3)
p.	Labor cost ($) Line 8a x Line 8n x Line 8o	_____	
q.	On-site treatment cost ($) Line 8d + Line 8g + Line 8j + Line 8m + Line 8p		0
r.	Residue generated from treatment (gal)	_____	

9. Testing for Success of Decontamination

a.	Number of Samples	73	1 per 100 ft2
b.	Sample collection time required (hrs/sample)	0.5	
c.	Technician unit labor cost ($/hr)	20.50	($20-50/hr; p. 9-3)
d.	Sample collection time (hrs) Line 9a x Line 9b	36.5	
e.	Sampling cost ($) Line 9c x Line 9d	748.25	
f.	Cost to test each sample ($/sample)	152	(pp. 5-10 - 5-11) ICP
g.	Testing cost ($) Line 9a x Line 9f	11096	
h.	Testing for success of decontamination cost ($) Line 9e + Line 9g		11844
i.	Sample Transportation		300
			12144

WORKSHEET D-5 (page 7)

10. Treated Residue Discharge to Sewer

a. Volume of liquid discharged (gal) 0

b. Sewer discharge unit cost ($/1000 gal) _____ ($1.50/1000 gal; p. 4-2)

c. Sewer discharge cost ($) (Line 10a ÷ 1000) x Line 10b 0

11. Off-Site Management of Decontamination Fluid/Residues and/or Treatment Residue

a. Off-site management method Precipitation

b. Quantity to be managed off-site (~~tons~~) gallons 29152 *

c. Truck capacity (~~tons~~) gallons 5000

d. Number of loads Line 11b ÷ Line 11c (round up to nearest integer) 6

e. One-way distance (mi/load) 50

f. Transportation unit cost ($/mi) 5.61 ($4.50/mi; p. 4-15)**

g. Transportation cost ($) Line 11d x Line 11e x Line 11f 1683

h. Off-site management unit cost ($/~~ton~~) gal 0.38 (pp. 4-13 - 4-20)

i. Off-site management cost ($) Line 11b x Line 11h 11078

j. Contaminated fluid and residue disposal subtotal ($) Line 11g + Line 11i 12761

12. On-Site Disposal

Include volume on one or more worksheets:
Landfill Inventory - Line 1n, Line 1p
Incinerator Inventory - Line 1l, Line 1n
Land Treatment Inventory - Line 1k, Line 1o

---

* Conversion factors are provided in the Volume III appendix.
** Based on a 250-mile one-way distance.

WBS-520

WORKSHEET D-5 (page 8)

13. Facility Decontamination Subtotal ($)
    Line 1c + Line 2j + Line 3m + Line 4d +
    Line 5j + Line 6d + Line 7e + Line 8q +
    Line 9h + Line 10c + Line 11j

31582

WBS-530 Disposal of Bins 3, 4, and 5

BIN DISPOSAL

1. Square feet of sheet stock	3269
2. Gauge of sheet stock	Assume 11
3. Pounds per square foot of sheet stock	5
4. Pounds of sheet stock	16345
5. Pounds of structural steel (20% of sheet)	3269
6. Total pounds of metal	19614
7. Tons of metal	9.81
8. Dismantlement unit cost ($ per ~~ton~~ ft^2)	0.52
9. Dismantlement cost	1700
10. Loading unit cost ($ per ton)	
11. Loading cost (Assume 15% of Dismantlement)	255
12. Transport vehicle capacity (tons)	40
13. Number of transport vehicles	1
14. Distance to salvage yard	50
15. Transport unit cost ($/vehicle/loaded mi)	5.61
16. Transport cost	281
17. Salvage cost ($ per ton)	0
18. Total disposal cost (lines 9,11,16,17)	2236

WBS-610
Inventory Management
WORKSHEET D-1

Inventory Management

1. Removing Waste Pile Inventory (Maximum)

   a. Maximum waste pile volume (yd^3) 270

   b. Moving/loading unit cost ($/$yd^3$) 0.98 (p. 4-7)

   c. Mobilization/demobilization cost ($) 115 (p. 4-7)

   d. Waste pile inventory removal cost ($)
   (Line 1a x Line 1b) + Line 1c 380

2. Containerization of Bulk Waste

   a. Quantity of waste to be containerized (gal) NA *

   b. Container capacity (gal/container) _____ (55 gal/container; p. 4-6)

   c. Number of containers needed
   Line 2a ÷ Line 2b _____

   d. Containerization unit cost ($/container) _____ (pp. 4-6 and 4-8)

   e. Containerization cost ($)
   Line 2c x Line 2d 0

3. Container Loading

   a. Number of pallets
   Line 2c ÷ 4
   (round up to nearest integer) NA

   b. Loading unit cost ($/pallet) _____ ($4.66/pallet; p. 4-8)

   c. Container loading cost ($)
   Line 3a x Line 3b 0

---

* Conversion factors are provided in the Volume III appendix.

WBS-610

WORKSHEET D-1 (page 2)

4. Off-Site Management of Inventory

a. Quantity to be managed off-site (tons) NA *

b. Off-site management method _____

c. Transportation unit cost ($/mi) _____ ($4.50/mi; p. 4-15)**

d. One-way travel distance (mi/load) _____

e. Truck capacity (tons) _____

f. Number of loads
Line 4a ÷ Line 4e
(round up to nearest integer) _____

g. Transportation cost ($)
Line 4c x Line 4d x Line 4f _____

h. Off-site management unit cost ($/ton) _____ (pp. 4-13 - 4-20)

i. Off-site management cost ($)
Line 4g + (Line 4a x Line 4h) 0

5. On-Site Disposal

Include volume on one or more worksheets:
Landfill Inventory - Line 1e $250/yd3
Incinerator Inventory - Line 1c
Land Treatment Inventory - Line 1a, Line 1c $67,500

6. Waste Pile Inventory Management Subtotal ($)
Line 1d + Line 2e + Line 3c + Line 4i 67,880

* Conversion factors are provided in the Volume III appendix.

** Based on a 250-mile one-way distance.

WBS-620
Decontamination

WORKSHEET D-5

Decontamination

1. Protective Clothing and Safety Equipment for Facility Personnel

   a. Number of personnel requiring protective clothing and safety equipment for decontamination ___2___

   b. Safety equipment and protective clothing unit cost ($/person) ___80___ ($80/person; p. 5-6)

   c. Safety equipment and protective clothing cost ($)
   Line 1a x Line 1b ___160___

2. Equipment Decontamination

   a. Equipment needing decontamination:

   - pumps and feed lines
   - heavy equipment (e.g., fork lifts, dozers, etc.)
   - other equipment (list) ___NONE___

   b. Number of pumps and lines _____

   c. Pumps and lines decontamination cost ($) _____ (p. 5-4)

   d. Residual generation rate for pump and line decontamination _____ (50 gal/pump and line; p. 5-1)

   e. Residual generated from pump and line decontamination (gal)
   Line 2b x Line 2d _____

   f. Heavy equipment decontamination cost ($) _____ (p. 5-2)

   g. Total heavy equipment decontamination time (hrs) _____ (p. 5-2)

   h. Residual generation rate for heavy equipment decontamination (gal/hr) _____ (100 gal/hr; p. 5-1)

WBS-620

WORKSHEET D-5 (page 2)

i. Residual generated from heavy equipment decontamination (gal)
Line 2g x Line 2h _____

j. Equipment decontamination cost ($)
Line 2c + Line 2f 0

k. Contaminated fluid and/or residues generated (gal)
Line 2e + Line 2i _____

3. Tank Decontamination

a. Number of personnel entering tanks 2

b. Additional personnel safety equipment unit cost ($/person) 0 ($172/person; p. 5-6)

c. Additional personnel safety equipment cost ($)
Line 3a x Line 3b 0

d. Method of tank decontamination High Pressure Wash

e. Tank area to be decontaminated (ft^2) 6538

f. Tank decontamination unit cost ($\$/ft^2$) 0.88 (p. 5-3)

g. Tank decontamination cost ($)
Line 3e x Line 3f 5754

h. Tank decontamination subtotal before surcharge ($)
Line 3c + Line 3g 5754

i. Surcharge factor (factor ≥ 1) 0 (2.0; p. 5-6)

j. Tank decontamination subtotal ($)
Line 3h x (1 + Line 3i) 5754

k. Volume of tank(s) to be filled with sand (gal) 0

WORKSHEET D-5 (page 3)

l. Sand purchase and placement unit cost ($/gal) 0 ($0.10/gal; p. 5-7)

m. Tank decontamination and sand filling cost ($)
Line 3j + (Line 3k x Line 3l) 5754

n. Residual generation rate for tank decontamination (gal/ft^2) 4 (p. 5-3)

o. Contaminated fluid and/or residues generated (gal)
Line 3e x Line 3n 26152

4. Pad or Foundation Decontamination

a. Method of pad decontamination NA

b. Pad area to be decontaminated (ft^2) _____

c. Pad decontamination unit cost ($/ft^2) _____ (p. 5-3)

d. Pad decontamination subtotal ($)
Line 4b x Line 4c 0

e. Residual generation rate for pad/foundation decontamination (gal/ft^2) _____ (p. 5-3)

f. Contaminated fluid and/or residues generated (gal)
Line 4b x Line 4e _____

5. Sump Decontamination

a. Method of sump decontamination High Pressure Wash

b. Volume to be pumped from sump(s) (gal) 26152

c. Time required for pumping (hrs)
Line 5b ÷ 8000
(round up to nearest integer) 4

d. Pumping unit cost ($/hr) 23 ($23/hr; p. 4-11)

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WORKSHEET D-5 (page 4)

e. Pump rental cost, optional ($/hr) 2.70 ($2.70/hr; p. 4-11)

f. Pumping cost ($)
(Line 5c x Line 5d) + Line 5e 103

g. Sump area to be decontaminated (ft^2) 750

h. Sump decontamination unit cost ($/$ft^2$) 0.88 (p. 5-3)

i. Sump decontamination cost ($)
Line 5g x Line 5h 660

j. Sump decontamination subtotal ($)
Line 5f + Line 5i 763

k. Residual generation rate for sump decontamination (gal/ft^2) 4 (p. 5-3)

l. Contaminated fluid and/or residues generated (gal)
Line 5b + (Line 5g x Line 5k) 29152

6. Container Rinsing

a. Number of containers 0

b. Container rinsing time required (hrs)
0.083 x Line 6a _____

c. Container rinsing unit cost ($/hr) _____ ($32.75/hr; p. 5-10)

d. Container rinsing subtotal ($)
Line 6b x Line 6c 0

e. Residual generation rate for container rinsing (gal/drum) _____ (10 gal/drum; p. 5-10)

f. Contaminated fluid/residual generated (gal)
Line 6a x Line 6e _____

7. Other Items Needing Decontamination

a. List items NONE

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WORKSHEET D-5 (page 5)

b. Method of decontamination for other items NONE

c. Surface area of other items to be decontaminated (ft^2) _____

d. Decontamination unit cost ($/$ft^2$) _____ (p. 5-3)

e. Decontamination of other items subtotal ($)
Line 7c x Line 7d 0

f. Residual generation rate for decontamination of other items (gal/ft^2) _____ (p. 5-3)

g. Contaminated fluid and/or residues generated (gal)
Line 7c x Line 7f _____

8. On-Site Treatment of Decontamination Residues

a. Quantity of residue to be treated (gal) 0

b. Chemicals required for treatment (lb/gal residue or gal/gal residue) _____ (pp. 4-12 - 4-13)

c. Chemicals unit cost ($/lb or $/gal) _____

d. Chemicals cost ($)
Line 8a x Line 8b x Line 8c _____

e. Electricity required for treatment (kwh/gal residue) _____ (pp. 4-12 - 4-13)

f. Electricity unit cost ($/kwh) _____ ($0.05/kwh; p. 4-2)

g. Electricity cost ($)
Line 8a x Line 8e x Line 8f _____

h. Water required for treatment (gal/gal residue) _____ (pp. 4-12 - 4-13)

i. Water unit cost ($/1000 gal) _____ ($1.22/1000 gal; p. 4-2)

j. Water cost ($)
[(Line 8a x Line 8h) ÷ 1000] x Line 8i _____

WORKSHEET D-5 (page 6)

k. Fuel required for treatment (MMBtu/gal residue) _____ (pp. 4-12 - 4-13)

l. Fuel unit cost ($/MMBtu) _____ (p. 4-2)

m. Fuel cost ($)
Line 8a x Line 8k x Line 8l _____

n. Labor required for treatment (hrs/gallon residue) _____ (pp. 4-12 - 4-13)

o. Process operator unit labor cost ($/hr) _____ ($26.50/hr; p. 9-3)

p. Labor cost ($)
Line 8a x Line 8n x Line 8o _____

q. On-site treatment cost ($)
Line 8d + Line 8g + Line 8j + Line 8m + Line 8p 0

r. Residue generated from treatment (gal) _____

9. Testing for Success of Decontamination

a. Number of Samples 73 1 per 100 ft²

b. Sample collection time required (hrs/sample) 0.5

c. Technician unit labor cost ($/hr) 20.50 ($20-50/hr; p. 9-3)

d. Sample collection time (hrs)
Line 9a x Line 9b 36.50

e. Sampling cost ($)
Line 9c x Line 9d 748.25

f. Cost to test each sample ($/sample) 152 (pp. 5-10 - 5-11)

g. Testing cost ($)
Line 9a x Line 9f 11096

h. Testing for success of decontamination cost ($)
Line 9e + Line 9g 11844

2. Sample Transportation 300

12144

WORKSHEET D-5 (page 7)

10. Treated Residue Discharge to Sewer

a. Volume of liquid discharged (gal) 0

b. Sewer discharge unit cost ($/1000 gal) _____ ($1.50/1000 gal; p. 4-2)

c. Sewer discharge cost ($) (Line 10a ÷ 1000) x Line 10b 0

11. Off-Site Management of Decontamination Fluid/Residues and/or Treatment Residue

a. Off-site management method Precipitation

b. Quantity to be managed off-site ~~(tons)~~ gallons 29152 *

c. Truck capacity (~~tons~~) gallons 5000

d. Number of loads Line 11b ÷ Line 11c (round up to nearest integer) 6

e. One-way distance (mi/load) 50

f. Transportation unit cost ($/mi) 5.61 ($4.50/mi; p. 4-15)**

g. Transportation cost ($) Line 11d x Line 11e x Line 11f 1683

h. Off-site management unit cost ($/~~ton~~) gal 0.38 (pp. 4-13 - 4-20)

i. Off-site management cost ($) Line 11b x Line 11h 11078

j. Contaminated fluid and residue disposal subtotal ($) Line 11g + Line 11i 12761

12. On-Site Disposal

Include volume on one or more worksheets:
Landfill Inventory - Line 1n, Line 1p
Incinerator Inventory - Line 1l, Line 1n
Land Treatment Inventory - Line 1k, Line 1o

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* Conversion factors are provided in the Volume III appendix.
** Based on a 250-mile one-way distance.

WBS-620

WORKSHEET D-5 (page 8)

13. Facility Decontamination Subtotal ($)
    Line 1c + Line 2j + Line 3m + Line 4d +
    Line 5j + Line 6d + Line 7e + Line 8q +
    Line 9h + Line 10c + Line 11j

31582

WBS-630 Disposal of Bins 6, 7, and 8

BIN DISPOSAL

1. Square feet of sheet stock	3269
2. Gauge of sheet stock	11
3. Pounds per square foot of sheet stock	5
4. Pounds of sheet stock	16345
5. Pounds of structural steel (20% of sheet)	~~19614~~ 3269
6. Total pounds of metal	19614
7. Tons of metal	9.81
8. Dismantlement unit cost ($ per ~~ton~~ ft²)	0.52
9. Dismantlement cost	1700
10. Loading unit cost ($ per ton)	
11. Loading cost (Assume 15% of Dismantlement)	255
12. Transport vehicle capacity (tons)	40
13. Number of transport vehicles	1
14. Distance to salvage yard	50
15. Transport unit cost ($/vehicle/loaded mi)	5.61
16. Transport cost	281
17. Salvage cost ($ per ton)	0
18. Total disposal cost (lines 9,11,16,17)	2236

WBS-710
Inventory Management
WORKSHEET D-1

Inventory Management

1. Removing Waste Pile Inventory (Maximum)

   a. Maximum waste pile volume (yd^3) 360

   b. Moving/loading unit cost ($/$yd^3$) 0.98 (p. 4-7)

   c. Mobilization/demobilization cost ($) 115 (p. 4-7)

   d. Waste pile inventory removal cost ($)
   (Line 1a x Line 1b) + Line 1c 468

2. Containerization of Bulk Waste

   a. Quantity of waste to be containerized (gal) NA *

   b. Container capacity (gal/container) _____ (55 gal/container; p. 4-6)

   c. Number of containers needed
   Line 2a ÷ Line 2b _____

   d. Containerization unit cost ($/container) _____ (pp. 4-6 and 4-8)

   e. Containerization cost ($)
   Line 2c x Line 2d 0

3. Container Loading

   a. Number of pallets
   Line 2c ÷ 4
   (round up to nearest integer) NA

   b. Loading unit cost ($/pallet) _____ ($4.66/pallet; p. 4-8)

   c. Container loading cost ($)
   Line 3a x Line 3b 0

---

* Conversion factors are provided in the Volume III appendix.

WBS-710

WORKSHEET D-1 (page 2)

4. Off-Site Management of Inventory

a. Quantity to be managed off-site (tons) 0 *

b. Off-site management method _____

c. Transportation unit cost ($/mi) _____ ($4.50/mi; p. 4-15)**

d. One-way travel distance (mi/load) _____

e. Truck capacity (tons) _____

f. Number of loads
Line 4a ÷ Line 4e
(round up to nearest integer) _____

g. Transportation cost ($)
Line 4c x Line 4d x Line 4f _____

h. Off-site management unit cost ($/ton) _____ (pp. 4-13 - 4-20)

i. Off-site management cost ($)
Line 4g + (Line 4a x Line 4h) 0

5. On-Site Disposal

Include volume on one or more worksheets:
Landfill Inventory - Line 1e $250/yd3
Incinerator Inventory - Line 1c
Land Treatment Inventory - Line 1a, Line 1c $90,000

6. Waste Pile Inventory Management Subtotal ($)
Line 1d + Line 2e + Line 3c + Line 4i $90,468

* Conversion factors are provided in the Volume III appendix.

** Based on a 250-mile one-way distance.

WBS-720
Decontamination

WORKSHEET D-5

Decontamination

1. Protective Clothing and Safety Equipment for Facility Personnel

   a. Number of personnel requiring protective clothing and safety equipment for decontamination ___2___

   b. Safety equipment and protective clothing unit cost ($/person) ___80___ ($80/person; p. 5-6)

   c. Safety equipment and protective clothing cost ($)
   Line 1a x Line 1b ___160___

2. Equipment Decontamination

   a. Equipment needing decontamination:

   - pumps and feed lines
   - heavy equipment (e.g., fork lifts, dozers, etc.)
   - other equipment (list) ___NONE___

   b. Number of pumps and lines ___

   c. Pumps and lines decontamination cost ($) ___ (p. 5-4)

   d. Residual generation rate for pump and line decontamination ___ (50 gal/pump and line; p. 5-1)

   e. Residual generated from pump and line decontamination (gal)
   Line 2b x Line 2d ___

   f. Heavy equipment decontamination cost ($) ___ (p. 5-2)

   g. Total heavy equipment decontamination time (hrs) ___ (p. 5-2)

   h. Residual generation rate for heavy equipment decontamination (gal/hr) ___ (100 gal/hr; p. 5-1)

WBS-720

WORKSHEET D-5 (page 2)

i. Residual generated from heavy equipment decontamination (gal) Line 2g x Line 2h — 0

j. Equipment decontamination cost ($) Line 2c + Line 2f — 0

k. Contaminated fluid and/or residues generated (gal) Line 2e + Line 2i — _____

3. ~~Tank~~ Bin Decontamination

a. Number of personnel entering tanks — 2

b. Additional personnel safety equipment unit cost ($/person) — 0 ($172/person; p. 5-6)

c. Additional personnel safety equipment cost ($) Line 3a x Line 3b — 0

d. Method of tank decontamination — High Pressure Wash

e. Tank area to be decontaminated (ft^2) — 4400

f. Tank decontamination unit cost ($\$/ft^2$) — 0.88 (p. 5-3)

g. Tank decontamination cost ($) Line 3e x Line 3f — 3872

h. Tank decontamination subtotal before surcharge ($) Line 3c + Line 3g — 3872

i. Surcharge factor (factor ≥ 1) — 0 (2.0; p. 5-6)

j. Tank decontamination subtotal ($) Line 3h x (1 + Line 3i) — 3872

k. Volume of tank(s) to be filled with sand (gal) — 0

WBS-720

WORKSHEET D-5 (page 3)

l. Sand purchase and placement unit cost ($/gal) ___0___ ($0.10/gal; p. 5-7)

m. Tank decontamination and sand filling cost ($)
Line 3j + (Line 3k x Line 3l) ___3872___

n. Residual generation rate for tank decontamination (gal/ft^2) ___4___ (p. 5-3)

o. Contaminated fluid and/or residues generated (gal)
Line 3e x Line 3n ___17600___

4. Pad or Foundation Decontamination

a. Method of pad decontamination ___NA___

b. Pad area to be decontaminated (ft^2) ___

c. Pad decontamination unit cost ($/ft^2) ___ (p. 5-3)

d. Pad decontamination subtotal ($)
Line 4b x Line 4c ___0___

e. Residual generation rate for pad/foundation decontamination (gal/ft^2) ___ (p. 5-3)

f. Contaminated fluid and/or residues generated (gal)
Line 4b x Line 4e ___

5. Sump Decontamination, Temporary

a. Method of sump decontamination ___High Pressure Wash___

b. Volume to be pumped from sump(s) (gal) ___17600___

c. Time required for pumping (hrs)
Line 5b ÷ 8000
(round up to nearest integer) ___3___

d. Pumping unit cost ($/hr) ___23___ ($23/hr; p. 4-11)

WBS-720

WORKSHEET D-5 (page 4)

e. Pump rental cost, optional ($/hr) 2.70 ($2.70/hr; p. 4-11)

f. Pumping cost ($) (Line 5c x Line 5d) + Line 5e 77.10

g. Sump area to be decontaminated (ft^2) 750

h. Sump decontamination unit cost ($/$ft^2$) 0.88 (p. 5-3)

i. Sump decontamination cost ($) Line 5g x Line 5h 660

j. Sump decontamination subtotal ($) Line 5f + Line 5i 737

k. Residual generation rate for sump decontamination (gal/ft^2) 4 (p. 5-3)

l. Contaminated fluid and/or residues generated (gal) Line 5b + (Line 5g x Line 5k) 20600

6. Container Rinsing

a. Number of containers 0

b. Container rinsing time required (hrs) 0.083 x Line 6a _____

c. Container rinsing unit cost ($/hr) _____ ($32.75/hr; p. 5-10)

d. Container rinsing subtotal ($) Line 6b x Line 6c 0

e. Residual generation rate for container rinsing (gal/drum) _____ (10 gal/drum; p. 5-10)

f. Contaminated fluid/residual generated (gal) Line 6a x Line 6e _____

7. Other Items Needing Decontamination

a. List items NONE

WBS-720

WORKSHEET D-5 (page 5)

b. Method of decontamination for other items NONE

c. Surface area of other items to be decontaminated (ft^2) _____

d. Decontamination unit cost ($/$ft^2$) _____ (p. 5-3)

e. Decontamination of other items subtotal ($)
Line 7c x Line 7d 0

f. Residual generation rate for decontamination of other items (gal/ft^2) _____ (p. 5-3)

g. Contaminated fluid and/or residues generated (gal)
Line 7c x Line 7f _____

8. On-Site Treatment of Decontamination Residues

a. Quantity of residue to be treated (gal) 0

b. Chemicals required for treatment (lb/gal residue or gal/gal residue) _____ (pp. 4-12 - 4-13)

c. Chemicals unit cost ($/lb or $/gal) _____

d. Chemicals cost ($)
Line 8a x Line 8b x Line 8c _____

e. Electricity required for treatment (kwh/gal residue) _____ (pp. 4-12 - 4-13)

f. Electricity unit cost ($/kwh) _____ ($0.05/kwh; p. 4-2)

g. Electricity cost ($)
Line 8a x Line 8e x Line 8f _____

h. Water required for treatment (gal/gal residue) _____ (pp. 4-12 - 4-13)

i. Water unit cost ($/1000 gal) _____ ($1.22/1000 gal; p. 4-2)

j. Water cost ($)
[(Line 8a x Line 8h) ÷ 1000] x Line 8i _____

WORKSHEET D-5 (page 6)

k. Fuel required for treatment (MMBtu/gal residue) _____ (pp. 4-12 - 4-13)

l. Fuel unit cost ($/MMBtu) _____ (p. 4-2)

m. Fuel cost ($)
Line 8a x Line 8k x Line 8l _____

n. Labor required for treatment (hrs/gallon residue) _____ (pp. 4-12 - 4-13)

o. Process operator unit labor cost ($/hr) _____ ($26.50/hr; p. 9-3)

p. Labor cost ($)
Line 8a x Line 8n x Line 8o _____

q. On-site treatment cost ($)
Line 8d + Line 8g + Line 8j + Line 8m + Line 8p 0

r. Residue generated from treatment (gal) _____

9. Testing for Success of Decontamination

a. Number of Samples 52 1 per 100 ft²

b. Sample collection time required (hrs/sample) 0.5

c. Technician unit labor cost ($/hr) 20.50 ($20-50/hr; p. 9-3)

d. Sample collection time (hrs)
Line 9a x Line 9b 26

e. Sampling cost ($)
Line 9c x Line 9d 533

f. Cost to test each sample ($/sample) 152 (pp. 5-10 - 5-11) ICP

g. Testing cost ($)
Line 9a x Line 9f 7904

h. Testing for success of decontamination cost ($)
Line 9e + Line 9g 8437

i. Sample Transportation 225

8662

WBS-720

WORKSHEET D-5 (page 7)

10. Treated Residue Discharge to Sewer

a. Volume of liquid discharged (gal) 0

b. Sewer discharge unit cost ($/1000 gal) _____ ($1.50/1000 gal; p. 4-2)

c. Sewer discharge cost ($)
(Line 10a ÷ 1000) x Line 10b 0

11. Off-Site Management of Decontamination Fluid/Residues and/or Treatment Residue

a. Off-site management method Precipitation

b. Quantity to be managed off-site ~~(tons)~~ gal 20,600 *

c. Truck capacity (~~tons~~) gal 5,000

d. Number of loads
Line 11b ÷ Line 11c
(round up to nearest integer) 5

e. One-way distance (mi/load) 50

f. Transportation unit cost ($/mi) 5.61 ($4.50/mi; p. 4-15)**

g. Transportation cost ($)
Line 11d x Line 11e x Line 11f 1403

h. Off-site management unit cost ($/~~ton~~ gal 0.38 (pp. 4-13 - 4-20)

i. Off-site management cost ($)
Line 11b x Line 11h 7828

j. Contaminated fluid and residue disposal subtotal ($)
Line 11g + Line 11i 9231

12. On-Site Disposal

Include volume on one or more worksheets:
Landfill Inventory - Line 1n, Line 1p
Incinerator Inventory - Line 1l, Line 1n
Land Treatment Inventory - Line 1k, Line 1o

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* Conversion factors are provided in the Volume III appendix.
** Based on a 250-mile one-way distance.

WBS-720

WORKSHEET D-5 (page 8)

13. Facility Decontamination Subtotal ($)
    Line 1c + Line 2j + Line 3m + Line 4d +
    Line 5j + Line 6d + Line 7e + Line 8q +
    Line 9h + Line 10c + Line 11j

22,662

WBS-730 Disposal of Bins 10 and 11

BIN DISPOSAL

1. Square feet of sheet stock	2200
2. Gauge of sheet stock	11 assumed
3. Pounds per square foot of sheet stock	5
4. Pounds of sheet stock	11000
5. Pounds of structural steel (20% of sheet)	2200
6. Total pounds of metal	13200
7. Tons of metal	6.6
8. Dismantlement unit cost ($ per ~~ton~~ ft²)	0.52
9. Dismantlement cost	1144
10. Loading unit cost ($ per ton)	
11. Loading cost (assume 15% of Dismantlement)	172
12. Transport vehicle capacity (tons)	40
13. Number of transport vehicles	1
14. Distance to salvage yard	50 mi.
15. Transport unit cost ($/vehicle/loaded mi)	5.61
16. Transport cost	281
17. Salvage cost ($ per ton)	0
18. Total disposal cost (lines 9,11,16,17)	1597

WBS-810

Inventory Management

WORKSHEET D-1

Inventory Management

1. Removing Waste Pile Inventory (Maximum)

   a. Maximum waste pile volume (yd^3) 210

   b. Moving/loading unit cost ($/$yd^3$) 0.98 (p. 4-7)

   c. Mobilization/demobilization cost ($) 115 (p. 4-7)

   d. Waste pile inventory removal cost ($)
   (Line 1a x Line 1b) + Line 1c 321

2. Containerization of Bulk Waste

   a. Quantity of waste to be containerized (gal) 0 *

   b. Container capacity (gal/container) _____ (55 gal/container; p. 4-6)

   c. Number of containers needed
   Line 2a ÷ Line 2b _____

   d. Containerization unit cost ($/container) _____ (pp. 4-6 and 4-8)

   e. Containerization cost ($)
   Line 2c x Line 2d 0

3. Container Loading

   a. Number of pallets
   Line 2c ÷ 4
   (round up to nearest integer) 0

   b. Loading unit cost ($/pallet) _____ ($4.66/pallet; p. 4-8)

   c. Container loading cost ($)
   Line 3a x Line 3b 0

---

* Conversion factors are provided in the Volume III appendix.

WBS-810

WORKSHEET D-1 (page 2)

4. Off-Site Management of Inventory

a. Quantity to be managed off-site (tons) 0 *

b. Off-site management method _____

c. Transportation unit cost ($/mi) _____ ($4.50/mi; p. 4-15)**

d. One-way travel distance (mi/load) _____

e. Truck capacity (tons) _____

f. Number of loads
Line 4a ÷ Line 4e
(round up to nearest integer) _____

g. Transportation cost ($)
Line 4c x Line 4d x Line 4f _____

h. Off-site management unit cost ($/ton) _____ (pp. 4-13 - 4-20)

i. Off-site management cost ($)
Line 4g + (Line 4a x Line 4h) 0

5. On-Site Disposal

Include volume on one or more worksheets:
Landfill Inventory - Line 1e $250/yd³
Incinerator Inventory - Line 1c
Land Treatment Inventory - Line 1a, Line 1c $52,500

6. Waste Pile Inventory Management Subtotal ($)
Line 1d + Line 2e + Line 3c + Line 4i $52,821

* Conversion factors are provided in the Volume III appendix.

** Based on a 250-mile one-way distance.

WBS-820
Decontamination

WORKSHEET D-5

Decontamination

1. Protective Clothing and Safety Equipment for Facility Personnel

   a. Number of personnel requiring protective clothing and safety equipment for decontamination ___4___

   b. Safety equipment and protective clothing unit cost ($/person) ___80___ ($80/person; p. 5-6)

   c. Safety equipment and protective clothing cost ($)
   Line 1a x Line 1b ___320___

2. Equipment Decontamination

   a. Equipment needing decontamination:

   - pumps and feed lines
   - heavy equipment (e.g., fork lifts, dozers, etc.)
   - other equipment (list) NONE

   b. Number of pumps and lines ___

   c. Pumps and lines decontamination cost ($) ___ (p. 5-4)

   d. Residual generation rate for pump and line decontamination ___ (50 gal/pump and line; p. 5-1)

   e. Residual generated from pump and line decontamination (gal)
   Line 2b x Line 2d ___

   f. Heavy equipment decontamination cost ($) ___ (p. 5-2)

   g. Total heavy equipment decontamination time (hrs) ___ (p. 5-2)

   h. Residual generation rate for heavy equipment decontamination (gal/hr) ___ (100 gal/hr; p. 5-1)

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WORKSHEET D-5 (page 2)

i. Residual generated from heavy equipment decontamination (gal)
Line 2g x Line 2h _____

j. Equipment decontamination cost ($)
Line 2c + Line 2f _____ 0

k. Contaminated fluid and/or residues generated (gal)
Line 2e + Line 2i _____

3. ~~Tank~~ Bin Decontamination

a. Number of personnel entering tanks 4

b. Additional personnel safety equipment unit cost ($/person) 0 ($172/person; p. 5-6)

c. Additional personnel safety equipment cost ($)
Line 3a x Line 3b 0

d. Method of tank decontamination High Pressure Wash

e. Tank area to be decontaminated (ft^2) 7170

f. Tank decontamination unit cost ($\$/ft^2$) 0.88 (p. 5-3)

g. Tank decontamination cost ($)
Line 3e x Line 3f 6310

h. Tank decontamination subtotal before surcharge ($)
Line 3c + Line 3g 6310

i. Surcharge factor (factor ≥ 1) 0 (2.0; p. 5-6)

j. Tank decontamination subtotal ($)
Line 3h x (1 + Line 3i) 6310

k. Volume of tank(s) to be filled with sand (gal) 0

WBS-820

WORKSHEET D-5 (page 3)

l. Sand purchase and placement unit cost ($/gal) ___0___ ($0.10/gal; p. 5-7)

m. Tank decontamination and sand filling cost ($)
Line 3j + (Line 3k x Line 3l) ___6310___

n. Residual generation rate for tank decontamination (gal/ft^2) ___4___ (p. 5-3)

o. Contaminated fluid and/or residues generated (gal)
Line 3e x Line 3n ___28,680___

4. Pad or Foundation Decontamination

a. Method of pad decontamination ___NA___

b. Pad area to be decontaminated (ft^2) _____

c. Pad decontamination unit cost ($/ft^2) _____ (p. 5-3)

d. Pad decontamination subtotal ($)
Line 4b x Line 4c ___0___

e. Residual generation rate for pad/foundation decontamination (gal/ft^2) _____ (p. 5-3)

f. Contaminated fluid and/or residues generated (gal)
Line 4b x Line 4e _____

5. Sump Decontamination, Temporary

a. Method of sump decontamination ___High Pressure Wash___

b. Volume to be pumped from sump(s) (gal) ___28680___

c. Time required for pumping (hrs)
Line 5b ÷ 8000
(round up to nearest integer) ___4___

d. Pumping unit cost ($/hr) ___23___ ($23/hr; p. 4-11)

WBS-820

WORKSHEET D-5 (page 4)

e. Pump rental cost, optional ($/hr) 2.70 ($2.70/hr; p. 4-11)

f. Pumping cost ($) (Line 5c x Line 5d) + Line 5e 103

g. Sump area to be decontaminated (ft^2) 750

h. Sump decontamination unit cost ($/$ft^2$) 0.88 (p. 5-3)

i. Sump decontamination cost ($) Line 5g x Line 5h 660

j. Sump decontamination subtotal ($) Line 5f + Line 5i 763

k. Residual generation rate for sump decontamination (gal/ft^2) 4 (p. 5-3)

l. Contaminated fluid and/or residues generated (gal) Line 5b + (Line 5g x Line 5k) 31680

6. Container Rinsing

a. Number of containers 0

b. Container rinsing time required (hrs) 0.083 x Line 6a _____

c. Container rinsing unit cost ($/hr) _____ ($32.75/hr; p. 5-10)

d. Container rinsing subtotal ($) Line 6b x Line 6c 0

e. Residual generation rate for container rinsing (gal/drum) _____ (10 gal/drum; p. 5-10)

f. Contaminated fluid/residual generated (gal) Line 6a x Line 6e _____

7. Other Items Needing Decontamination

a. List items NONE

WBS-820

WORKSHEET D-5 (page 5)

b. Method of decontamination for other items NONE

c. Surface area of other items to be decontaminated (ft^2) _____

d. Decontamination unit cost ($/$ft^2$) _____ (p. 5-3)

e. Decontamination of other items subtotal ($)
Line 7c x Line 7d 0

f. Residual generation rate for decontamination of other items (gal/ft^2) _____ (p. 5-3)

g. Contaminated fluid and/or residues generated (gal)
Line 7c x Line 7f _____

8. On-Site Treatment of Decontamination Residues

a. Quantity of residue to be treated (gal) 0

b. Chemicals required for treatment (lb/gal residue or gal/gal residue) _____ (pp. 4-12 - 4-13)

c. Chemicals unit cost ($/lb or $/gal) _____

d. Chemicals cost ($)
Line 8a x Line 8b x Line 8c _____

e. Electricity required for treatment (kwh/gal residue) _____ (pp. 4-12 - 4-13)

f. Electricity unit cost ($/kwh) _____ ($0.05/kwh; p. 4-2)

g. Electricity cost ($)
Line 8a x Line 8e x Line 8f _____

h. Water required for treatment (gal/gal residue) _____ (pp. 4-12 - 4-13)

i. Water unit cost ($/1000 gal) _____ ($1.22/1000 gal; p. 4-2)

j. Water cost ($)
[(Line 8a x Line 8h) ÷ 1000] x Line 8i _____

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WORKSHEET D-5 (page 6)

k.	Fuel required for treatment (MMBtu/gal residue)	_____	(pp. 4-12 - 4-13)
l.	Fuel unit cost ($/MMBtu)	_____	(p. 4-2)
m.	Fuel cost ($) Line 8a x Line 8k x Line 8l	_____	
n.	Labor required for treatment (hrs/gallon residue)	_____	(pp. 4-12 - 4-13)
o.	Process operator unit labor cost ($/hr)	_____	($26.50/hr; p. 9-3)
p.	Labor cost ($) Line 8a x Line 8n x Line 8o	_____	
q.	On-site treatment cost ($) Line 8d + Line 8g + Line 8j + Line 8m + Line 8p		0
r.	Residue generated from treatment (gal)	_____	

9. Testing for Success of Decontamination

a.	Number of Samples	80	1 per 100 ft²
b.	Sample collection time required (hrs/sample)	0.5	
c.	Technician unit labor cost ($/hr)	20.50	($20-50/hr; p. 9-3)
d.	Sample collection time (hrs) Line 9a x Line 9b	40	
e.	Sampling cost ($) Line 9c x Line 9d	820	
f.	Cost to test each sample ($/sample)	152	(pp. 5-10 - 5-11) ICP
g.	Testing cost ($) Line 9a x Line 9f	12160	
h.	Testing for success of decontamination cost ($) Line 9e + Line 9g		12980
2.	Sample Transportation		375
			13355

WORKSHEET D-5 (page 7)

10. Treated Residue Discharge to Sewer

a. Volume of liquid discharged (gal) 0

b. Sewer discharge unit cost ($/1000 gal) _____ ($1.50/1000 gal; p. 4-2)

c. Sewer discharge cost ($) (Line 10a ÷ 1000) x Line 10b 0

11. Off-Site Management of Decontamination Fluid/Residues and/or Treatment Residue

a. Off-site management method Precipitation

b. Quantity to be managed off-site (tons) 31680 *

c. Truck capacity (tons) 5000

d. Number of loads Line 11b ÷ Line 11c (round up to nearest integer) 7

e. One-way distance (mi/load) 50

f. Transportation unit cost ($/mi) 5.61 ($4.50/mi; p. 4-15)**

g. Transportation cost ($) Line 11d x Line 11e x Line 11f 1964

h. Off-site management unit cost ($/ton) 0.38 (pp. 4-13 - 4-20)

i. Off-site management cost ($) Line 11b x Line 11h 12038

j. Contaminated fluid and residue disposal subtotal ($) Line 11g + Line 11i 14002

12. On-Site Disposal

Include volume on one or more worksheets:
Landfill Inventory - Line 1n, Line 1p
Incinerator Inventory - Line 1l, Line 1n
Land Treatment Inventory - Line 1k, Line 1o

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* Conversion factors are provided in the Volume III appendix.
** Based on a 250-mile one-way distance.

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WORKSHEET D-5 (page 8)

13. Facility Decontamination Subtotal ($)
    Line 1c + Line 2j + Line 3m + Line 4d +
    Line 5j + Line 6d + Line 7e + Line 8q +
    Line 9h + Line 10c + Line 11j

34750

WBS-830 Disposal of Bins 9, 15, 16, and 17

BIN DISPOSAL

1. Square feet of sheet stock	3585
2. Gauge of sheet stock	assume 11
3. Pounds per square foot of sheet stock	5
4. Pounds of sheet stock	17925
5. Pounds of structural steel (20% of sheet)	3585
6. Total pounds of metal	21510
7. Tons of metal	10.76
8. Dismantlement unit cost ($ per ~~ton~~ ft²) per R.S. Means 1990 Building Cost Data	$ 0.52
9. Dismantlement cost	1864
10. Loading unit cost ($ per ton) per R.S. Means	15% of dismantlement 280
11. Loading cost	280
12. Transport vehicle capacity (tons)	40
13. Number of transport vehicles	1
14. Distance to salvage yard	50 mi.
15. Transport unit cost ($/vehicle/loaded mi)	5.61
16. Transport cost	281
17. Salvage cost ($ per ton)	0
18. Total disposal cost (lines 9,11,16,17)	2425

Reference

Building Construction Cost Data 1990
R.S. Means Co. Inc.

WS - 910
Inventory Managment

WORKSHEET A-1

Inventory Management

1. Recontainerization of Waste

a. Number of damaged/leaking containers needing recontainerization — 238 — Assume 2% of total

b. Recontainerization unit cost ($/container) — 144 — ($144/container; p. 4-8)

c. Recontainerization cost ($) Line 1a x Line 1b — 34272

2. Inventory Quantity (Maximum)

a. Total number of full containers — 11900 — Assumed

b. Container capacity (gal/container) — 55

c. Containerized waste quantity (gal) Line 2a x Line 2b — 654500

d. Total number of empty containers — 0

e. Container weight (lb/container) — 1000 — (55 lb/container; p. 4-8)

f. Total container weight (tons) Line 2c ÷ (Line 2d x Line 2e) — 5950 *

3. Container Loading

a. Number of pallets (Line 2a + Line 2d) ÷ 4 (round up to nearest integer) — 2975

b. Loading unit cost ($/pallet) — 4.66 — ($4.66/pallet; p. 4-8)

c. Container loading cost ($) Line 3a x Line 3b — 13864

* Conversion factors are provided in the Volume III appendix.

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WORKSHEET A-1 (page 2)

4. Off-Site Management of Inventory
(include containers and waste)

a. Quantity to be managed off-site (tons) ____0____ *

b. Truck capacity (tons) _____

c. Number of loads
Line 4a ÷ Line 4b _____

d. One-way distance (mi/load) _____

e. Transportation unit cost ($/mi) _____ ($4.50/mi; p. 4-15)*

f. Transportation cost ($)
Line 4c x Line 4d x Line 4e _____

g. Off-site management unit cost ($/ton) _____ (pp. 4-13 - 4-20)

h. Off-site management cost ($)
Line 4a x Line 4g _____

i. Off-site management subtotal ($)
Line 4f + Line 4h ____0____

5. Solidification Prior to On-Site Landfill Disposal

a. Number of containers to be solidified (containers) ____0____

b. Solidification unit cost ($/container) _____ ($10.50/container; p. 4-9)

c. Solidification cost ($)
Line 5a x Line 5b ____0____

6. On-Site Disposal

Include volume on one or more worksheets:
Landfill Inventory - Line 1h $75/drum
Incinerator Inventory - Line 1d
Land Treatment Inventory - Line 1e $892,500

7. Container and Drum Inventory Management Subtotal ($)
Line 1c + Line 3c + Line 4i + Line 5c $940636

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* Conversion factors are provided in the Volume III appendix.
* Based on a 250-mile one-way distance.

WBS 920 Decontamination and Disposal of Containers

WORKSHEET A-3

Decontamination

1. Protective Clothing and Safety Equipment for Facility Personnel

   a. Number of personnel requiring protective clothing and safety equipment for decontamination ___80___ 4 persons, 20 days each

   b. Safety equipment and protective clothing unit cost ($/person) ___80___ ($80/person; p. 5-6)

   c. Safety equipment and protective clothing cost ($)
   Line 1a x Line 1b ___6400___

2. Equipment Decontamination

   a. Equipment needing decontamination:

   - pumps and feed lines
   - heavy equipment (e.g., fork lifts, dozers, etc.)
   - other equipment (list) Fork lift

   b. Number of pumps and lines ___0___

   c. Pumps and lines decontamination cost ($) ___0___ (p. 5-4)

   d. Residual generation rate for pump and line decontamination ___0___ (50 gal/pump and line; p. 5-1)

   e. Residual generated from pump and line decontamination (gal)
   Line 2b x Line 2d ___0___

   f. Heavy equipment decontamination cost ($) ___79___ (p. 5-2)

   g. Total heavy equipment decontamination time (hrs) ___3___ (p. 5-2)

   h. Residual generation rate for heavy equipment decontamination (gal/hr) ___100___ (100 gal/hr; p. 5-1)

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WORKSHEET A-3 (page 2)

i. Residual generated from heavy equipment decontamination (gal)
Line 2g x Line 2h _____300_____

j. Equipment decontamination cost ($)
Line 2c + Line 2f _____79_____

k. Contaminated fluid and/or residues generated (gal)
Line 2e + Line 2i _____300_____

3. Pad or Foundation Decontamination

a. Method of pad decontamination _____NONE_____

b. Pad area to be decontaminated (ft^2) _____

c. Pad decontamination unit cost ($/$ft^2$) _____(p. 5-3)

d. Pad decontamination subtotal ($)
Line 3b x Line 3c _____0_____

e. Residual generation rate for pad/foundation decontamination (gal/ft^2) _____(p. 5-3)

f. Contaminated fluid and/or residues generated (gal)
Line 3b x Line 3e _____

4. Sump Decontamination

a. Method of sump decontamination _____INCLUDED WITH OTHERS

b. Volume to be pumped from sump(s) (gal) _____

c. Time required for pumping (hrs)
Line 4b ÷ 8000
(round up to nearest integer) _____

d. Pumping unit cost ($/hr) _____($23/hr; p. 4-11)

e. Pump rental cost, optional ($/hr) _____($2.70/hr; p. 4-11)

f. Pumping cost ($)
(Line 4c x Line 4d) + Line 4e _____

WBS-920

WORKSHEET A-3 (page 3)

g. Sump area to be decontaminated (ft^2) _____

h. Sump decontamination unit cost ($\$/ft^2$) _____ (p. 5-3)

i. Sump decontamination cost ($) Line 4g x Line 4h _____

j. Sump decontamination subtotal ($) Line 4f + Line 4i 0

k. Residual generation rate for sump decontamination (gal/ft^2) _____ (p. 5-3)

l. Contaminated fluid and/or residues generated (gal) Line 4b + (Line 4g x Line 4k) _____

5. Container Rinsing

a. Number of containers 11,900

b. Container rinsing time required (hrs) 0.083 x Line 5a 988

c. Container rinsing unit cost ($/hr) 32.75 ($32.75/hr; p. 5-10)

d. Container rinsing subtotal ($) Line 5b x Line 5c 32357

e. Residual generation rate for container rinsing (gal/drum) 10 (10 gal/drum; p. 5-10)

f. Contaminated fluid/residual generated (gal) Line 5a x Line 5e 119,000

6. Other Items Needing Decontamination

a. List items NONE

b. Method of decontamination for other items _____

WBS-920

WORKSHEET A-3 (page 4)

c. Surface area of other items to be decontaminated (ft^2) _____

d. Decontamination unit cost ($/$ft^2$) _____ (p. 5-3)

e. Decontamination of other items subtotal ($)
Line 6c x Line 6d 0

f. Residual generation rate for decontamination of other items (gal/ft^2) _____ (p. 5-3)

g. Contaminated fluid and/or residues generated (gal)
Line 6c x Line 6f _____

7. On-Site Treatment of Decontamination Residues

a. Quantity of residue to be treated (gal) 0

b. Chemicals required for treatment (lb/gal residue or gal/gal residue) _____ (pp. 4-12 - 4-13)

c. Chemicals unit cost ($/lb or $/gal) _____

d. Chemicals cost ($)
Line 7a x Line 7b x Line 7c _____

e. Electricity required for treatment (kwh/gal residue) _____ (pp. 4-12 - 4-13)

f. Electricity unit cost ($/kwh) _____ ($0.05/kwh; p. 4-2)

g. Electricity cost ($)
Line 7a x Line 7e x Line 7f _____

h. Water required for treatment (gal/gal residue) _____ (pp. 4-12 - 4-13)

i. Water unit cost ($/1000 gal) _____ ($1.22/1000 gal; p. 4-2)

j. Water cost ($)
[(Line 7a x Line 7h) ÷ 1000] x Line 7i _____

k. Fuel required for treatment (MMBtu/gal residue) _____ (pp. 4-12 - 4-13)

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WORKSHEET A-3 (page 5)

l.	Fuel unit cost ($/MMBtu)		(p. 4-2)
m.	Fuel cost ($) Line 7a x Line 7k x Line 7l		
n.	Labor required for treatment (hrs/gallon residue)		(pp. 4-12 - 4-13)
o.	Process operator unit labor cost ($/hr)		($26.50/hr; p. 9-3)
p.	Labor cost ($) Line 7a x Line 7n x Line 7o		
q.	On-site treatment cost ($) Line 7d + Line 7g + Line 7j + Line 7m + Line 7p		0
r.	Residue generated from treatment (gal)		

8. Testing for Success of Decontamination

a.	Number of Samples	2	heavy equipment
b.	Sample collection time required (hrs/sample)	0.5	
c.	Technician unit labor cost ($/hr)	20.50	($20.50/hr; p. 9-3)
d.	Sample collection time (hrs) Line 8a x Line 8b	1	
e.	Sampling cost ($) Line 8c x Line 8d	20.50	
f.	Cost to test each sample ($/sample)	152	(pp. 5-10 - 5-11)
g.	Testing cost ($) Line 8a x Line 8f	304	
h.	Testing for success of decontamination cost ($) Line 8e + Line 8g		325

9. Treated Residue Discharge to Sewer

a.	Volume of liquid discharged (gal)	0	
b.	Sewer discharge unit cost ($/1000 gal)		($1.50/1000 gal; p. 4-2)

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WORKSHEET A-3 (page 6)

c. Sewer discharge cost ($)
(Line 9a ÷ 1000) x Line 9b _____ 0 _____

10. Off-Site Management of Decontamination Fluid/Residues and/or Treatment Residue

a. Off-site management method Precipitation

b. Quantity to be managed off-site (~~tons~~ gallons _____ 119,310 _____ *

c. Truck capacity (~~tons~~ gallons _____ 5,000 _____

d. Number of loads
Line 10b ÷ Line 10c
(round up to nearest integer) _____ 24 _____

e. One-way distance (mi/load) _____ 50 _____

f. Transportation unit cost ($/mi) _____ 5.61 _____ ($4.50/mi; p. 4-15)**

g. Transportation cost ($)
Line 10d x Line 10e x Line 10f _____ 6732 _____

h. Off-site management unit cost (~~$/ton~~ $/gal _____ 0.38 _____ (pp. 4-13 - 4-20)

i. Off-site management cost ($)
Line 10b x Line 10h _____ 45334 _____

j. Contaminated fluid and residue disposal subtotal ($)
Line 10g + Line 10i _____ 52066 _____

11. Off-Site Management of Rinsed Containers in a Sanitary Landfill

a. Quantity to be managed off-site (tons) _____ 327 _____ (55 lbs/container; p. 4-5)

b. Truck capacity (tons) _____ 40 _____

c. Number of loads
11a ÷ 11b
(round up to nearest integer) _____ 9 _____

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* Conversion factors are provided in the Volume III appendix.
** Based on a 250-mile one-way distance.

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WORKSHEET A-3 (page 7)

d. One-way distance (mi/load) 50

e. Transportation unit cost ($/mi) 5.19 ($5.19/mi; p. 4-15)***

f. Transportation cost ($)
Line 11c x Line 11d x Line 11e 2336

g. Sanitary landfill disposal cost
($/ton) 12 ($12/ton; p. 5-10)

h. Off-site management cost ($)
Line 11a x Line 11g 3924

i. Empty container disposal
Subtotal ($)
Line 11n + Line 11e 6260

12. On-Site Disposal

Include volume on one or more worksheets:
Landfill Inventory - Line 1n, Line 1p
Incinerator Inventory - Line 1l, Line 1n
Land Treatment Inventory - Line 1k, Line 1o

13. Facility Decontamination Subtotal ($)
Line 1c + Line 2j + Line 3d + Line 4j +
Line 5d + Line 6e + Line 7q + Line 8n +
Line 9c + Line 10j + Line 11i 97487

*** Based on a 25-mile one-way distance.

WBS-1010 Inventory Management

WORKSHEET A-1

Inventory Management

1. Recontainerization of Waste

   a. Number of damaged/leaking containers needing recontainerization ___0___

   b. Recontainerization unit cost ($/container) _____ ($144/container; p. 4-8)

   c. Recontainerization cost ($) Line 1a x Line 1b ___0___

2. Inventory Quantity (Maximum)

   a. Total number of full containers ___17___

   b. Container capacity (gal/container) ___40 yd3___

   c. Containerized waste quantity (~~gal~~) yd3 Line 2a x Line 2b ___680___

   d. Total number of empty containers _____

   e. Container weight (lb/container) _____ (55 lb/container; p. 4-5)

   f. Total container weight (tons) Line 2c + (Line 2d x Line 2e) ___680 yd3___ *

3. Container Loading

   a. Number of pallets (Line 2a + Line 2d) ÷ 4 (round up to nearest integer) ___680 yd3___

   b. Loading unit cost ($/~~pallet~~) yd3 ___0.98___ ($4.66/pallet; p. 4-8)

   c. Container loading cost ($) Line 3a x Line 3b ___666___

* Conversion factors are provided in the Volume III appendix.

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WORKSHEET A-1 (page 2)

4. Off-Site Management of Inventory
(include containers and waste)

a. Quantity to be managed off-site (tons) 0 *

b. Truck capacity (tons) _____

c. Number of loads
Line 4a ÷ Line 4b _____

d. One-way distance (mi/load) _____

e. Transportation unit cost ($/mi) _____ ($4.50/mi; p. 4-15)*

f. Transportation cost ($)
Line 4c x Line 4d x Line 4e _____

g. Off-site management unit cost ($/ton) _____ (pp. 4-13 - 4-20)

h. Off-site management cost ($)
Line 4a x Line 4g _____

i. Off-site management subtotal ($)
Line 4f + Line 4h 0

5. Solidification Prior to On-Site Landfill Disposal

a. Number of containers to be solidified (containers) 0

b. Solidification unit cost ($/container) _____ ($10.50/container; p. 4-9)

c. Solidification cost ($)
Line 5a x Line 5b 0

6. On-Site Disposal

Include volume on one or more worksheets:
Landfill Inventory - Line 1h $250/yd³
Incinerator Inventory - Line 1d
Land Treatment Inventory - Line 1e $170,000

7. Container and Drum Inventory Management Subtotal ($)
Line 1c + Line 3c + Line 4i + Line 5c 170,666

* Conversion factors are provided in the Volume III appendix.
* Based on a 250-mile one-way distance.

WBS-1020. Decontamination and Disposal of Roll-Off Boxes

WORKSHEET A-3

Decontamination

1. Protective Clothing and Safety Equipment for Facility Personnel

   a. Number of personnel requiring protective clothing and safety equipment for decontamination: 40 — 4 workers, 10 days each

   b. Safety equipment and protective clothing unit cost ($/person): 80 ($80/person; p. 5-6)

   c. Safety equipment and protective clothing cost ($) Line 1a x Line 1b: 3 200

2. Equipment Decontamination

   a. Equipment needing decontamination:

   - pumps and feed lines
   - heavy equipment (e.g., fork lifts, dozers, etc.)
   - other equipment (list) loader

   b. Number of pumps and lines: 0

   c. Pumps and lines decontamination cost ($): 0 (p. 5-4)

   d. Residual generation rate for pump and line decontamination: 0 (50 gal/pump and line; p. 5-1)

   e. Residual generated from pump and line decontamination (gal) Line 2b x Line 2d: 0

   f. Heavy equipment decontamination cost ($): 79 (p. 5-2)

   g. Total heavy equipment decontamination time (hrs): 3 (p. 5-2)

   h. Residual generation rate for heavy equipment decontamination (gal/hr): 100 (100 gal/hr; p. 5-1)

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WORKSHEET A-3 (page 2)

i. Residual generated from heavy equipment decontamination (gal)
Line 2g x Line 2h _____300_____

j. Equipment decontamination cost ($)
Line 2c + Line 2f _____79_____

k. Contaminated fluid and/or residues generated (gal)
Line 2e + Line 2i _____300_____

3. Pad or Foundation Decontamination

a. Method of pad decontamination _____NA_____

b. Pad area to be decontaminated (ft^2) _____

c. Pad decontamination unit cost ($/$ft^2$) _____(p. 5-3)

d. Pad decontamination subtotal ($)
Line 3b x Line 3c _____0_____

e. Residual generation rate for pad/foundation decontamination (gal/ft^2) _____(p. 5-3)

f. Contaminated fluid and/or residues generated (gal)
Line 3b x Line 3e _____

4. Sump Decontamination

a. Method of sump decontamination _____INCLUDED WITH OTHERS_____

b. Volume to be pumped from sump(s) (gal) _____

c. Time required for pumping (hrs)
Line 4b ÷ 8000
(round up to nearest integer) _____

d. Pumping unit cost ($/hr) _____($23/hr; p. 4-11)

e. Pump rental cost, optional ($/hr) _____($2.70/hr; p. 4-11)

f. Pumping cost ($)
(Line 4c x Line 4d) + Line 4e _____

WBS-1020

WORKSHEET A-3 (page 3)

g. Sump area to be decontaminated (ft^2) _____

h. Sump decontamination unit cost ($\$/ft^2$) _____ (p. 5-3)

i. Sump decontamination cost ($) Line 4g x Line 4h _____

j. Sump decontamination subtotal ($) Line 4f + Line 4i 0

k. Residual generation rate for sump decontamination (gal/ft^2) _____ (p. 5-3)

l. Contaminated fluid and/or residues generated (gal) Line 4b + (Line 4g x Line 4k) _____

5. Container Rinsing , 17 roll-offs

a. Number of containers 17

b. Container rinsing time required (hrs) 8 hrs per box
C.083 x Line 5a 136

c. Container rinsing unit cost ($/hr) 32.75 ($32.75/hr; p. 5-10)

d. Container rinsing subtotal ($) Line 5b x Line 5c 4454

e. Residual generation rate for container rinsing (gal/drum) 800 gal/box
800 (10 gal/drum; p. 5-10)

f. Contaminated fluid/residual generated (gal) Line 5a x Line 5e 13,600

6. Other Items Needing Decontamination

a. List items NONE

b. Method of decontamination for other items _____

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WORKSHEET A-3 (page 4)

c. Surface area of other items to be decontaminated (ft^2) _____

d. Decontamination unit cost ($/$ft^2$) _____ (p. 5-3)

e. Decontamination of other items subtotal ($)
Line 6c x Line 6d 0

f. Residual generation rate for decontamination of other items (gal/ft^2) _____ (p. 5-3)

g. Contaminated fluid and/or residues generated (gal)
Line 6c x Line 6f _____

7. On-Site Treatment of Decontamination Residues

a. Quantity of residue to be treated (gal) 0

b. Chemicals required for treatment (lb/gal residue or gal/gal residue) _____ (pp. 4-12 - 4-13)

c. Chemicals unit cost ($/lb or $/gal) _____

d. Chemicals cost ($)
Line 7a x Line 7b x Line 7c _____

e. Electricity required for treatment (kwh/gal residue) _____ (pp. 4-12 - 4-13)

f. Electricity unit cost ($/kwh) _____ ($0.05/kwh; p. 4-2)

g. Electricity cost ($)
Line 7a x Line 7e x Line 7f _____

h. Water required for treatment (gal/gal residue) _____ (pp. 4-12 - 4-13)

i. Water unit cost ($/1000 gal) _____ ($1.22/1000 gal; p. 4-2)

j. Water cost ($)
[(Line 7a x Line 7h) ÷ 1000] x Line 7i _____

k. Fuel required for treatment (MMBtu/gal residue) _____ (pp. 4-12 - 4-13)

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WORKSHEET A-3 (page 5)

l.	Fuel unit cost ($/MMBtu)		(p. 4-2)
m.	Fuel cost ($) Line 7a x Line 7k x Line 7l		
n.	Labor required for treatment (hrs/gallon residue)		(pp. 4-12 - 4-13)
o.	Process operator unit labor cost ($/hr)		($26.50/hr; p. 9-3)
p.	Labor cost ($) Line 7a x Line 7n x Line 7o		
q.	On-site treatment cost ($) Line 7d + Line 7g + Line 7j + Line 7m + Line 7p		0
r.	Residue generated from treatment (gal)		

8. Testing for Success of Decontamination

a.	Number of Samples	170	10 per roll-off
b.	Sample collection time required (hrs/sample)	0.5	
c.	Technician unit labor cost ($/hr)	20.50	($20.50/hr; p. 9-3)
d.	Sample collection time (hrs) Line 8a x Line 8b	85	
e.	Sampling cost ($) Line 8c x Line 8d	1743	
f.	Cost to test each sample ($/sample)	152	(pp. 5-10 - 5-11) ICP
g.	Testing cost ($) Line 8a x Line 8f	25840	
h.	Testing for success of decontamination cost ($) Line 8e + Line 8g		27583

9. Treated Residue Discharge to Sewer

a.	Volume of liquid discharged (gal)	0	
b.	Sewer discharge unit cost ($/1000 gal)		($1.50/1000 gal; p. 4-2)

WBS-1020

WORKSHEET A-3 (page 6)

c. Sewer discharge cost ($)
(Line 9a ÷ 1000) x Line 9b — 0

10. Off-Site Management of Decontamination Fluid/Residues and/or Treatment Residue

a. Off-site management method Precipitation

b. Quantity to be managed off-site (~~tons~~) gallons — 13,900 *

c. Truck capacity (~~tons~~) gallons — 5000

d. Number of loads
Line 10b ÷ Line 10c
(round up to nearest integer) — 3

e. One-way distance (mi/load) — 50

f. Transportation unit cost ($/mi) — 5.61 ($4.50/mi; p. 4-15)**

g. Transportation cost ($)
Line 10d x Line 10e x Line 10f — 842

h. Off-site management unit cost (~~$/ton~~) 0.38/gal — 0.38 (pp. 4-13 - 4-20)

i. Off-site management cost ($)
Line 10b x Line 10h — 5282

j. Contaminated fluid and residue disposal subtotal ($)
Line 10g + Line 10i — 6124

11. Off-Site Management of Rinsed Containers in a Sanitary Landfill

Assume 4 tons each

a. Quantity to be managed off-site (tons) — 68 (55 lbs/container; p. 4-5)

b. Truck capacity (tons) — 40

c. Number of loads
11a ÷ 11b
(round up to nearest integer) — 2

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* Conversion factors are provided in the Volume III appendix.
** Based on a 250-mile one-way distance.

WBS-1020

WORKSHEET A-3 (page 7)

d. One-way distance (mi/load) 50

e. Transportation unit cost ($/mi) 5.61 ($5.19/mi; p. 4-15)***

f. Transportation cost ($)
Line 11c x Line 11d x Line 11e 561

g. Sanitary landfill disposal cost
($/ton) 12 ($12/ton; p. 5-10)

h. Off-site management cost ($)
Line 11a x Line 11g 816

i. Empty container disposal
Subtotal ($)
Line 11n + Line 11e 1377

12. On-Site Disposal

Include volume on one or more worksheets:
Landfill Inventory - Line 1n, Line 1p
Incinerator Inventory - Line 1l, Line 1n
Land Treatment Inventory - Line 1k, Line 1o

13. Facility Decontamination Subtotal ($)
Line 1c + Line 2j + Line 3d + Line 4j +
Line 5c + Line 6e + Line 7q + Line 8n +
Line 9c + Line 10j + Line 11i 42817

*** Based on a 25-mile one-way distance.

WBS - 1110
Inventory Management

WORKSHEET B-1

Inventory Management

1. Inventory Quantity (Maximum)

   a. Number of tanks — 1

   b. Tank waste quantity (gal/tank) — 10,000

   c. Total waste quantity (gal)
      Line 1a x Line 1b — 10,000

2. Containerization of Bulk Waste

   a. Quantity of waste to be containerized (gal) — 10,000 *

   b. Container capacity (gal/container) — 5,000 (55 gal/container; tanker p. 4-6)

   c. Number of containers needed
      Line 2a ÷ Line 2b — 2

   d. Containerization unit cost ($/container) — 200 (p. 4-6)

   e. Containerization cost ($)
      Line 2c x Line 2d — 400

3. Container Loading

   a. Number of pallets
      Line 2c ÷ 4
      (round up to nearest integer) — NA

   b. Loading unit cost ($/pallet) — ($4.66/pallet; p.4-8)

   c. Container loading cost ($)
      Line 3a x Line 3b — 0

4. On-Site Treatment of Liquid Waste Inventory

   a. Quantity of waste to be treated (gal) — 0

WBS-1110

WORKSHEET B-1 (page 2)

b. Chemicals required for treatment (lb/gal waste or gal/gal waste)	_____	(pp. 4-12 - 4-13)
c. Chemicals unit cost ($/lb or $/gal)	_____	
d. Chemicals cost ($) Line 4a x Line 4b x Line 4c	_____	
e. Electricity required for treatment (kwh/gal waste)	_____	(pp. 4-12 - 4-13)
f. Electricity unit cost ($/kwh)	_____	($0.05/kwh; p. 4-2)
g. Electricity cost ($) Line 4a x Line 4e x Line 4f	_____	
h. Water required for treatment (gal/gal waste)	_____	(pp. 4-12 - 4-13)
i. Water unit cost ($/1000 gal)	_____	($1.22/1000 gal; p. 4-2)
j. Water cost ($) [(Line 4a x Line 4h) ÷ 1000] x Line 4i	_____	
k. Fuel required for treatment (MMBtu/gal waste)	_____	(pp. 4-12 - 4-13)
l. Fuel unit cost ($/MMBtu)	_____	(p. 4-2)
m. Fuel cost ($) Line 4a x Line 4k x Line 4l	_____	
n. Labor required for treatment (hrs/gallon waste)	_____	(pp. 4-12 - 4-13)
o. Process operator unit labor cost ($/hr)	_____	($26.50/hr; p. 9-3)
p. Labor cost ($) Line 4a x Line 4n x Line 4o	_____	
q. On-site treatment cost ($) Line 4d + Line 4g + Line 4j + Line 4m + Line 4p		0
r. Residue generated from treatment (gal)	_____	

WBS-1110

WORKSHEET B-1 (page 3)

5. Treated Waste Discharge to Sewer

a. Volume of liquid discharged (gal) 0

b. Sewer discharge unit cost ($/1000 gal) _____ ($1.50/1000 gal; p. 4-2)

c. Sewer discharge cost ($) (Line 5a ÷ 1000) x Line 5b) 0

6. Off-Site Management of Inventory and/or Treatment Residue

a. Quantity to be managed off-site (~~tons~~) gal 10,000 *

b. Truck capacity (~~tons~~) gal 5,000

c. Number of loads Line 6a ÷ Line 6b (round up to nearest integer) 2

d. One-way distance (mi/load) 50

e. Transportation unit cost ($/mi) 5.61 ($4.50/mi; p. 4-15)**

f. Transportation cost ($) Line 6c x Line 6d x Line 6e 561

g. Off-site management unit cost ($/~~ton~~) gal $0.38 (pp. 4-13 - 4-20)

h. Off-site management cost ($) Line 6a x Line 6g 3800

i. Off-site management subtotal ($) Line 6f + Line 6h 4361

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* Conversion factors are provided in the Volume III appendix.

** Based on a 250-mile one-way distance.

WBS-1110

WORKSHEET B-1 (page 4)

7. Solidification Prior to On-Site Landfill Disposal

   a. Quantity to be solidified (tons) 0 *

   b. Type of solidification material _____

   c. Solidification unit cost ($/ton) _____ (p. 4-11)

   d. Solidification cost ($) Line 7a x Line 7c 0

   e. Change in waste quantity (factor ≥ 1) _____ (1.0; p. 4-11)

   f. Final solidified waste quantity (tons) Line 7a x (1 + Line 7e) _____

8. On-Site Disposal

   Include volume on one or more worksheets:
   Landfill Inventory - Line 1i, Line 1p
   Incinerator Inventory - Line 1e, Line 1f, Line 1n
   Land Treatment Inventory - Line 1b, Line 1d, Line 1o

9. Treatment/Storage Tank Inventory Management Subtotal ($)
   Line 2e - Line 3c + Line 4c - Line 5c - Line 6i - Line 7d

   4761

* Conversion factors are provided in the Volume III appendix.

WBS-1120
Tank Removal and Disposal

WORKSHEET B-5

Tank Removal

1. Onground Tank

a. Tank surface area (ft^2)	_____	(p. 5-3)
b. Tank removal unit cost ($\$/ft^2$)	_____	(p. 5-9)
c. Tank removal cost ($) Line 1a x Line 1b		_____

2. Inground Tank

a. Cover removal (hrs)	2	(p. 5-7)
b. Cover removal unit cost ($/hr)	200	($200/hr; p. 5-7)
c. Cover removal cost ($) Line 2a x Line 2b	400	
d. Tank wall surface area (ft^2)	—	(p. 5-5)
e. Tank wall thickness (ft)	—	
f. Volume of tank wall to be demolished (yd^3) (Line 2d x Line 2e) ÷ 27	10	
g. Tank wall demolition unit cost ($\$/yd^3$)	82	(p. 5-8)
h. Tank wall loading unit cost ($\$/yd^3$)	0.98	(pp. 6-3 - 6-4)
i. Tank wall demolition and loading cost ($) Line 2f x (Line 2g + Line 2h)	830	
j. Mobilization/demobilization cost ($)	210	(pp. 5-7 and 6-3)
k. Tank wall demolition and loading cost before surcharge ($) Line 2i + Line 2j	1040	
l. Surcharge	0	(1.0; pp. 6-8 - 6-9)
m. Inground tank demolition and loading cost ($) Line 2k x (1 + Line 2l)		1440

W BS-1120

WORKSHEET B-5 (page 2)

3. Underground Tank

a.	Cover removal (hrs)	NA	(p. 5-7)
b.	Cover removal unit cost ($/hr)		($200/hr; p. 5-7)
c.	Cover removal cost ($) Line 3a x Line 3b		
d.	Volume of contaminated soil to be removed (yd^3)		
e.	Excavation and loading unit cost ($/$yd^3$)		(pp. 6-3 - 6-7)
f.	Mobilization/demobilization cost ($)		(pp. 5-7 and 6-3)
g.	Contaminated soil excavation and loading cost ($) (Line 3d x Line 3e) + Line 3f		
h.	Tank surface area (ft^2)		(p. 5-3)
i.	Tank removal unit cost ($/$ft^2$)		(p. 5-9)
j.	Tank removal cost ($) Line 3h x Line 3i		
k.	Surcharge		(1.0; pp. 6-8 - 6-9)
l.	Underground tank removal cost ($) (Line 3g + Line 3j) x (1 x Line 3k)		0

4. Concrete Slab or Deadman Removal
(double-walled underground tanks only)

a.	Volume of concrete slab or deadman to be demolished (yd^3)	NA	
b.	Demolition unit cost ($/$yd^3$)		($82/$yd^3$; p. 6-1)
c.	Concrete slab or deadman loading unit cost ($/$yd^3$)		(pp. 6-3 - 6-4)
d.	Demolition and loading cost ($) Line 4a x (Line 4b + Line 4c)		
e.	Mobilization/demobilization cost ($)		(p. 6-3)
f.	Concrete slab or deadman demolition and loading cost before surcharge ($) Line 4d + Line 4e		

WBS-1120

WORKSHEET B-5 (page 3)

g. Surcharge factor _____ (1.0; pp. 6-8 - 6-9)

h. Concrete slab or deadman demolition cost ($)
Line 4f x (1 + Line 4g) 0

5. Off-Site Management of Rubble, Decontamination Residue, and/or Treatment Residue

a. Volume to be managed off-site ~~(tons)~~ yd3 10 *

b. Truck capacity (~~tons~~ yd3 40

c. Number of loads
Line 5a ÷ Line 5b
(round up to nearest integer 1

d. Transportation unit cost ($/mi) 5.61 ($4.50/mi; p. 4-15)**

e. One-way distance (mi/load) 100

f. Transportation cost ($)
Line 5c x Line 5d x Line 5e 561

g. Off-site management unit cost ($/~~ton~~) yd3 275 (pp. 4-13 - 4-20)

h. Off-site management cost ($)
Line 5a x Line 5g 2750

i. Off-site management subtotal ($)
Line 5f + Line 5i 3311

6. On-Site Disposal

Include volume on one or more worksheets:
Landfill Inventory - Line 1m, Line 1n, Line 1o
Incinerator Inventory - Line 1l, Line 1n
Land Treatment Inventory - Line 1k, Line 1o

7. Tank Removal Subtotal ($)
Line 1c + Line 2m + Line 3l + Line 4h + Line 5i 4751

* Conversion factors are provided in the Volume III appendix.

** Based on 250-mile one-way distance.

WBS- 1210 Demolition on Process Equipment and Structures

Process Equipment Decontamination

Includes: Furnaces and Baghouses
Assumptions: Equipment Can Be Decontaminated,
Decon Crew is 4 people,
Decon Time is 480 hours,
Decon Fluid Generated at 100 gal/hr and Disposed as Hazardous Waste,
Decon Verification Sample (AA-Pb) Taken Hourly

1. Personal Protective Equipment (240) man-days x $80) -	$19,200
2A. Decon Fluid (Gal) (480 hrs x 100 gal/hr) -	48,000
2B. Decon Fluid Transportation - (10 trucks x 50 mi x $5.61/loaded mile)	2,805
2C. Decon Fluid Disposal ($0.38/gal) -	18,240
2. Decon FLuid transportation and Disposal Total (2B+2C)	$ 5,402
3A. Number of Decon Verification Samples	480
3B. Sample Collection Time (hrs/sample)	0.5
3C. Sample Collection Labor Time (hrs)	240
3D. Sample Collection Labor Cost ($20.50 x 3C)	4,920
3E. Sample Analysis Unit Cost ($/ICP Sample)	152
3F. Sample Analysis Cost ($)	72,960
3G. Sample Transportation Cost	3,000
3. Decon Verification Total (3D+3F+3G)	$ 80,880
4. Total	$121,125

Demolition

Includes: Roundhouse, office structure, furnace building, S & R building, white metal building, PTR building, and baghouses

1. Volume of Structures to be Demolished (ft3)	1,189,500
2. Unit Cost of Demolition ($/ft3) (includes demolition, loading, hauling, and disposal as nonhazardous solid waste)	0.20
3. Cost of Demolition	$ 237,900
TOTAL COST OF DECONTAMINATION AND DEMOLITION	$ 359,025

WBS-1220

Demolition of Paved Surfaces

WORKSHEET D-6

Foundation/Pad Removal

1. Protective Clothing

a.	Number of personnel requiring protective clothing for demolition	80	4 workers 20 days each
b.	Protective clothing unit cost ($/person)	77	($77/person; p. 6-8)
c.	Protective clothing cost ($) Line 1a x Line 1b		6160

2. Pad or Foundation Demolition

a.	Volume of pad/foundation to be demolished (yd^3)	3000	assume 160,000 ft^2 6 inch thick
b.	Demoliton unit cost ($/$yd^3$)	82	($82/$yd^3$; p. 6-1)
c.	Pad/foundation loading unit cost ($/$yd^3$)	5.33	(p. 4-7)
d.	Demolition and loading cost ($) Line 2a x (Line 2b + Line 2c)	87.33	
e.	Mobilization/demolition cost ($)	115	(p. 4-7)
f.	Pad/foundation demolition and loading cost before surcharge ($) Line 2d + Line 2e	262105	
g.	Surcharge factor	0.0	(1.0; pp. 6-8 - 6-9)
h.	Foundation demolition cost ($) Line 2f x (1 + Line 2g)		262105

3. Equipment Decontamination

a.	Total heavy equipment decontamination time (hrs)	INCLUDED IN WBS-1250	(p. 5-2)
b.	Heavy equipment decontamination cost ($)		0 (p. 5-2)
c.	Residual generation rate for heavy equipment decontamination (gal/hr)	100	(100 gal/hr; p. 5-1)
d.	Contaminated fluid and/or residue generated (gal) Line 3a x Line 3c	300	

WBS-1220

WORKSHEET D-6 (page 2)

4. On-Site Treatment of Decontamination Residues

a.	Quantity of residue to be treated (gal)	0	
b.	Chemicals required for treatment (lb/gal residue or gal/gal residue)	_____	(pp. 4-12 - 4-13)
c.	Chemicals unit cost ($/lb or $/gal)	_____	
d.	Chemicals cost ($) Line 4a x Line 4b x Line 4c	_____	
e.	Electricity required for treatment (kwh/gal residue)	_____	(pp. 4-12 - 4-13)
f.	Electricity unit cost ($/kwh)	_____	($0.05/kwh; p. 4-2)
g.	Electricity cost ($) Line 4a x Line 4e x Line 4f	_____	
h.	Water required for treatment (gal/gal residue)	_____	(pp. 4-12 - 4-13)
i.	Water unit cost ($/1000 gal)	_____	($1.22/1000 gal; 4-2)
j.	Water cost ($) [(Line 4a x Line 4h) ÷ 1000] x Line 4i	_____	
k.	Fuel required for treatment (MMBtu/gal residue)	_____	(pp. 4-12 - 4-13)
l.	Fuel unit cost ($/MMBtu)	_____	(p. 4-2)
m.	Fuel cost ($) Line 4a x Line 4k x Line 4l	_____	
n.	Labor required for treatment (hrs/gallon residue)	_____	(pp. 4-12 - 4-13)
o.	Process operator unit labor cost ($/hr)	_____	($26.50/hr; p. 9-3)
p.	Labor cost ($) Line 4a x Line 4n x Line 4o	_____	
q.	On-site treatment cost ($) Line 4d + Line 4g + Line 4j + Line 4m + Line 4p		0
r.	Residue generated from treatment (gal)	_____	

WBS-1220

WORKSHEET D-6 (page 3)

5. Treated Residue Discharge to Sewer

   a. Volume of liquid discharged (gal) — 0

   b. Sewer discharge unit cost ($/1000 gal) — _____ ($1.50/1000 gal; p. 4-2)

   c. Sewer discharge cost ($) (Line 5a ÷ 1000) x Line 5b — 0

6. Off-Site Management of Rubble, Decontamination Residue, and/or Treatment Residue

   3000 lbs / yards^3

   a. Volume to be managed off-site (tons) — 4500 * 3000 yd 3

   b. Truck capacity (tons) — 40

   c. Number of loads Line 6a ÷ Line 6b (round up to nearest integer) — 113

   d. Transportation unit cost ($/mi) — 5.61 ($4.50/mi; p. 4-15)**

   e. One-way distance (mi/load) — 100

   f. Transportation cost ($) Line 6c x Line 6d x Line 6e — 63393

   g. Off-site management unit cost ($/ton) $275/yd3 $185/ton — 185 (pp. 4-13 - 4-20)

   h. Off-site management cost ($) Line 6a x Line 6g — 832,500

   i. Off-site management subtotal ($) Line 6f + Line 6i — 895893

7. On-Site Disposal

   Include volume on one or more worksheets:
   Landfill Inventory - Line 1m, Line 1n, Line 1p
   Incinerator Inventory - Line 1l, Line 1n
   Land Treatment Inventory - Line 1k, Line 1o

8. Demolition and Removal Subtotal ($) Line 1c + Line 2h + Line 3b + Line 4q + Line 5c + Line 6i — 1,164,158

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* Conversion factors are provided in the Volume III appendix.
** Based on a 250-mile one-way distance.

WBS- 1230 Installation of Final Cover

WORKSHEET G-9

Final Cover

1. Native Soil for Slope and Fill

   a. Length of area to be capped (yd) 0

   b. Width of area to be capped (yd) _____

   c. Quantity needed (yd^3) _____ (*)

   d. Excavation unit cost ($/$yd^3$) _____

   e. Placement and spreading unit cost ($/$yd^3$) _____ ($2.48/yd^3; p. 7-6)

   f. Compaction unit cost ($/$yd^3$) _____ ($2.25/yd^3; p. 7-6)

   g. Total native soil unit cost ($/$yd^3$)
      Line 1d + Line 1e + Line 1f _____ ($1.04/$yd^3$; p. 7-6)

   h. Percent compaction (decimal < 1) _____ (0.25; p. 7-10)

   i. Native soil cost ($)
      Line 1c x Line 1g x (1 + Line 1h) 0

2. On-Site Clay

   a. Area to be capped (yd^2)
      Line 1a x Line 1b 0

   b. Depth of clay needed (yd) _____

   c. Quantity needed (yd^3)
      Line 2a x Line 2b _____

   d. Excavation unit cost ($/$yd^3$) _____ ($4.05/yd^3; p. 7-10)

   e. Placement/spreading unit cost ($/$yd^3$) _____ ($2.25/yd^3; p. 7-10)

   f. Compaction unit cost ($/$yd^3$) _____ ($2.41/yd^3; p. 7-10)

   g. Total on-site clay unit cost ($/$yd^3$)
      Line 2d + Line 2e + Line 2f _____ ($8.71/$yd^3$; pp. 7-10 - 7-11)

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* Formula provided in Final Cover and Revegetation chapter of Volume III.

WBS-1230

WORKSHEET G-9 (page 2)

h. Percent compaction (decimal < 1) _____ (0.25; p. 7-10)

i. Clay lift thickness (yd) _____ (0.22 yd; p. 7-12)

j. Number of lifts
Line 2b ÷ Line 2i _____

k. Number of samples to be tested/lift (samples/lift) _____ (3 samples/lift; p. 7-12)

l. Number of samples to be tested
Line 2j x Line 2k _____

m. Clay testing unit cost ($/sample) _____ ($230/sample; p. 7-12)

n. Clay testing cost
Line 2l x Line 2m _____

o. On-site clay cost ($)
Line 2c x Line 2g x (1 + Line 2h) + Line 2n 0

3. Off-Site Clay

a. Area to be capped (yd^2)
Line 1a x Line 1b 21667

b. Depth of clay needed (yd) 0.67 (0.67 yd; p. 7-4)

c. Quantity needed (yd^3)
Line 3a x Line 3b 14517

d. Purchase unit cost ($/$yd^3$) 4.75 ($4.75/yd^3; p. 7-13)

e. Delivery unit cost ($/$yd^3$) 10.16 ($10.16/yd^3; p. 7-13)

f. Spreading unit cost ($/$yd^3$) 1.03 ($1.03/yd^3; p. 7-13)

g. Compaction unit cost ($/$yd^3$) 2.41 ($2.41/yd^3; p. 7-13)

h. Total off-site clay unit cost ($/$yd^3$)
Line 3d + Line 3e + Line 3f + Line 3g 18.35 ($18.35/$yd^3$; pp. 7-13 - 7-14)

i. Percent compaction (decimal < 1) 0.40 (0.40; p. 7-10)

j. Clay lift thickness (yd) 0.22 (0.22 yd; p. 7-12)

WORKSHEET G-9 (page 3)

k. Number of lifts
Line 3b ÷ Line 3j — 3

l. Number of samples to be tested/lift (samples/lift) — 3 (3 samples/lift; p. 7-12)

m. Number of samples to be tested
Line 3k x Line 3l — 9

n. Clay testing unit cost ($/sample) — 230 ($230/sample; p. 7-12)

o. Clay testing cost
Line 3m x Line 3n — 2070

p. Off-site clay cost ($)
Line 3c x Line 3h x (1 + Line 3i) + Line 3o — 375012

4. Synthetic Membrane

a. Type of membrane — 30 mil PVC

b. Quantity needed (yd^2) — 22000

c. Purchase unit cost ($/$yd^2$) — 2.60 ($2.60/yd^2; p. 7-16)

d. Delivery unit cost ($/$yd^2$) — 0.25 ($0.25/yd^2; p. 7-16)

e. Installation unit cost ($/$yd^2$) — 0.50 ($0.50/yd^2; p. 7-16)

f. Total synthetic membrane unit cost ($/$yd^2$)
Line 4c + Line 4d + Line 4e — 3.35 ($3.35/$yd^2$; p. 7-16)

g. Synthetic liner testing (percent of total synthetic membrane unit cost) — 0.25 (0.25; p. 7-15)

h. Synthetic membrane cost ($)
Line 4b x Line 4f x (1 + Line 4g) — 92125

5. Sand

a. Area to be capped (yd^2)
Line 1a x Line 1b — 21667

b. Depth of sand needed (yd) — 0.33 (0.33 yd; p. 7-4)

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WORKSHEET G-9 (page 4)

c. Quantity needed (yd^3)
Line 5a x Line 5b — 7150

d. Purchase unit cost ($/$yd^3$) — 5.50 ($5.50/yd^3; p. 7-20)

e. Delivery unit cost ($/$yd^3$) — 2.61 ($2.61/yd^3; p. 7-20)

f. Spreading unit cost ($/$yd^3$) — 1.03 ($1.03/yd^3; p. 7-20)

g. Compaction unit cost ($/$yd^3$) — 1.49 ($1.49/yd^3; p. 7-20)

h. Total sand unit cost ($/$yd^3$)
Line 5d + Line 5e + Line 5f + Line 5g — 10.63 ($10.63/$yd^3$; pp. 7-20 - 7-21)

i. Percent compaction (decimal < 1) — 0.10 (0.10; p. 7-10)

j. Sand cost ($)
Line 5c x Line 5h x (1 + Line 5i) — 83605

6. Gravel

a. Area to be capped (yd^2)
Line 1a x Line 1b — 21667

b. Depth of gravel needed (yd) — 0.33 (0.33 yd; p. 7-4)

c. Quantity needed (yd^3)
Line 6a x Line 6b — 7150

d. Purchase unit cost ($/$yd^3$) — 3.85 ($3.85/yd^3; p. 7-17)

e. Delivery unit cost ($/$yd^3$) — 2.61 ($2.61/yd^3; p. 7-17)

f. Spreading unit cost ($/$yd^3$) — 1.03 ($1.03/yd^3; p. 7-17)

g. Compaction unit cost ($/$yd^3$) — 1.22 ($1.22/yd^3; p. 7-17)

h. Total gravel unit cost ($/$yd^3$)
Line 6d + Line 6e + Line 6f + Line 6g — 8.71 ($8.71/$yd^3$; pp. 7-17 - 7-18)

i. Percent compaction (decimal < 1) — 0.05 (0.05; p. 7-10)

j. Gravel cost ($)
Line 6c x Line 6h x (1 + Line 6i) — 65390

WORKSHEET G-9 (page 5)

7. Drainage Tile

a. Type of tile Perforated PVC

b. Length needed (L.F.) 3700

c. Tile unit cost ($/L.F.) 0.50 ($0.50/L.F.; p. 7-22)

d. Trenching and backfilling unit cost ($/L.F.) 0.56 ($0.56/L.F.; p. 7-22)

e. Total drainage tile unit cost ($/L.F.)
Line 7c + Line 7d 1.06 ($1.06/L.F.; pp. 7-22 - 7-23)

f. Drainage tile cost ($)
Line 7b x Line 7e 3922

8. Geotextile Filter Fabric

a. Type of geotextile _____

b. Quantity needed (yd^2) 21667

c. Purchase unit cost ($/$yd^2$) 0.69 ($0.69/yd^2; p. 7-24)

d. Delivery unit cost ($/$yd^2$) 0.05 ($0.05/yd^2; p. 7-24)

e. Installation unit cost ($/$yd^2$) 0.09 ($0.09/yd^2; p. 7-24)

f. Total geotextile filter fabric unit cost ($/$yd^2$)
Line 8c + Line 8d + Line 8e 0.83 ($0.83/$yd^2$; p. 7-24)

g. Geotextile filter fabric cost ($)
Line 8b x Line 8f 17984

9. Topsoil

a. Area to be capped (yd^2)
Line 1a x Line 1b 21667

b. Depth of topsoil needed (yd) 0.67 (0.67 yd; p. 7-4)

c. Quantity needed (yd^3)
Line 9a x Line 9b 14517

d. Purchase unit cost ($/$yd^3$) 6.56 ($6.56/yd^3; p. 7-26)

e. Delivery unit cost ($/$yd^3$) 2.61 ($2.61/yd^3; p. 7-26)

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WORKSHEET G-9 (page 6)

f. Spreading unit cost ($/yd^3) 1.03 ($1.03/yd^3; p. 7-26)

g. Compaction unit cost ($/yd^3) 1.22 ($1.22/yd^3; p. 7-26)

h. Total topsoil unit cost ($/yd^3)
Line 9d + Line 9e + Line 9f + Line 9g 11.42 ($11.42/yd^3; p. 7-26 - 7-27)

i. Percent compaction (decimal < 1) 0.25 (0.25; p. 7-10)

j. Topsoil cost ($)
Line 9c x Line 9h x (1 + Line 9i) 207230

10. Crushed Stone

a. Area to be capped (yd^2)
Line 1a x Line 1b 0

b. Depth of crushed stone needed (yd) _____ (0.33 yd; p. 7-4)

c. Quantity needed (yd^3)
Line 10a x Line 10b _____

d. Purchase unit cost ($/yd^3) _____ ($11.55/yd^3; p. 7-28)

e. Delivery unit cost ($/yd^3) _____ ($2.61/yd^3; p. 7-28)

f. Spreading unit cost ($/yd^3) _____ ($1.03/yd^3; p. 7-28)

g. Compaction unit cost ($/yd^3) _____ ($1.22/yd^3; p. 7-28)

h. Total crushed stone unit cost ($/yd^3)
Line 10d + Line 10e + Line 10f + Line 10g _____ ($16.41/yd^3; pp. 7-28 - 7-29)

i. Percent compaction (decimal < 1) _____ (0.05; p. 7-10)

j. Crushed stone cost ($)
Line 10c x Line 10h x (1 + Line 10i) 0

11. Mobilization/Demobilization

a. Heavy equipment mobilization/demobilization cost ($) 700 ($700; p. 7-32)

12. Final Cover Subtotal ($)
Line 1i + Line 2o + Line 3p + Line 4h + Line 5j + Line 6j + Line 7f + Line 8g + Line 9j + Line 10j + Line 11a

845968

WBS-1230

WORKSHEET G-10

Revegetation

1. Soil Preparation and Grading

   a. Area to be revegetated, including closed area that needs replanting (acres) — 4.5

   b. Soil preparation and grading unit cost ($/acre) — 1002 ($1002/acre; p. 7-31)

   c. Soil preparation and grading cost ($)
   Line 1a x Line 1b — 4509

2. Seeding

   a. Type of vegetation — Fescue

   b. Seed unit cost ($/acre) — 795 ($795/acre; p. 7-31)

   c. Seed cost ($)
   Line 1a x Line 2b — 3578

3. Fertilizing

   a. Type of fertilizer — 20-3-3

   b. Fertilizer unit cost ($/acre) — 176 ($176/acre; p. 7-31)

   c. Fertilizing cost ($)
   Line 1a x Line 3b — 792

4. Mulching

   a. Mulch unit cost ($/acre) — 1048 ($1048/acre; p. 7-31)

   b. Mulching cost ($)
   Line 1a x Line 4a — 4716

5. Mobilization/Demobilization

   a. Heavy equipment mobilization/demobilization cost ($) — 105 ($105; p. 7-32)

6. Revegetation Subtotal ($)
   Line 1c + Line 2c + Line 3c + Line 4b + Line 5a — 13700

TOTAL

– COVER	845,968
– VEGETATION	13,700
	859,668

WBS-1240
Decontamination of Equipment

WORKSHEET G-7

Decontamination

1. Protective Clothing and Safety Equipment for Facility Personnel

   a. Number of personnel requiring protective clothing and safety equipment for decontamination: 4

   b. Safety equipment and protective clothing unit cost ($/person): 80 ($80/person; p. 5-6)

   c. Safety equipment and protective clothing cost ($)
   Line 1a x Line 1b: 320

2. Equipment Decontamination

   a. Equipment needing decontamination:

   - pumps and feed lines
   - heavy equipment (e.g., fork lifts, dozers, etc.)
   - other equipment (list) dozer, scraper, dump truck, forklift, backhoe, compactor, drill rig

   b. Number of pumps and lines: 3

   c. Pumps and lines decontamination cost ($): 450 (p. 5-4)

   d. Residual generation rate for pump and line decontamination: 50 (50 gal/pump and line; p. 5-1)

   e. Residual generated from pump and line decontamination (gal)
   Line 2b x Line 2d: 150

   f. Heavy equipment decontamination cost ($): 7x $79 553 (p. 5-2)

   g. Total heavy equipment decontamination time (hrs): 3 hrs each 18 (p. 5-2)

   h. Residual generation rate for heavy equipment decontamination (gal/hr): 100 (100 gal/hr; p. 5-1)

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WORKSHEET G-7 (page 2)

i. Residual generated from heavy equipment decontamination (gal) Line 2g x Line 2h _____1800_____

j. Equipment decontamination cost ($) Line 2c + Line 2f _____1003_____

k. Contaminated fluid and/or residues generated (gal) Line 2e + Line 2i _____1950_____

3. Tank Decontamination

a. Number of personnel entering tanks _____0_____

b. Additional personnel safety equipment unit cost ($/person) _____ ($172/person; p. 5-6)

c. Additional personnel safety equipment cost ($) Line 3a x Line 3b _____

d. Method of tank decontamination _____

e. Tank area to be decontaminated (ft^2) _____

f. Tank decontamination unit cost ($\$/ft^2$) _____ (p. 5-3)

g. Tank decontamination cost ($) Line 3e x Line 3f _____

h. Tank decontamination subtotal before surcharge ($) Line 3c + Line 3g _____

i. Surcharge factor (factor ≥ 1) _____ (2.0; p. 5-6)

j. Tank decontamination subtotal ($) Line 3h x (1 + Line 3i) _____

k. Volume of tank(s) to be filled with sand (gal) _____

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WORKSHEET G-7 (page 3)

l. Sand purchase and placement unit cost ($/gal) _____ ($0.10/gal; p. 5-7)

m. Tank decontamination and sand filling cost ($)
Line 3j + (Line 3k x Line 3l) 0

n. Residual generation rate for tank decontamination (gal/ft^2) _____ (p. 5-3)

o. Contaminated fluid and/or residues generated (gal)
Line 3e x Line 3n _____

4. Pad or Foundation Decontamination

a. Method of pad decontamination 0

b. Pad area to be decontaminated (ft^2) _____

c. Pad decontamination unit cost ($/ft^2) _____ (p. 5-3)

d. Pad decontamination subtotal ($)
Line 4b x Line 4c 0

e. Residual generation rate for pad/foundation decontamination (gal/ft^2) _____ (p. 5-3)

f. Contaminated fluid and/or residues generated (gal)
Line 4b x Line 4e _____

5. Sump Decontamination, Temporary

a. Method of sump decontamination High Pressure Wash

b. Volume to be pumped from sump(s) (gal) 1950

c. Time required for pumping (hrs)
Line 5b ÷ 8000
(round up to nearest integer) 1

d. Pumping unit cost ($/hr) 23 ($23/hr; p. 4-11)

WORKSHEET G-7 (page 4)

e. Pump rental cost, optional ($/hr) 2.70 ($2.70/hr; p. 4-11)

f. Pumping cost ($) (Line 5c x Line 5d) + Line 5e 25.70

g. Sump area to be decontaminated (ft^2) 750

h. Sump decontamination unit cost ($/$ft^2$) 0.88 (p. 5-3)

i. Sump decontamination cost ($) Line 5g x Line 5h 660

j. Sump decontamination subtotal ($) Line 5f + Line 5i 686

k. Residual generation rate for sump decontamination (gal/ft^2) 4 (p. 5-3)

l. Contaminated fluid and/or residues generated (gal) Line 5b + (Line 5g x Line 5k) 4950

6. Container Rinsing

a. Number of containers 0

b. Container rinsing time required (hrs) 0.083 x Line 6a _____

c. Container rinsing unit cost ($/hr) _____ ($32.75/hr; p. 5-10)

d. Container rinsing subtotal ($) Line 6b x Line 6c 0

e. Residual generation rate for container rinsing (gal/drum) _____ (10 gal/drum; p. 5-10)

f. Contaminated fluid/residual generated (gal) Line 6a x Line 6e _____

7. Other Items Needing Decontamination

a. List items NONE

WORKSHEET G-7 (page 5)

b. Method of decontamination for other items NONE

c. Surface area of other items to be decontaminated (ft^2) _____

d. Decontamination unit cost ($/$ft^2$) _____ (p. 5-3)

e. Decontamination of other items subtotal ($)
Line 7c x Line 7d 0

f. Residual generation rate for decontamination of other items (gal/ft^2) _____ (p. 5-3)

g. Contaminated fluid and/or residues generated (gal)
Line 7c x Line 7f _____

8. On-Site Treatment of Decontamination Residues

a. Quantity of residue to be treated (gal) 0

b. Chemicals required for treatment (lb/gal residue or gal/gal residue) _____ (pp. 4-12 - 4-13)

c. Chemicals unit cost ($/lb or $/gal) _____

d. Chemicals cost ($)
Line 8a x Line 8b x Line 8c _____

e. Electricity required for treatment (kwh/gal residue) _____ (pp. 4-12 - 4-13)

f. Electricity unit cost ($/kwh) _____ ($0.05/kwh; p. 4-2)

g. Electricity cost ($)
Line 8a x Line 8e x Line 8f _____

h. Water required for treatment (gal/gal residue) _____ (pp. 4-12 - 4-13)

i. Water unit cost ($/1000 gal) _____ ($1.22/1000 gal; p. 4-2)

j. Water cost ($)
[(Line 8a x Line 8h) ÷ 1000] x Line 8i _____

WORKSHEET G-7 (page 6)

k.	Fuel required for treatment (MMBtu/gal residue)	_____	(pp. 4-12 - 4-13)
l.	Fuel unit cost ($/MMBtu)	_____	(p. 4-2)
m.	Fuel cost ($) Line 8a x Line 8k x Line 8l	_____	
n.	Labor required for treatment (hrs/gallon residue)	_____	(pp. 4-12 - 4-13)
o.	Process operator unit labor cost ($/hr)	_____	($26.50/hr; p. 9-3)
p.	Labor cost ($) Line 8a x Line 8n x Line 8o	_____	
q.	On-site treatment cost ($) Line 8d + Line 8g + Line 8j + Line 8m + Line 8p		0
r.	Residue generated from treatment (gal)	_____	

9. Testing for Success of Decontamination

a.	Number of Samples	38	Assume 30 samples from equipment, 8 samples from sump
b.	Sample collection time required (hrs/sample)	0.5	
c.	Technician unit labor cost ($/hr)	20.50	($20-50/hr; p. 9-3)
d.	Sample collection time (hrs) Line 9a x Line 9b	19	
e.	Sampling cost ($) Line 9c x Line 9d	390	
f.	Cost to test each sample ($/sample)	152	(pp. 5-10 - 5-11) ICP
g.	Testing cost ($) Line 9a x Line 9f	5776	
h.	Testing for success of decontamination cost ($) Line 9e + Line 9g		6166

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WORKSHEET G-7 (page 7)

10. Treated Residue Discharge to Sewer

a. Volume of liquid discharged (gal) 0

b. Sewer discharge unit cost ($/1000 gal) _____ ($1.50/1000 gal; p. 4-2)

c. Sewer discharge cost ($)
(Line 10a ÷ 1000) x Line 10b 0

11. Off-Site Management of Decontamination Fluid/Residues and/or Treatment Residue

a. Off-site management method Precipitation

b. Quantity to be managed off-site (~~tons~~) gal 4950 *

c. Truck capacity (~~tons~~) gal 5000

d. Number of loads
Line 11b ÷ Line 11c
(round up to nearest integer) 1

e. One-way distance (mi/load) 50

f. Transportation unit cost ($/mi) 5.61 ($4.50/mi; p. 4-15)**

g. Transportation cost ($)
Line 11d x Line 11e x Line 11f 281

h. Off-site management unit cost ($/~~ton~~ gal) 0.38 (pp. 4-13 - 4-20)

i. Off-site management cost ($)
Line 11b x Line 11h 1881

j. Contaminated fluid and residue disposal subtotal ($)
Line 11g + Line 11i 2162

12. On-Site Disposal

Include volume on one or more worksheets:
Landfill Inventory - Line 1n, Line 1p
Incinerator Inventory - Line 1l, Line 1n
Land Treatment Inventory - Line 1k, Line 1o

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* Conversion factors are provided in the Volume III appendix.
** Based on a 250-mile one-way distance.

WBS-1240

WORKSHEET G-7 (page 8)

13. Facility Decontamination Subtotal ($)
    Line 1c + Line 2j + Line 3m + Line 4d +
    Line 5j + Line 6d + Line 7e + Line 8q +
    Line 9h + Line 10c + Line 11j

10337

WBS-1250
Survey Plat and Notice to Land Authority

WORKSHEET H-2

Notation on Property Deed - Final Closure

1. Attorney

a.	Attorney time required (hrs)	2	
b.	Attorney unit labor cost ($/hr)	100	($100/hr; p. 9-4)
c.	Attorney cost ($) Line 1a x Line 1b		200

2. Clerical

a.	Clerical time required (hrs)	4	
b.	Clerical unit labor cost ($/hr)	18	($18/hr; p. 9-4)
c.	Clerical cost ($) Line 2a x Line 2b	72	
d.	Filing fee ($)	65	
e.	Clerical subtotal Line 2c + Line 2d		137

3. Waste Record Submittal

a.	Engineer time required (hrs)	8	
b.	Engineer unit labor cost ($/hr)	45.50	($45.50/hr; p. 9-4)
c.	Engineer cost ($) Line 3a x Line 3b	364	
d.	Clerical time required (hrs)	4	
e.	Clerical unit labor cost ($/hr)	18	($18/hr; p. 9-4)
f.	Clerical cost ($) Line 3d x Line 3e	72	
g.	Waste record submittal cost ($) Line 3c + Line 3f		436

4. Notation on Property Deed Subtotal ($)
Line 1c + Line 2e + Line 3g

773

WBS-1250

WORKSHEET G-14

Survey Plat - Final Closure

1. Surveying of Waste Management Area Boundaries

   a. Land surveying team time required (hrs) — 8

   b. Land surveying team unit labor cost ($/hr) — 75 ($75/hr; p. 9-3)

   c. Land surveying cost ($) Line 1a x Line 1b — 600

2. Fence Posts to Mark Boundaries

   a. Number of fence posts — 4

   b. Fence post unit cost ($/post) — 29 ($29/post; p. 3-7)

   c. Fence post cost ($) Line 2a x Line 2b — 116

3. Plat Submittal

   a. Attorney time required (hrs) — 1

   b. Attorney unit labor cost ($/hr) — 100 ($100/hr; p. 9-3)

   c. Attorney cost ($) Line 3a x Line 3b — 100

   d. Clerical time required (hrs) — 2

   e. Clerical unit labor cost ($/hr) — 18 ($18/hr; p. 9-3)

   f. Clerical cost ($) Line 3d x Line 3e — 36

   g. Plat submittal cost ($) Line 3c + Line 3f — 136

4. Notice to Local Land Authority Subtotal ($) Line 1c + Line 2c + Line 3g — 852

WBS-1310
Facility Inspections
WORKSHEET H-4

Facility Inspection

1. Engineer

   a. Number of inspections during post-closure period (inspections/30 years) 120

   b. Engineer time required (hrs/insp) 4

   c. Engineer unit labor cost ($/hr) 45.50 ($45.50/hr; p. 9-4)

   d. Engineer cost ($)
   Line 1a x Line 1b x Line 1c 21840

2. Technician

   a. Technician time required (hrs/insp) 0

   b. Technician unit labor cost ($/hr) _____ ($20.50/hr; p. 9-4)

   c. Technician cost ($)
   Line 1a x Line 2a x Line 2b 0

3. Clerical

   a. Clerical time required (hrs/insp) 1

   b. Clerical unit labor cost ($/hr) 18 ($18/hr; p. 9-4)

   c. Clerical cost ($)
   Line 1a x Line 3a x Line 3b 2160

4. Facility Inspection Subtotal ($)
   Line 1d + Line 2c + Line 3c 24000

WBS- 1320
Routine Maintenance

WORKSHEET H-3

Maintenance of Waste Management Area Boundaries

1. Post Maintenance

   a. Number of replacement posts during post-closure period (posts/30 yrs) — 4

   b. Post unit cost ($/post) — 29 ($29/post; p. 3-7)

   c. Post maintenance cost ($) Line 1a x Line 1b — 116

2. Maintenance of Waste Management Area Boundaries Subtotal ($) Line 1c — 116

WBS-1320

WORKSHEET H-5

Routine Maintenance and Repairs

1. Mowing

   a. Mowing frequency (visits/30 yrs) 150

   b. Area to be mowed per visit (acres/visit) 4.5

   c. Mowing unit cost ($/acre) 25 ($25/acre; p. 3-9)

   d. Mowing cost ($)
      Line 1a x Line 1b x Line 1c 16875

2. Fertilizing

   a. Fertilizing frequency (visits/30 yrs) 60

   b. Area to be fertilized (acres/visit) 4.5

   c. Fertilizer unit cost ($/acre) 176 ($176/acre; p. 3-9)

   d. Mobilization/demobiliation cost ($/visit) 105 ($105/visit; p. 3-9)

   e. Fertilizing cost ($)
      (Line 2a x Line 2b x Line 2c)
      + (Line 2a x Line 2d) 53820

3. Sprinkling or Irrigation

   a. Sprinkling frequency (days/30 yrs) 0

   b. Sprinkling unit cost ($/day) _____ ($420/day; p. 3-9)

   c. Sprinkling cost ($)
      Line 3a x Line 3b 0

4. Re-establishment of Vegetative Cover

   a. Number of visits (visits/30 yrs) 1

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WORKSHEET H-5 (page 2)

b. Area requiring re-establishment of vegetation per visit (acres/visit) 0.5

c. Seed unit cost ($/acre) 1155 ($1155/acre; p. 3-11)

d. Seeding cost ($)
Line 4a x Line 4b x Line 4c 578

e. Fertilizer unit cost ($/acre) 290 ($290/acre; p. 3-11)

f. Fertilizing cost ($)
Line 4a x Line 4b x Line 4e 145

g. Re-establishment of cover ($)
Line 4d + Line 4f 723

5. Routine Erosion Damage Repair of Vegetative or Crushed Stone Cover, Dikes, and Berms (if applicable)

a. Repairing frequency (visits/30 yrs) 3

b. Quantity of soil required (yd^3/visit) 10

c. Time required for excavation and transportation of on-site soil (hrs/visit) 2

d. Unit labor cost ($/hr) 23 ($23/hr; p. 9-4)

e. On-site soil cost ($)
Line 5a x Line 5c x Line 5d 138

f. Off-site soil unit cost ($/$yd^3$) 17.60 ($17.60/yd^3; p. 3-12)*

g. Off-site soil cost ($)
Line 5a x Line 5b x Line 5f 528

h. Time required for soil placement (hrs/visit) 2

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* Based on a 5-mile haul distance.

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WORKSHEET H-5 (page 3)

i.	Soil placement cost ($) Line 5a x Line 5d x Line 5h	138	
j.	Area to be seeded, fertilized, and mulched (acres/visit)	0	
k.	Seed unit cost ($/acre)	0	($1334/acre; p. 3-11)
l.	Seeding cost ($) Line 5a x Line 5j x Line 5k	0	
m.	Fertilizer unit cost ($/acre)	0	($290/acre; p. 3-11)
n.	Fertilizing cost ($) Line 5a x Line 5j x Line 5m	0	
o.	Mulch unit cost ($/acre)	0	($2904/acre; p. 3-11)
p.	Mulching cost ($) Line 5a x Line 5j x Line 5o	0	
q.	Quantity of crushed stone required (yd^3/visit)	0	
r.	Purchase unit cost ($/$yd^3$)	0	($11.55/$yd^3$; p. 3-11)
s.	Delivery unit cost ($/$yd^3$)	0	($2.61/$yd^3$; p. 3-11)
t.	Spreading unit cost ($/$yd^3$)	0	($15.35/$yd^3$; p. 3-11)
u.	Compaction unit cost ($/$yd^3$)	0	($4.14/$yd^3$; p. 3-11)
v.	Total crushed stone unit cost ($/$yd^3$) Line 5r + Line 5s + Line 5t + Line 5u	0	
w.	Crushed stone cost ($) Line 5a x Line 5q x Line 5v	0	
x.	Erosion damage repair subtotal ($) Line 5e + Line 5g + Line 5i + Line 5l + Line 5n + Line 5p + Line 5w		804

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WORKSHEET H-5 (page 4)

6. Security System Maintenance and Repair

a.	Security system maintenance frequency (visits/30 yrs)	30	
b.	Amount of fence needing replacement (L.F./visit)	50	
c.	Fencing unit cost ($/L.F.)	10.55	($10.55/L.F.; p. 3-8)
d.	Fence cost ($) Line 6a x Line 6b x Line 6c	15825	
e.	Number of replacement gates (gates/visit)	0	
f.	Gate unit cost ($/gate)	0	($80/gate; p. 3-8)
g.	Gate replacement cost ($) Line 6a x Line 6e x Line 6f	0	
h.	Number of replacement posts (posts/visit)	0	
i.	Post unit cost ($/post)	0	($57/post; p. 3-8)
j.	Post replacement cost ($) Line 6a x Line 6h x Line 6i	0	
k.	Number of other security items needing replacement (items/visit)	0	
l.	Other security items unit cost ($/item)	0	(p. 3-8)
m.	Other security items replacement cost ($) Line 6a x Line 6k x Line 6l	0	
n.	Security repair subtotal ($) Line 6d + Line 6g + Line 6j + Line 6m		15825

7. Diversion Ditch Cleaning

a.	Diversion ditch cleaning frequency (visits/30yrs)	30
b.	Length of diversion ditch (L.F./visit)	1000

WORKSHEET H-5 (page 5)

c. Cleaning time required (hrs/L.F.) 0.1

d. Unit labor cost ($/hr) 23 ($23/hr; p. 9-4)

e. Diversion ditch cleaning cost ($)
Line 7a x Line 7b x Line 7c
x Line 7d 69,000

8. Diversion Ditch Repair

a. Diversion ditch repair frequency
(visits/30 yrs) 2

b. Quantity of soil required
(yd^3/visit) 10

c. Off-site soil unit cost ($/$yd^3$) 17.60 ($17.60/yd^3; p. 3-12)*

d. Off-site soil cost ($)
Line 8a x Line 8b x Line 8c 352

e. Area to be seeded, fertilized,
and mulched (acres/visit) 0 Assume no seeding in ditch required

f. Seed unit cost ($/acre) 0 ($1334/acre; p. 3-11)

g. Seeding cost ($)
Line 8a x Line 8e x Line 8f 0

h. Fertilizer unit cost ($/acre) 0 ($290/acre; p. 3-11)

i. Fertilizing cost ($)
Line 8a x Line 8e x Line 8h 0

j. Mulch unit cost ($/acre) 0 ($2904/acre; p. 3-11)

k. Mulching cost ($)
Line 8a x Line 8e x Line 8j 0

l. Diversion ditch repair subtotal ($)
Line 8d + Line 8g + Line 8i
+ Line 8k 352

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* Based on a 5-mile haul distance.

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WORKSHEET H-5 (page 6)

9. Rodent Control

a. Rodent control frequency (visits/30 yrs) 30

b. Area requiring rodent control (acres/visit) 4.5

c. Rodent control unit cost ($/acre) 30 ($30/acre; p. 3-12)

d. Application time required (hrs/visit) 8

e. Unit labor cost ($/hr) 23 ($23/hr; p. 9-4)

f. Rodent control cost ($)
(Line 9a x Line 9b x Line 9c)
+ (Line 9a x Line 9d x Line 9e) 9570

10. Maintaining pH (Land Treatment Only)

a. pH maintenance frequency - supplementary applications (visits/30 years) 0

b. Land treatment area (acres/visit) _____

c. Lime unit cost - initial application ($/acre) _____ ($214/acre; p. 3-13)

d. Lime cost - initial application ($)
Line 10b x Line 10c _____

e. Lime unit cost - supplementary applications ($/acre) _____ ($60/acre; p. 3-13)

f. Lime cost - supplementary applications ($)
Line 10a x Line 10b x Line 10e _____

g. Mobilization/demobilization cost ($/visit) _____ ($105/visit; p. 3-13)

h. pH maintenance cost ($)
[(Line 10a + 1) x Line 10i] +
Line 10d + Line 10f 0

WBS-1320

WORKSHEET H-5 (page 7)

11. Routine Maintenance and Repairs
Subtotal ($)
Line 1d + Line 2e + Line 3c +
Line 4g + Line 5x + Line 6n +
Line 7e + Line 8l + Line 9f
Line 10h

166969

Routine Maintenance Total

— Boundaries Maintenance	116
— Maintenance and Repairs	166,969
	167,085

WBS-1330 Groundwater Monitoring

OSWER Policy Directive #9476.00-6

WORKSHEET H-8, PART 265 ONLY

Groundwater Monitoring

1. ~~Primary Drinking Water Parameters Analysis - Background/Upgradient and Downgradient Wells~~ All Parameters Listed Below

a.	Number of wells	5	(minimum of 4; p. 2-1)
b.	Number of samples collected per well (samples/well)	1	
c.	Number of replicate analyses per sample (replicates/sample)	0.1	
d.	Number of analyses Line 1a x Line 1b x Line 1c	6	
e.	Sample collection and preparation time required (hrs/well)	4	(4 hrs/well; p. 2-6)
f.	Transportation time to and from site (hrs)	2	
g.	Contract lab technician unit labor cost ($/hr)	20.50	($20.50/hr; p. 9-4)
h.	Sample collection time (hrs) (Line 1a x Line 1e) + Line 1f	22	
i.	Sampling cost ($) Line 1g x Line 1h	451	ICP - $152 AA, Hg - $37 GC (PCBs, Pest) - $200 GC/MS (VOC) - $500 GC/MS (BNA) - $1560
j.	Contract lab fee ($/analysis)	2449	($585/analysis; p. 2-8)
k.	Contract lab cost ($) Line 1d x Line 1j	14694	
l.	Number of times background drinking water samples are collected during post-closure	60	2 times/year (~~quarterly for one year; p. 2-2~~)
m.	Background drinking water parameters sampling cost ($) (Line 1i + Line 1k) x Line 1l		908,700

WBS-133D

WORKSHEET H-8, PART 265 ONLY (page 2)

2. Groundwater Quality Analysis - Background/Upgradient and Downgradient Wells — INCLUDED ON P6. 6-31

a.	Number of wells	_____	(minimum of 4; p. 2-1)
b.	Number of samples collected per well (samples/well)	_____	
c.	Number of replicate analyses per sample (replicates/sample)	_____	
d.	Number of analyses Line 2a x Line 2b x Line 2c	_____	
e.	Sample collection and preparation time required (hrs/well)	_____	(4 hrs/well; p. 2-4)
f.	Transportation time to and from site (hrs)	_____	
g.	Contract lab technician unit labor cost ($/hr)	_____	($20.50/hr; p. 9-4)
h.	Sample collection time (hrs) (Line 2a x Line 2e) + Line 2f	_____	
i.	Sampling cost ($) Line 2g x Line 2h	_____	
j.	Contract lab fee ($/analysis)	_____	($85/analysis; p. 2-5)
k.	Contract lab cost ($) Line 2d x Line 2j	_____	
l.	Number of times background groundwater quality samples are collected during post-closure	_____	(quarterly for one year; p. 2-2)
m.	Background groundwater quality sampling cost ($) (Line 2i + Line 2k) x Line 2l		0

WORKSHEET H-8, PART 265 ONLY (page 3)

3. Groundwater Quality Analysis - Upgradient and Downgradient Wells SEE PG 6-31

a. Groundwater quality monitoring frequency (visits/30 yrs)	_____	(at least annually; p. 2-2)
b. Number of wells sampled per visit (wells/visit)	_____	(minimum of 4; p. 2-1)
c. Number of samples collected per well (samples/well)	_____	
d. Number of replicate analyses per sample (replicates/sample)	_____	
e. Number of analyses per visit Line 3b x Line 3c x Line 3d	_____	
f. Sample collection and preparation time required (hrs/well)	_____	(4 hrs/well; p. 2-4)
g. Transportation time to and from site (hrs/visit)	_____	
h. Contract lab technician unit labor cost ($/hr)	_____	($20.50/hr; p. 9-4)
i. Sample collection time (hrs/visit) (Line 1b x Line 1f) + Line 1g	_____	
j. Sampling cost ($/visit) Line 1h x Line 1i	_____	
k. Contract lab fee ($/analysis)	_____	($85/analysis; p. 2-5)
l. Contract lab cost ($/visit) Line 1e x Line 1k	_____	
m. Groundwater quality analysis cost ($) Line 1a x (Line 1j + Line 1l)		0

WBS-1330

WORKSHEET H-8, PART 265 ONLY (page 4)

4. Groundwater Contamination Analysis - Background/Upgradient and Downgradient Wells SEE PG 6-31

a.	Number of wells	_____	(minimum of 4; p. 2-1)
b.	Number of samples collected per well (samples/well)	_____	
c.	Number of replicate analyses per sample (replicates/sample)	_____	(4 replicates/sample; p. 2-2)
d.	Number of analyses Line 4a x Line 4b x Line 4c	_____	
e.	Sample collection and preparation time required (hrs/well)	_____	(4 hrs/well; p. 2-6)
f.	Transportation time to and from site (hrs)	_____	
g.	Contract lab technician unit labor cost ($/hr)	_____	($20.50/hr; p. 9-4)
h.	Sample collection time (hrs) (Line 4a x Line 4e) + Line 4f	_____	
i.	Sampling cost ($) Line 4g x Line 4h	_____	
j.	Contract lab fee ($/analysis)	_____	($120/analysis; p. 2-7)
k.	Contract lab cost ($) Line 3d x Line 3j	_____	
l.	Number of times background groundwater contamination samples are collected during post-closure	_____	(quarterly for one year; p. 2-2)
m.	Background groundwater contamination sampling cost ($) (Line 3i + Line 3k) x Line 3l		0

WORKSHEET H-8, PART 265 ONLY (page 5)

5. Groundwater Contamination Analysis - Upgradient and Downgradient Wells

SEE PG 6-31

a. Groundwater contamination monitoring frequency (visits/30 yrs)	_____	(at least semi-annually; p. 2-2)
b. Number of wells sampled per visit (wells/visit)	_____	(minimum of 4; p. 2-1)
c. Number of samples collected per well (samples/well)	_____	
d. Number of replicate analyses per sample (replicates/sample)	_____	(4 replicates/sample; p. 2-2)
e. Number of analyses per visit Line 5b x Line 5c x Line 5d	_____	
f. Sample collection and preparation time required (hrs/well)	_____	(4 hrs/well; p. 2-6)
g. Transportation time to and from site (hrs/visit)	_____	
h. Contract lab technician unit labor cost ($/hr)	_____	
i. Sample collection time (hrs/visit) (Line 5b x Line 5f) + Line 5g	_____	($20.50/hr; p. 9-4)
j. Sampling cost ($/visit) Line 5h x Line 5i	_____	
k. Contract lab fee ($/analysis)	_____	($120/analysis; p. 2-7)
l. Contract lab cost ($/visit) Line 5e x Line 5k	_____	
m. Groundwater contamination analysis cost ($) Line 5a x (Line 5j + Line 5l)		0

WORKSHEET H-8, PART 265 ONLY (page 6)

6. Monitoring Well Inspection

   a. Inspection frequency (insp/30 yrs) 60

   b. Inspection time required (hrs/insp) 4

   c. Technician unit labor cost ($/hr) 20.50 ($20.50/hr; p. 9-4)

   d. Inspection cost ($)
      Line 6a x Line 6b x Line 6c 4920

7. Monitoring Well Maintenance

   a. Maintenance frequency (visits/30 yrs) 30

   b. Number of monitoring wells needing maintenance per visit 0

   c. Maintenance time required (hrs/well) 1

   d. Unit labor cost ($/hr) 23 ($23/hr; p. 9-4)

   e. Monitoring well maintenance cost ($)
      Line 7a x Line 7b x Line 7c x Line 7d 690

8. Monitoring Well and Parts Replacement

   a. Number of wells needing replacement during post-closure period 2

   b. Existing monitoirng well sealing unit cost ($/well) 300 ($300/well; 3-5)*

   c. New monitoring well construction unit cost ($/well) 4125 ($4125/well; p. 3-5)*

   d. Mobilization/demobilization ($) 150 ($150; p. 3-5)

   e. Monitoring well replacement cost ($)
      [Line 8a x (Line 8b + Line 8c)] + Line 8d 9000

   f. Number of pumps needing replacement during post-closure period 0 (p. 3-5)

---

* Based on a depth of 100 vertical lineal feet.

WBS-1330

WORKSHEET H-8, PART 265 ONLY (page 7)

g.	Pump unit cost ($/pump)	0	
h.	Pump cost ($) Line 8f x Line 8g	0	
i.	Number of wells needing tubing replacement during post-closure period	0	
j.	Length of tubing (ft/well)	0	
k.	Tubing unit cost ($/ft)	0	(p. 3-5)
l.	Tubing replacement cost ($) Line 8i x Line 8j x Line 8k	0	
m.	Number of wells needing cap replacement during post-closure period	5	
n.	Well cap unit cost ($/cap)	20	
o.	Well cap replacement cost ($) Line 8m x Line 8n	100	
p.	Monitoring well and parts replacement cost ($) Line 8e + Line 8h + Line 8l + Line 8o		9100

9. Post-Closure Groundwater Monitoring Subtotal ($)
Line 1m + Line 2m + Line 3m + Line 4m + Line 5m + Line 6d + Line 7e + Line 8p

$\boxed{923,410}$

WBS-1340
Certification of Post Closure
WORKSHEET H-12

Certification of Post-Closure

1. Independent Registered Professional Engineer

a.	Initial review of post-closure plan (hrs)	4	(4 hrs; p. 8-5)
b.	Inspection frequency (inspections/yr)	2	(p. 8-4)
c.	Inspection time required (hrs/inspection)	4	(p. 8-4)
d.	Number of years of post-closure care (yrs)	30	(30 yrs)
e.	Inspection time required (hrs) Line 1b x Line 1c x Line 1d	240	
f.	Prepare final documentation (hrs)	4	(4 hrs; p. 8-5)
g.	Total professional engineer time required (hrs) Line 1a + Line 1e + Line 1f	248	
h.	Professional engineer unit labor cost ($/hr)	45.50	($45.50/hr; p. 8-4)
i.	Number of separate post-closures	1	
j.	Professional engineer cost ($) Line 1g x Line 1h x Line 1i		11284

2. Clerical*

a.	Clerical time required (hrs/inspection)	1	(4 hrs/insp; p. 8-4)
b.	Clerical unit labor cost ($/hr)	18	($18/hr; p. 8-4)
c.	Clerical cost ($) Line 1b x Line 2a x Line 2b x Line 1d		1080

3. Certification of Post-Closure Subtotal ($) Line 1j + Line 2c: **12364**

* Clerical time should be included only if the Professional Engineer is operating independently in a single-person business.

CLOSURE COST ESTIMATE

MASTER METALS INCORPORATED
CLEVELAND, OHIO

July 28, 1992

Prepared for
U.S. Environmental Protection Agency
Office of Waste Programs Enforcement
Washington, D.C. 20460

Work Assignment	:	R05053
EPA Region	:	5
Site No.	:	OHD 097 613 871
Date Prepared	:	July 28, 1992
Prepared by	:	PRC Environmental Management, Inc.
Contract No.	:	68-W9-0006
PRC No.	:	209-R05053
Contractor Project Manager	:	Mike Navetta
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3.0 RESULTS	1
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Appendix

A COST ESTIMATE WORKSHEETS

LIST OF TABLES

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1	WORK BREAKDOWN STRUCTURE	2
2	ASSUMPTIONS	4
3	CLOSURE COST SUMMARY	6

1.0 SCOPE

On April 13, 1992, Master Metals Incorporated (Master Metals) submitted closure plans and closure cost estimates for hazardous waste management units at its Cleveland facility to the U.S. Environmental Protection Agency (EPA). EPA reviewed the closure cost estimates and determined them to be inaccurate (PRC, 1992). As a result, EPA prepared a more accurate estimate of closure costs for the Master Metals facility. This document presents closure cost estimates for the following hazardous waste management units at the Master Metals Incorporated (Master Metals) facility in Cleveland, Ohio.

- Bins 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 15, 16, and 17
- Seventeen roll-off boxes
- Container storage unit
- Battery cracking area
- Underground storage tank

The cost estimates do not address the furnace area and the baghouses, nor do they include contingent closure and post-closure cost estimates. Contingent closure and post-closure cost estimates will be prepared separately.

2.0 METHODOLOGY

A work breakdown structure (WBS) was formulated to reflect envisioned groups of units and sequences of activities within those groups during the closure process. The WBS is presented in Table 1.

A series of assumptions were made to facilitate the preparation of the cost estimates. The assumptions were necessary because the closure plans prepared by the facility operator have been deemed inadequate by the EPA. Moreover, information provided to EPA by the facility operator was insufficient to prepare a definitive closure plan and a closure cost estimate. These assumptions used in preparing the closure cost estimates are listed in Table 2.

Finally, a detailed closure cost estimate was prepared based on background data provided in several facility documents, the WBS presented in Table 1, the assumptions presented in Table 2, and worksheets from EPA guidance (MM, 1992a, MM, 1992b, CTI, 1991, ESC, 1991, EPA, 1986, EPA, 1987). Completed worksheets are provided in the Appendix. Closure costs are summarized in Table 3.

3.0 RESULTS

The total closure cost estimate is $ 5,167,774.

TABLE 1

WORK BREAKDOWN STRUCTURE

WBS-100	Site-wide Activities
WBS-110	Monitoring Well Installation
WBS-120	Ground-water Monitoring
WBS-130	Decontamination of Storm Sewer
WBS-140	Inspections and Certifications by Independent Professional Engineer
WBS-200	Receiving Bin Closure
WBS-210	Inventory Management
WBS-220	Decontamination
WBS-230	Pad Removal
WBS-240	Contaminated Soil Removal
WBS-250	Backfilling and Grading
WBS-260	Revegetation
WBS-300	Bin 1 Closure
WBS-310	Inventory Management
WBS-320	Decontamination
WBS-330	Pad Removal
WBS-340	Contaminated Soil Removal
WBS-350	Backfilling and Grading
WBS-360	Revegetation
WBS-400	Bin 2 Closure
WBS-410	Inventory Management
WBS-420	Decontamination
WBS-430	Pad Removal
WBS-440	Contaminated Soil Removal
WBS-450	Backfilling and Grading
WBS-460	Revegetation
WBS-500	Bins 3, 4, and 5 Closure
WBS-510	Inventory Management
WBS-520	Decontamination
WBS-530	Pad Removal
WBS-540	Contaminated Soil Removal
WBS-550	Backfilling and Grading
WBS-560	Revegetation
WBS-600	Bins 6, 7, and 8 Closure
WBS-610	Inventory Management
WBS-620	Decontamination
WBS-630	Pad Removal
WBS-640	Contaminated Soil Removal
WBS-650	Backfilling and Grading
WBS-660	Revegetation

TABLE 1 (CON'T)

WORK BREAKDOWN SCHEDULE

WBS-700	Bins 10 and 11 Closure
WBS-710	Inventory Management
WBS-720	Decontamination
WBS-730	Pad Removal
WBS-740	Contaminated Soil Removal
WBS-750	Backfilling and Grading
WBS-760	Revegetation
WBS-800	Bins 9, 15, 16, and 17 Closure
WBS-810	Inventory Management
WBS-820	Decontamination
WBS-830	Pad Removal
WBS-840	Contaminated Soil Removal
WBS-850	Backfilling and Grading
WBS-860	Revegetation
WBS-900	Battery Cracking Area Closure
WBS-910	Pad Removal
WBS-920	Contaminated Soil Removal
WBS-930	Backfilling and Grading
WBS-940	Revegetation
WBS-1000	Container Storage Unit Closure
WBS-1010	Inventory Management
WBS-1020	Decontamination
WBS-1030	Pad Removal
WBS-1040	Contaminated Soil Removal
WBS-1050	Backfilling and Grading
WBS-1060	Revegetation
WBS-1100	Roll-off Box Area Closure
WBS-1110	Inventory Management
WBS-1120	Decontamination
WBS-1130	Pad Removal
WBS-1140	Contaminated Soil Removal
WBS-1150	Backfilling and Grading
WBS-1160	Revegetation
WBS-1200	Underground Storage Tank Closure
WBS-1210	Inventory Management
WBS-1220	Decontamination
WBS-1230	Tank Removal
WBS-1240	Contaminated Soil Removal
WBS-1250	Backfilling and Grading
WBS-1260	Revegetation

TABLE 2

ASSUMPTIONS

1. All metal surfaces of bins and roll-off boxes can be effectively decontaminated.

2. All concrete will be disposed as hazardous waste due to years of direct contact with waste materials, the absence of protective coatings, the presence of spawled and cracked areas, and underlying soil contamination.

3. All decontamination solutions will be hazardous waste.

4. Bin capacities are as stated in Table 1 of the closure plan (MM, 1992).

5. The 17 roll-off boxes are assumed to have maximum waste volumes of 40 cubic yards each.

6. There are 11,900 55-gallon drums in the container storage area.

7. Approximately 1,440 linear feet of storm drain must be decontaminated.

8. Bin, drum, and roll-off box inventories will be processed in the on-site furnaces.

9. On-site treatment costs are $250 per cubic yard bulk and $75 per drum.

10. Off-site disposal costs are $275 per cubic yard solid hazardous, based on information provided by Envirosafe; $0.38 per gallon liquid hazardous, based on information provided by Envirite; and $10.73 per cubic yard solid nonhazardous, based on information provided by BFI.

11. Subsurface soil contamination is extensive. The quantity of contaminated soil to be excavated and removed is 6,111 cubic yards.

12. Disposal sites are as follows:

Decontamination Solutions	--	Envirite of Canton, Ohio (approximately 50 miles from the site)
Hazardous Solids	--	Envirosafe of Oregon, Ohio (approximately 100 miles from the site)
Nonhazardous Solids	--	BFI of Lorain, Ohio (approximately 50 miles from the site)

13. The facility will be clean closed.

14. The existing network of four ground-water monitoring wells will be augmented with five additional wells.

15. Contaminated soil will be characterized before closure starts.

16. Bins will be closed under the rules for waste piles.

17. The container storage unit and roll-off boxes will be closed as container storage units.

TABLE 2 (CON'T)

ASSUMPTIONS

18. The battery cracking unit will be closed as a waste pile.

19. The underground storage tank (UST) will be closed as a tank without secondary containment.

20. Wastes in inventory will be adequately characterized for treatment in on-site furnaces.

TABLE 3

CLOSURE COST SUMMARY

WBS Element	Activity	Cost
100	Site-wide Activities	
110	Ground-water Well Installation	$ 4,050
120	Ground-water Well Monitoring	174,785
130	Storm Drain Decontamination	3,384
140	PE Inspections and Certifications	9,858
Subtotal	Site-wide Activities	$ 192,077
200	Receiving Bin	115,941
300	Bin 1	198,753
400	Bin 2	198,753
500	Bins 3, 4, and 5	366,413
600	Bins 6, 7, and 8	366,413
700	Bins 10 and 11	217,623
800	Bins 9, 15, 16, and 17	226,007
900	Battery Cracking Area	506,576
1000	Container Storage Area	2,248,262
1100	Roll-Off Box Area	360,749
1200	Underground Storage Tank	170,207
TOTAL		**$ 5,167,774**

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ESC, 1991. Environmental Strategies Corporation. Environmental Risk Assessment Final Report. February 15, 1991.

MM, 1992a. Master Metals, Inc. Facility Closure Plan, Master Metals, Inc. April 13, 1992.

MM, 1992b. Master Metals, Inc. Partial Closure Plan, Master Metals, Inc. April 13, 1992.

PRC, 1992. PRC Environmental Management, Inc. Technical Evaluation of Facility Closure Plan. July 7, 1992.

APPENDIX A

COST ESTIMATE WORKSHEETS

WBS-110
Install Groundwater Monitoring Wells

WORKSHEET B-12

Groundwater Monitoring Well Construction

1. Number of Groundwater Monitoring Wells

   a. Total number of wells to be constructed: 5

2. Depth

a. Well number	1	2	3	4	5	6	7	8
b. Well depth (ft)	15	15	15	15	15			
c. Length of screen (ft)	5	5	5	5	5			
d. Length of casing (ft) Line 2b - Line 2c	10	10	10	10	10			

a. Well number	9	10	11	12	13	14	15	SUM
b. Well depth(ft)								
c. Length of screen (ft)								
d. Length of casing (ft) Line 2b - Line 2c								

3. Materials

   a. Total length of casing (ft) ~~Line 2d~~ SUM: 50

   b. ~~Casing unit~~ cost ($/ft): 9 ($9 ft; p. 3-5)

   c. Casing cost ($) Line 3a x Line 3b: 450

   d. Well screen unit cost ($/ea): 290 ($290/ea; p. 3-5)

   e. Well screen cost ($) Line 1a x Line 3d: 1450

   f. Pump unit cost ($/ea): NA ($495/ea; p. 3-5)

WORKSHEET B-12 (page 2)

g. Pump cost ($)
Line 1a x Line 3f — NA

h. Tubing unit cost ($/ft) — NA ($2.75/ft; p. 3-5)

i. Tubing cost ($)
Line 3a x Line 3h — NA

j. Well cap unit cost ($/ea) — 70 ($70/ea; p. 3-5)

k. Well cap cost ($)
Line 1a x Line 3j — 350

l. Materials cost
Line 3c + Line 3e + Line 3g + Line 3i + Line 3k — 2250

4. Installation

a. Total depth of wells (ft)
Line 2b SUM — 75

b. Drilling unit cost ($/ft) — 22 ($22/ft; p. 3-5)

c. Drilling cost ($)
Line 4a x Line 4b — 1650

d. Mobilization/demobilization ($) — 150 ($150; p. 3-5)

e. Installation cost
Line 4c + Line 4d — 1800

5. Groundwater Monitoring Well Construction Subtotal ($)

Line 3l + Line 4e — 4050

WBS-120

WORKSHEET D-3, PART 264 ONLY

Groundwater Monitoring

Assume facility gets a permit. Assume 4 sampling events

1. Detection Monitoring - Background/ Upgradient Wells (continuation of monitoring program from operating period)

a.	Number of wells	1	
b.	Number of samples collected per well (samples/well)	3	
c.	Number of replicate analyses per sample (replicates/sample)	0.1	
d.	Number of analyses Line 1a x Line 1b x Line 1c	4	(minimum of 4)
e.	Sample collection and preparation time required (hrs/well)	4	(4 hrs/well; p. 2-9)
f.	Transportation time to and from site (hrs)	2	
g.	Contract lab technician unit labor cost ($/hr)	20.50	($20.50/hr; p. 9-3)
h.	Sample collection time (hrs) (Line 1a x Line 1e) + Line 1f	6	
i.	Sampling cost ($) Line 1g x Line 1h	123	
j.	Contract lab fee ($/analysis)	2449	(p. 2-10)
k.	Contract lab cost ($) Line 1d x Line 1j	9796	
l.	Number of times upgradient detection monitoring samples are collected during closure	4	(quarterly for one year; p. 2-3)
m.	Upgradient/background detection monitoring cost ($) (Line 1i + Line 1k) x Line 1l	39676	

ICP - $150
AA Hg - $37
GC (PCBs, Pests) - $200
GC/MS (VOC) - $500
GC/MS (BNA) - $1560

WORKSHEET D-3, PART 264 ONLY (page 2)

2. Detection Monitoring - Compliance Point/Downgradient Wells (continuation of monitoring program from operating period)

a.	Number of wells	8
b.	Number of samples collected per well (samples/well)	3
c.	Number of replicate analyses per sample (replicates/sample)	0.1
d.	Number of analyses Line 2a x Line 2b x Line 2c	27
e.	Sample collection and preparation time required (hrs/well)	4 (4 hrs/well; p. 2-9)
f.	Transportation time to and from site (hrs)	2
g.	Contract lab technician unit labor cost ($/hr)	20.50 ($20.50/hr; p. 9-3)
h.	Sample collection time (hrs) (Line 2a x Line 2e) + Line 2f	34
i.	Sampling cost ($) Line 2g x Line 2h	697
j.	Contract lab fee ($/analysis)	2449 (p. 2-10)
k.	Contract lab cost ($) Line 2d x Line 2j	66123
l.	Number of times downgradient detection monitoring samples are collected during closure	2 (twice/year; p. 2-3)
m.	Downgradient/compliance point detection monitoring cost ($) (Line 2i + Line 2k) x Line 2l	133640

3. Compliance Monitoring - Background/ Upgradient Wells (continuation of monitoring program from operating period)

Assume no compliance monitoring

a. Number of wells 0

WORKSHEET D-3, PART 264 ONLY (page 3)

b. Number of samples collected per well (samples/well) _____

c. Number of replicate analyses per sample (replicates/sample) _____

d. Number of analyses
Line 3a x Line 3b x Line 3c _____ (minimum of 4)

e. Sample collection and preparation time required (hrs/well) _____ (4 hrs/well; p. 2-9)

f. Transportation time to and from site (hrs) _____

g. Contract lab technician unit labor cost ($/hr) _____ ($20.50/hr; p. 9-3)

h. Sample collection time (hrs)
(Line 3a x Line 3e) + Line 3f _____

i. Sampling cost ($)
Line 3g x Line 3h _____

j. Contract lab fee ($/analysis) _____ (p. 2-10)

k. Contract lab cost ($)
Line 3d x Line 3j _____

l. Number of times upgradient compliance monitoring samples are collected during closure _____ (quarterly for one year; p. 2-4)

m. Upgradient/background compliance monitoring cost ($)
(Line 3i + Line 3k) x Line 3l 0

4. Compliance Monitoring - for Selected Hazardous Constituents at Compliance Point/Downgradient Wells (continuation of monitoring program from operating period)

a. Number of wells 0

b. Number of samples collected per well (samples/well) _____

c. Number of replicate analyses per sample (replicates/sample) _____

WORKSHEET D-3, PART 264 ONLY (page 4)

d. Number of analyses
Line 4a x Line 4b x Line 4c _____

e. Sample collection and preparation time required (hrs/well) _____ (4 hrs/well; p. 2-9)

f. Transportation time to and from site (hrs) _____

g. Contract lab technician unit labor cost ($/hr) _____ ($20.50/hr; p. 9-3)

h. Sample collection time (hrs)
(Line 4a x Line 4e) + Line 4f _____

i. Sampling cost ($)
Line 4g x Line 4h _____

j. Contract lab fee ($/analysis) _____ (p. 2-10)

k. Contract lab cost ($)
Line 4d x Line 4j _____

l. Number of times downgradient hazardous constituent compliance monitoring samples are collected during closure _____ (quarterly; p. 2-4)

m. Downgradient hazardous constituent compliance monitoring cost ($)
(Line 4i + Line 4k) x Line 4l 0

5. Compliance Monitoring - for Appendix VIII Constituents at Compliance Point/Downgradient Wells (continuation of monitoring program from operating period)

a. Number of wells 0

b. Number of samples collected per well (samples/well) _____

c. Number of replicate analyses per sample (replicates/sample) _____

d. Number of analyses
Line 5a x Line 5b x Line 5c _____

e. Sample collection and preparation time required (hrs/well) _____ (4 hrs/well; p. 2-9)

WORKSHEET D-3, PART 264 ONLY (page 5)

f. Transportation time to and from site (hrs) _____

g. Contract lab technician unit labor costs ($/hr) _____ ($20.50/hr; p. 9-3)

h. Sample collection time (hrs) (Line 5a x Line 5e) + Line 5f _____

i. Sampling cost ($) Line 5g x Line 5h _____

j. Contract lab fee ($/analysis) _____ (p. 2-10)

k. Contract lab cost ($) Line 5d x Line 5j _____

l. Number of times downgradient Appendix VIII compliance monitoring samples are collected during closure _____ (annually; p. 2-4)

m. Downgradient Appendix VIII constituents compliance monitoring cost ($) (Line 5i + Line 5k) x Line 4l _____ 0

6. Administrative (Reporting)

a. Number of analyses (Line 1d x Line 1l) + (Line 2d x Line 2l) + (Line 3d x Line 3l) + (Line 4d x Line 4l) + (Line 5d x Line 5l) _____ 70

b. Contract lab technician time required (hrs/analysis) _____ 0.5

c. Contract lab technician unit labor cost ($/hr) _____ 20.5 ($20.50/hr; p. 9-3)

d. Technician cost ($) Line 6a x Line 6b x Line 6c _____ 717.50

e. Clerical time required (hrs/analysis) _____ 0.10

f. Clerical unit labor cost ($/hr) _____ 18 ($18/hr; p. 9-3)

g. Clerical cost ($) Line 6a x Line 6e x Line 6f _____ 126

h. Administration subtotal ($) Line 6d + Line 6g _____ 834.50

WORKSHEET D-3, PART 264 ONLY (page 6)

7. Monitoring Well Maintenance and Replacement

a.	Total number of wells	9	
b.	Maintenance time required (hrs/well)	2	
c.	Unit labor cost ($/hr)	23	($23/hr; p. 9-3)
d.	Monitoring well maintenance cost ($) Line 7a x Line 7b x Line 7c	414	
e.	Number of wells needing replacement	0	
f.	Existing monitoring well sealing unit cost ($/well)	0	($300/well; p. 3-5)*
g.	New monitoring well construction unit cost ($/well)	0	($4125/well; p. 3-5)*
h.	Mobilization/demobilization ($)	150	($150; p. 3-5)
i.	Monitoring well replacement cost ($) [Line 7e x (Line 7f + Line 7g)] + Line 7h	0	
j.	Number of pumps needing replacement	0	(p. 3-5)
k.	Pump unit cost ($/pump)	0	
l.	Pump cost ($) Line 7j x Line 7k	0	
m.	Number of wells needing tubing replacement	0	
n.	Length of tubing (ft/well)	0	
o.	Tubing unit cost ($/ft)	0	(p. 3-5)
p.	Tubing replacement cost ($) Line 7m x Line 7n x Line 7o	0	
q.	Number of wells needing cap replacement	1	
r.	Well cap unit cost ($/cap)	70	

* Based on a depth of 100 vertical lineal feet.

WORKSHEET D-3, PART 264 ONLY (page 7)

s. Well cap replacement cost ($)
Line 7q x Line 7r. 70

t. Monitoring well maintenance and replacement cost ($)
Line 7d + Line 7h + Line 7i + Line 7l + Line 7p + Line 7s 634

8. Groundwater Monitoring Subtotal ($)
Line 1m + Line 2m + Line 3m + Line 4m + Line 5m + Line 6h + Line 7t 174,785

WBS – 130

Decontamination of Storm Drain System

Assume 1440 linear feet of system
Assume cost to be \$1.10 per linear foot.
Assume 2 gallons waste liquid per linear foot.
Mobilization cost = \$250

Decontamination cost = $\frac{1440 \text{ ft}}{} \frac{\$1.10}{\text{ft}}$ = \$1584

Quantity waste liquid = 1440 (2) = 2880 gallons

Assume waste liquid transportation costs shared with other liquids and that disposal cost is \$0.38/gal.

Waste liquid disposal cost = \$2880 gallons $\left(\frac{\$0.38}{\text{gallon}}\right)$

= \$1094

Assume 3 rinseate samples for decontamination verification. Analyte to be ICP Metals @ \$152 each.
Sampling and Analysis Cost = \$152 x 3 = \$456

Total Cost = \$250 + \$1584 + \$1094 + 456
= \$3384

WBS - 140

WORKSHEET D-10

Certification of Final Closure

1. Independent Registered Professional Engineer

a.	Initial review of closure plan (hrs)	8	(8 hrs; p. 8-4)
b.	Inspection frequency (inspections/wk)	2	(p. 8-3)
c.	Inspection time required (hrs/inspection)	6	(p. 8-3)
d.	Number of weeks for closure (wks)	16	assumed
e.	Inspection time required (hrs) Line 1b x Line 1c x Line 1d	192	
f.	Prepare final documentation (hrs)	4	(4 hrs; p. 8-4)
g.	Total professional engineer time required (hrs) Line 1a + Line 1e + Line 1f	204	
h.	Professional engineer unit labor cost ($/hr)	45.50	($45.50/hr; p. 8-3)
i.	Professional engineer cost ($) Line 1g x Line 1h		9282

2. Clerical*

a.	Clerical time required (hrs/wk)	2	(2 hrs/wk; p. 8-3)
b.	Clerical unit labor cost ($/hr)	18	($18/hr; p. 8-3)
c.	Clerical cost ($) Line 1d x Line 2a x Line 2b		576

3. Certification of Closure Subtotal ($) Line 1i + Line 2c

$9858

* Clerical time should be included only if the Professional Engineer is operating independently in a single-person business.

WBS- 200
Receiving Bin

WORKSHEET D-1

Inventory Management

1. Removing Waste Pile Inventory (Maximum)

   a. Maximum waste pile volume (yd^3) 50

   b. Moving/loading unit cost ($/$yd^3$) 0.98 (p. 4-7) based on 1 1/2 yd^3 loader

   c. Mobilization/demobilization cost ($) 115 (p. 4-7)

   d. Waste pile inventory removal cost ($) (Line 1a x Line 1b) + Line 1c 164

2. Containerization of Bulk Waste

   a. Quantity of waste to be containerized (gal) NA *

   b. Container capacity (gal/container) (55 gal/container; p. 4-6)

   c. Number of containers needed Line 2a ÷ Line 2b

   d. Containerization unit cost ($/container) (pp. 4-6 and 4-8)

   e. Containerization cost ($) Line 2c x Line 2d 0

3. Container Loading

   a. Number of pallets Line 2c ÷ 4 (round up to nearest integer) NA

   b. Loading unit cost ($/pallet) ($4.66/pallet; p. 4-8)

   c. Container loading cost ($) Line 3a x Line 3b

* Conversion factors are provided in the Volume III appendix.

WORKSHEET D-1 (page 2)

4. Off-Site Management of Inventory

a. Quantity to be managed off-site (tons) NA *

b. Off-site management method _____

c. Transportation unit cost ($/mi) _____ ($4.50/mi; p. 4-15)**

d. One-way travel distance (mi/load) _____

e. Truck capacity (tons) _____

f. Number of loads
Line 4a ÷ Line 4e
(round up to nearest integer) _____

g. Transportation cost ($)
Line 4c x Line 4d x Line 4f _____

h. Off-site management unit cost ($/ton) _____ (pp. 4-13 - 4-20)

i. Off-site management cost ($)
Line 4g + (Line 4a x Line 4h) NA

5. On-Site Disposal

Include volume on one or more worksheets:
Landfill Inventory - Line 1e
Incinerator Inventory - Line 1c
Land Treatment Inventory - Line 1a, Line 1c

assume $250/yd3 on-site
cost = $12,500

6. Waste Pile Inventory Management Subtotal ($)
Line 1d + Line 2e + Line 3c + Line 4i

$12,664

* Conversion factors are provided in the Volume III appendix.

** Based on a 250-mile one-way distance.

WORKSHEET D-5

Decontamination

1. Protective Clothing and Safety Equipment for Facility Personnel

   a. Number of personnel requiring protective clothing and safety equipment for decontamination: 2

   b. Safety equipment and protective clothing unit cost ($/person): 80 ($80/person; p. 5-6)

   c. Safety equipment and protective clothing cost ($)
   Line 1a x Line 1b: 160

2. Equipment Decontamination

   a. Equipment needing decontamination:

   - pumps and feed lines
   - heavy equipment (e.g., fork lifts, dozers, etc.)
   - other equipment (list) 1 1/2 yd³ loader

   b. Number of pumps and lines: 0

   c. Pumps and lines decontamination cost ($): 0 (p. 5-4)

   d. Residual generation rate for pump and line decontamination: 0 (50 gal/pump and line; p. 5-1)

   e. Residual generated from pump and line decontamination (gal)
   Line 2b x Line 2d: 0

   f. Heavy equipment decontamination cost ($): 79 (p. 5-2)

   g. Total heavy equipment decontamination time (hrs): 3 (p. 5-2)

   h. Residual generation rate for heavy equipment decontamination (gal/hr): 100 (100 gal/hr; p. 5-1)

WORKSHEET D-5 (page 2)

i. Residual generated from heavy equipment decontamination (gal)
Line 2g x Line 2h — 300

j. Equipment decontamination cost ($)
Line 2c + Line 2f — 79

k. Contaminated fluid and/or residues generated (gal)
Line 2e + Line 2i — 300

3. Tank Decontamination (Bin Decon)

a. Number of personnel entering tanks — 2

b. Additional personnel safety equipment unit cost ($/person) — 172 ($172/person; p. 5-6)

c. Additional personnel safety equipment cost ($)
Line 3a x Line 3b — 344

d. Method of tank decontamination — High Pressure Wash

e. Tank area to be decontaminated (ft^2) — 1792

f. Tank decontamination unit cost ($/$ft^2$) — 0.88 (p. 5-3)

g. Tank decontamination cost ($)
Line 3e x Line 3f — 1576.96

h. Tank decontamination subtotal before surcharge ($)
Line 3c + Line 3g — 1920.96

i. Surcharge factor (factor ≥ 1) — 0 (2.0; p. 5-6)

j. Tank decontamination subtotal ($)
Line 3h x (1 + Line 3i) — 1920.96

k. Volume of tank(s) to be filled with sand (gal) — 0

WORKSHEET D-5 (page 3)

l. Sand purchase and placement unit cost ($/gal) 0 ($0.10/gal; p. 5-7)

m. Tank decontamination and sand filling cost ($)
Line 3j + (Line 3k x Line 3l) 192096

n. Residual generation rate for tank decontamination (gal/ft^2) 4 (p. 5-3)

o. Contaminated fluid and/or residues generated (gal)
Line 3e x Line 3n 7168

4. Pad or Foundation Decontamination

a. Method of pad decontamination NA Pad Will Be Disposed as Haz Waste

b. Pad area to be decontaminated (ft^2) –

c. Pad decontamination unit cost ($/ft^2) (p. 5-3)

d. Pad decontamination subtotal ($)
Line 4b x Line 4c 0

e. Residual generation rate for pad/foundation decontamination (gal/ft^2) (p. 5-3)

f. Contaminated fluid and/or residues generated (gal)
Line 4b x Line 4e 0

5. Sump Decontamination (temporary sump for decon fluid)

a. Method of sump decontamination High Pressure Wash

b. Volume to be pumped from sump(s) (gal) 7168

c. Time required for pumping (hrs)
Line 5b ÷ 8000
(round up to nearest integer) 1

d. Pumping unit cost ($/hr) 23.00 ($23/hr; p. 4-11)

WORKSHEET D-5 (page 4)

e. Pump rental cost, optional ($/hr) 2.70 ($2.70/hr; p. 4-11)

f. Pumping cost ($) (Line 5c x Line 5d) + Line 5e 25.70

g. Sump area to be decontaminated (ft^2) 750

h. Sump decontamination unit cost ($/$ft^2$) 0.88 (p. 5-3)

i. Sump decontamination cost ($) Line 5g x Line 5h 660

j. Sump decontamination subtotal ($) Line 5f + Line 5i 685.70

k. Residual generation rate for sump decontamination (gal/ft^2) 4 (p. 5-3)

l. Contaminated fluid and/or residues generated (gal) Line 5b + (Line 5g x Line 5k) 10168

6. Container Rinsing

a. Number of containers 0

b. Container rinsing time required (hrs) 0.083 x Line 6a _____

c. Container rinsing unit cost ($/hr) _____ ($32.75/hr; p. 5-10)

d. Container rinsing subtotal ($) Line 6b x Line 6c 0

e. Residual generation rate for container rinsing (gal/drum) _____ (10 gal/drum; p. 5-10)

f. Contaminated fluid/residual generated (gal) Line 6a x Line 6e _____

7. Other Items Needing Decontamination

a. List items None

WORKSHEET D-5 (page 5)

b. Method of decontamination for other items _____

c. Surface area of other items to be decontaminated (ft^2) _____

d. Decontamination unit cost ($/$ft^2$) _____ (p. 5-3)

e. Decontamination of other items subtotal ($)
Line 7c x Line 7d _____

f. Residual generation rate for decontamination of other items (gal/ft^2) _____ (p. 5-3)

g. Contaminated fluid and/or residues generated (gal)
Line 7c x Line 7f _____

8. On-Site Treatment of Decontamination Residues

a. Quantity of residue to be treated (gal) NA

b. Chemicals required for treatment (lb/gal residue or gal/gal residue) _____ (pp. 4-12 - 4-13)

c. Chemicals unit cost ($/lb or $/gal) _____

d. Chemicals cost ($)
Line 8a x Line 8b x Line 8c _____

e. Electricity required for treatment (kwh/gal residue) _____ (pp. 4-12 - 4-13)

f. Electricity unit cost ($/kwh) _____ ($0.05/kwh; p. 4-2)

g. Electricity cost ($)
Line 8a x Line 8e x Line 8f _____

h. Water required for treatment (gal/gal residue) _____ (pp. 4-12 - 4-13)

i. Water unit cost ($/1000 gal) _____ ($1.22/1000 gal; p. 4-2)

j. Water cost ($)
[(Line 8a x Line 8h) ÷ 1000] x Line 8i _____

WORKSHEET D-5 (page 6)

k. Fuel required for treatment (MMBtu/gal residue) _____ (pp. 4-12 - 4-13)

l. Fuel unit cost ($/MMBtu) _____ (p. 4-2)

m. Fuel cost ($)
Line 8a x Line 8k x Line 8l _____

n. Labor required for treatment (hrs/gallon residue) _____ (pp. 4-12 - 4-13)

o. Process operator unit labor cost ($/hr) _____ ($26.50/hr; p. 9-3)

p. Labor cost ($)
Line 8a x Line 8n x Line 8o _____

q. On-site treatment cost ($)
Line 8d + Line 8g + Line 8j + Line 8m + Line 8p _____

r. Residue generated from treatment (gal) _____

9. Testing for Success of Decontamination

a. Number of Samples 26 1 per 100 ft²

b. Sample collection time required (hrs/sample) 0.5

c. Technician unit labor cost ($/hr) 20.50 ($20-50/hr; p. 9-3)

d. Sample collection time (hrs)
Line 9a x Line 9b 13

e. Sampling cost ($)
Line 9c x Line 9d 266.50

f. Cost to test each sample ($/sample) 152 (pp. 5-10 - 5-11) (ICP metals)

g. Testing cost ($)
Line 9a x Line 9f 3952

h. Testing for success of decontamination cost ($)
Line 9e + Line 9g 4218.50

i. Sample Transportation (1 cooler x 75) 75

4293.50

WORKSHEET D-5 (page 7)

10. Treated Residue Discharge to Sewer

a. Volume of liquid discharged (gal) NA

b. Sewer discharge unit cost ($/1000 gal) ↓ ($1.50/1000 gal; p. 4-2)

c. Sewer discharge cost ($) (Line 10a ÷ 1000) x Line 10b 0

11. Off-Site Management of Decontamination Fluid/Residues and/or Treatment Residue

a. Off-site management method Precipitation

b. Quantity to be managed off-site (tons) 10168 gallons

c. Truck capacity (tons) 5000 gals

d. Number of loads Line 11b ÷ Line 11c (round up to nearest integer) 3

e. One-way distance (mi/load) 50

f. Transportation unit cost ($/mi) 5.61 ($4.50/mi; p. 4-15)**

g. Transportation cost ($) Line 11d x Line 11e x Line 11f 841.50

h. Off-site management unit cost ($/ton) $2.50/gal (pp. 4-13 - 4-20)

i. Off-site management cost ($) Line 11b x Line 11h $25420

j. Contaminated fluid and residue disposal subtotal ($) Line 11g + Line 11i $26261.50

12. On-Site Disposal

Include volume on one or more worksheets:
Landfill Inventory - Line 1n, Line 1p
Incinerator Inventory - Line 1l, Line 1n
Land Treatment Inventory - Line 1k, Line 1o

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* Conversion factors are provided in the Volume III appendix.
** Based on a 250-mile one-way distance.

WORKSHEET D-5 (page 8)

13. Facility Decontamination Subtotal ($)
Line 1c + Line 2j + Line 3m + Line 4d +
Line 5j + Line 6d + Line 7e + Line 8q +
Line 9h + Line 10c + Line 11j

$ 33,400

WORKSHEET D-6

Foundation/Pad Removal

1. Protective Clothing

   a. Number of personnel requiring protective clothing for demolition — 4

   b. Protective clothing unit cost ($/person) — 77 ($77/person; p. 6-8)

   c. Protective clothing cost ($) Line 1a x Line 1b — 308

2. Pad or Foundation Demolition

   a. Volume of pad/foundation to be demolished (yd^3) — 25 (assume 8" pad 1000 ft2)

   b. Demoliton unit cost ($/$yd^3$) — 82 ($82/yd^3; p. 6-1)

   c. Pad/foundation loading unit cost ($/$yd^3$) — 0.98 (p. 4-7)

   d. Demolition and loading cost ($) Line 2a x (Line 2b + Line 2c) — 2074.50

   e. Mobilization/demolition cost ($) — 115 (p. 4-7)

   f. Pad/foundation demolition and loading cost before surcharge ($) Line 2d + Line 2e — 2189.50

   g. Surcharge factor — 0 (1.0; pp. 6-8 - 6-9)

   h. Foundation demolition cost ($) Line 2f x (1 + Line 2g) — 2189.50

3. Equipment Decontamination

   a. Total heavy equipment decontamination time (hrs) — 3 (p. 5-2)

   b. Heavy equipment decontamination cost ($) — 79 (p. 5-2)

   c. Residual generation rate for heavy equipment decontamination (gal/hr) — 100 (100 gal/hr; p. 5-1)

   d. Contaminated fluid and/or residue generated (gal) Line 3a x Line 3c — 300

WORKSHEET D-6 (page 2)

4. On-Site Treatment of Decontamination Residues

a. Quantity of residue to be treated (gal)	NA	
b. Chemicals required for treatment (lb/gal residue or gal/gal residue)	_____	(pp. 4-12 - 4-13)
c. Chemicals unit cost ($/lb or $/gal)	_____	
d. Chemicals cost ($) Line 4a x Line 4b x Line 4c	_____	
e. Electricity required for treatment (kwh/gal residue)	_____	(pp. 4-12 - 4-13)
f. Electricity unit cost ($/kwh)	_____	($0.05/kwh; p. 4-2)
g. Electricity cost ($) Line 4a x Line 4e x Line 4f	_____	
h. Water required for treatment (gal/gal residue)	_____	(pp. 4-12 - 4-13)
i. Water unit cost ($/1000 gal)	_____	($1.22/1000 gal; 4-2)
j. Water cost ($) [(Line 4a x Line 4h) ÷ 1000] x Line 4i	_____	
k. Fuel required for treatment (MMBtu/gal residue)	_____	(pp. 4-12 - 4-13)
l. Fuel unit cost ($/MMBtu)	_____	(p. 4-2)
m. Fuel cost ($) Line 4a x Line 4k x Line 4l	_____	
n. Labor required for treatment (hrs/gallon residue)	_____	(pp. 4-12 - 4-13)
o. Process operator unit labor cost ($/hr)	_____	($26.50/hr; p. 9-3)
p. Labor cost ($) Line 4a x Line 4n x Line 4o	_____	
q. On-site treatment cost ($) Line 4d + Line 4g + Line 4j + Line 4m + Line 4p		0
r. Residue generated from treatment (gal)	_____	

WORKSHEET D-6 (page 3)

5. Treated Residue Discharge to Sewer

   a. Volume of liquid discharged (gal) — NA

   b. Sewer discharge unit cost ($/1000 gal) — _____ ($1.50/1000 gal; p. 4-2)

   c. Sewer discharge cost ($) (Line 5a ÷ 1000) x Line 5b — 0

6. Off-Site Management of Rubble, Decontamination Residue, and/or Treatment Residue

   a. Volume to be managed off-site (tons) — 25 yd³ concrete; 300 gal * liq. ***

   b. Truck capacity (tons) — 40 yd³

   c. Number of loads Line 6a ÷ Line 6b (round up to nearest integer) — 1

   d. Transportation unit cost ($/mi) — 4.50 ($4.50/mi; p. 4-15)**

   e. One-way distance (mi/load) — 100

   f. Transportation cost ($) Line 6c x Line 6d x Line 6e — 450

   g. Off-site management unit cost ($/ton) — $275/yd³ (pp. 4-13 - 4-20)

   h. Off-site management cost ($) Line 6a x Line 6g — $6875

   i. Off-site management subtotal ($) Line 6f + Line 6i — $7325

7. On-Site Disposal

   Include volume on one or more worksheets:
   Landfill Inventory - Line 1m, Line 1n, Line 1p
   Incinerator Inventory - Line 1l, Line 1n
   Land Treatment Inventory - Line 1k, Line 1o

8. Demolition and Removal Subtotal ($) Line 1c + Line 2h + Line 3b + Line 4q + Line 5c + Line 6i — $9901.50

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* Conversion factors are provided in the Volume III appendix.
** Based on a 250-mile one-way distance.

*** transported with other rinse waters.

WORKSHEET D-8

Removal of Contaminated Soil

1. Protective Clothing

   a. Number of personnel requiring protective clothing for excavation and decontaminating: 4

   b. Protective clothing unit cost ($/person): 77 ($77/person; p. 6-8)

   c. Protective clothing cost ($) Line 1a x Line 1b: 308

2. Excavation of Contaminated Soil and Earthen Berms

   a. Volume of contaminated soil/berms to be removed (yd^3): 185 1000 ft^2 x 5 ft deep

   b. Excavation unit cost, including loading ($/$yd^3$): $547 (pp. 6-3 - 6-7)

   c. Mobilization/demobilization cost ($): 230 (pp. 4-5, 4-7, 4-10, and 6-3)

   d. Contaminated soil/berm removal cost before surcharge ($) (Line 2a x Line 2b) + Line 2c: 1241.95

   e. Surcharge factor: 0 (1.0; pp. 6-8 - 6-9)

   f. Contaminated soil/berm removal subtotal ($) Line 2d x (1 + Line 2e): 1241.95

3. Equipment Decontamination

   a. Total heavy equipment decontamination time (hrs): 3 (p. 5-2)

   b. Heavy equipment decontamination cost ($): 79 (p. 5-2)

   c. Residual generation rate for heavy equipment decontamination (gal/hr): 100 (100 gal/hr; p. 5-1)

   d. Contaminated fluid and/or residues generated (gal) Line 3a x Line 3c: 300

WORKSHEET D-8 (page 2)

4. On-Site Treatment of Decontamination Residues

a. Quantity of residue to be treated (gal)	NA	
b. Chemicals required for treatment (lb/gal residue or gal/gal residue)		(pp. 4-12 - 4-13)
c. Chemicals unit cost ($/lb or $/gal)		
d. Chemicals cost ($) Line 4a x Line 4b x Line 4c		
e. Electricity required for treatment (kwh/gal residue)		(pp. 4-12 - 4-13)
f. Electricity unit cost ($/kwh)		($0.05/kwh; p. 4-2)
g. Electricity cost ($) Line 4a x Line 4e x Line 4f		
h. Water required for treatment (gal/gal residue)		(pp. 4-12 - 4-13)
i. Water unit cost ($/1000 gal)		($1.22/1000 gal; p. 4-2)
j. Water cost ($) [(Line 4a x Line 4h) ÷ 1000] x Line 4i		
k. Fuel required for treatment (MMBtu/gal residue)		(pp. 4-12 - 4-13)
l. Fuel unit cost ($/MMBtu)		(p. 4-2)
m. Fuel cost ($) Line 4a x Line 4k x Line 4l		
n. Labor required for treatment (hrs/gallon residue)		(pp. 4-12 - 4-13)
o. Process operator unit labor cost ($/hr)		($26.50/hr; p. 9-3)
p. Labor cost ($) Line 4a x Line 4n x Line 4o		

WORKSHEET D-8 (page 3)

q. On-site treatment cost ($)
Line 4d + Line 4g + Line 4j + Line 4m + Line 4p — NA

r. Residue generated from treatment (gal) — NA

5. Treated Residue Discharge to Sewer

a. Volume of liquid discharged (gal) — NA

b. Sewer discharge unit cost ($/1000 gal) — NA ($1.50/1000 gal; p. 4-2)

c. Sewer discharge cost ($)
(Line 5a ÷ 1000) x Line 5b — NA

6. Off-Site Management of Contaminated Soil, Decontamination Residue, and/or Treatment Residue

a. Quantity to be managed off-site (tons) — 185 yd3 soil; 300 gal water* **

b. Truck capacity (tons) — 240 yd3

c. Number of loads
Line 6a ÷ Line 6b
(round up to nearest integer) — 5

d. One-way distance (mi/load) — 100

e. Transportation unit cost ($/mi) — $4.50 ($4.50/mi; p. 4-15)**

f. Transportation cost ($)
Line 6c x Line 6d x Line 6e — 2250

g. Off-site management unit cost ($/ton) — $0.38/gal liquid; $275/yd3 (pp. 4-13 - 4-20)

h. Off-site management cost ($)
Line 6a x Line 6g — 50989

i. Off-site management subtotal ($)
Line 6f + Line 6h — 53239

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* Conversion factors are provided in the Volume III appendix.
** Based on a 250-mile one-way distance.

** & transported and costed with other liquids

WORKSHEET D-8 (page 4)

7. On-Site Disposal

Include volume on one or more worksheets:
Landfill Inventory - Line 1n, Line 1o, Line 1p
Incinerator Inventory - Line 1l, Line 1n, Line 1o
Land Treatment Inventory - Line 1k, Line 1l, Line 1o

8. Contaminated Soil Removal Subtotal ($)
Line 1c + Line 2f + Line 3b + Line 4q + Line 5c + Line 6i

$54,868

WORKSHEET D-12

Final Cover

1. Native Soil for Slope and Fill

a.	Length of area to be capped (yd)	0	
b.	Width of area to be capped (yd)		
c.	Quantity needed (yd^3)		(*)
d.	Excavation unit cost ($\$/yd^3$)		
e.	Placement and spreading unit cost ($\$/yd^3$)		($\$2.48/yd^3$; p. 7-6)
f.	Compaction unit cost ($\$/yd^3$)		($\$2.25/yd^3$; p. 7-6)
g.	Total native soil unit cost ($\$/yd^3$) Line 1d + Line 1e + Line 1f		($\$1.04/yd^3$; p. 7-6)
h.	Percent compaction (decimal < 1)		(0.25; p. 7-10)
i.	Native soil cost ($) Line 1c x Line 1g x (1 + Line 1h)		0

2. On-Site Clay

a.	Area to be capped (yd^2) Line 1a x Line 1b	0	
b.	Depth of clay needed (yd)		
c.	Quantity needed (yd^3) Line 2a x Line 2b		
d.	Excavation unit cost ($\$/yd^3$)		($\$4.05/yd^3$; p. 7-10)
e.	Placement/spreading unit cost ($\$/yd^3$)		($\$2.25/yd^3$; p. 7-10)
f.	Compaction unit cost ($\$/yd^3$)		($\$2.41/yd^3$; p. 7-10)
g.	Total on-site clay unit cost ($\$/yd^3$) Line 2d + Line 2e + Line 2f		($\$8.71/yd^3$; pp. 7-10 - 7-11)

* Formula provided in Final Cover and Revegetation chapter of Volume III.

WORKSHEET D-12 (page 2)

h. Percent compaction (decimal < 1) _____ (0.25; p. 7-10)

i. Clay lift thickness (yd) _____ (0.22 yd; p. 7-12)

j. Number of lifts
Line 2b ÷ Line 2i _____

k. Number of samples to be tested/lift (samples/lift) _____ (3 samples/lift; p. 7-12)

l. Number of samples to be tested
Line 2j x Line 2k _____

m. Clay testing unit cost ($/sample) _____ ($230/sample; p. 7-12)

n. Clay testing cost
Line 2l x Line 2m _____

o. On-site clay cost ($)
Line 2c x Line 2g x (1 + Line 2h) + Line 2n 0

3. Off-Site Clay

a. Area to be capped (yd^2)
Line 1a x Line 1b _____

b. Depth of clay needed (yd) _____ (0.67 yd; p. 7-4)

c. Quantity needed (yd^3)
Line 3a x Line 3b 185

d. Purchase unit cost ($/$yd^3$) 4.75 ($4.75/yd^3; p. 7-13)

e. Delivery unit cost ($/$yd^3$) 10.16 ($10.16/yd^3; p. 7-13)

f. Spreading unit cost ($/$yd^3$) 1.03 ($1.03/yd^3; p. 7-13)

g. Compaction unit cost ($/$yd^3$) 2.41 ($2.41/yd^3; p. 7-13)

h. Total off-site clay unit cost ($/$yd^3$)
Line 3d + Line 3e + Line 3f + Line 3g 18.35 ($18.35/$yd^3$; pp. 7-13 - 7-14)

i. Percent compaction (decimal < 1) NA (0.40; p. 7-10)

j. Clay lift thickness (yd) NA (0.22 yd; p. 7-12)

WORKSHEET D-12 (page 3)

k. Number of lifts
Line 3b ÷ Line 3j — NA

l. Number of samples to be tested/lift (samples/lift) — NA (3 samples/lift; p. 7-12)

m. Number of samples to be tested
Line 3k x Line 3l — NA

n. Clay testing unit cost ($/sample) — NA ($230/sample; p. 7-12)

o. Clay testing cost
Line 3m x Line 3n — NA

p. Off-site clay cost ($)
Line 3c x Line 3h x (1 + Line 3i) + Line 3o — $3394.75

4. Synthetic Membrane

a. Type of membrane — NA

b. Quantity needed (yd^2) — _____

c. Purchase unit cost ($/$yd^2$) — _____ ($2.60/yd^2; p. 7-16)

d. Delivery unit cost ($/$yd^2$) — _____ ($0.25/yd^2; p. 7-16)

e. Installation unit cost ($/$yd^2$) — _____ ($0.50/yd^2; p. 7-16)

f. Total synthetic membrane unit cost ($/$yd^2$)
Line 4c + Line 4d + Line 4e — _____ ($3.35/$yd^2$; p. 7-16)

g. Synthetic liner testing (percent of total synthetic membrane unit cost) — _____ (0.25; p. 7-15)

h. Synthetic membrane cost ($)
Line 4b x Line 4f x (1 + Line 4g) — 0

5. Sand

a. Area to be capped (yd^2)
Line 1a x Line 1b — _____

b. Depth of sand needed (yd) — _____ (0.33 yd; p. 7-4)

WORKSHEET D-12 (page 4)

c. Quantity needed (yd^3)
Line 5a x Line 5b _____

d. Purchase unit cost ($/$yd^3$) _____ ($5.50/yd^3; p. 7-20)

e. Delivery unit cost ($/$yd^3$) _____ ($2.61/yd^3; p. 7-20)

f. Spreading unit cost ($/$yd^3$) _____ ($1.03/yd^3; p. 7-20)

g. Compaction unit cost ($/$yd^3$) _____ ($1.49/yd^3; p. 7-20)

h. Total sand unit cost ($/$yd^3$)
Line 5d + Line 5e + Line 5f
+ Line 5g _____ ($10.63/$yd^3$; pp. 7-20 - 7-21)

i. Percent compaction (decimal < 1) _____ (0.10; p. 7-10)

j. Sand cost ($)
Line 5c x Line 5h x (1 + Line 5i) 0

6. Gravel

a. Area to be capped (yd^2)
Line 1a x Line 1b NA

b. Depth of gravel needed (yd) _____ (0.33 yd; p. 7-4)

c. Quantity needed (yd^3)
Line 6a x Line 6b _____

d. Purchase unit cost ($/$yd^3$) _____ ($3.85/yd^3; p. 7-17)

e. Delivery unit cost ($/$yd^3$) _____ ($2.61/yd^3; p. 7-17)

f. Spreading unit cost ($/$yd^3$) _____ ($1.03/yd^3; p. 7-17)

g. Compaction unit cost ($/$yd^3$) _____ ($1.22/yd^3; p. 7-17)

h. Total gravel unit cost ($/$yd^3$)
Line 6d + Line 6e + Line 6f
+ Line 6g _____ ($8.71/$yd^3$; pp. 7-17 - 7-18)

i. Percent compaction (decimal < 1) _____ (0.05; p. 7-10)

j. Gravel cost ($)
Line 6c x Line 6h x (1 + Line 6i) 0

WORKSHEET D-12 (page 5)

7. Drainage Tile

a. Type of tile NA

b. Length needed (L.F.) _____

c. Tile unit cost ($/L.F.) _____ ($0.50/L.F.; p. 7-22)

d. Trenching and backfilling unit cost ($/L.F.) _____ ($0.56/L.F.; p. 7-22)

e. Total drainage tile unit cost ($/L.F.)
Line 7c + Line 7d _____ ($1.06/L.F.; pp. 7-22 - 7-23)

f. Drainage tile cost ($)
Line 7b x Line 7e 0

8. Geotextile Filter Fabric

a. Type of geotextile NA

b. Quantity needed (yd^2) _____

c. Purchase unit cost ($/$yd^2$) _____ ($0.69/yd^2; p. 7-24)

d. Delivery unit cost ($/$yd^2$) _____ ($0.05/yd^2; p. 7-24)

e. Installation unit cost ($/$yd^2$) _____ ($0.09/yd^2; p. 7-24)

f. Total geotextile filter fabric unit cost ($/$yd^2$)
Line 8c + Line 8d + Line 8e _____ ($0.83/$yd^2$; p. 7-24)

g. Geotextile filter fabric cost ($)
Line 8b x Line 8f 0

9. Topsoil

a. Area to be capped (yd^2)
Line 1a x Line 1b 111

b. Depth of topsoil needed (yd) 0.67 (0.67 yd; p. 7-4)

c. Quantity needed (yd^3)
Line 9a x Line 9b 74

d. Purchase unit cost ($/$yd^3$) 6.56 ($6.56/yd^3; p. 7-26)

e. Delivery unit cost ($/$yd^3$) 2.61 ($2.61/yd^3; p. 7-26)

WORKSHEET D-12 (page 6)

f. Spreading unit cost ($/yd^3) 1.03 ($1.03/yd^3; p. 7-26)

g. Compaction unit cost ($/yd^3) 1.22 ($1.22/yd^3; p. 7-26)

h. Total topsoil unit cost ($/yd^3)
Line 9d + Line 9e + Line 9f + Line 9g 11.42 ($11.42/yd^3; p. 7-26 - 7-27)

i. Percent compaction (decimal < 1) 0 (0.25; p. 7-10)

j. Topsoil cost ($)
Line 9c x Line 9h x (1 + Line 9i) 845.08

10. Crushed Stone

a. Area to be capped (yd^2)
Line 1a x Line 1b NA

b. Depth of crushed stone needed (yd) _____ (0.33 yd; p. 7-4)

c. Quantity needed (yd^3)
Line 10a x Line 10b _____

d. Purchase unit cost ($/yd^3) _____ ($11.55/yd^3; p. 7-28)

e. Delivery unit cost ($/yd^3) _____ ($2.61/yd^3; p. 7-28)

f. Spreading unit cost ($/yd^3) _____ ($1.03/yd^3; p. 7-28)

g. Compaction unit cost ($/yd^3) _____ ($1.22/yd^3; p. 7-28)

h. Total crushed stone unit cost ($/yd^3)
Line 10d + Line 10e + Line 10f + Line 10g _____ ($16.41/yd^3; pp. 7-28 - 7-29)

i. Percent compaction (decimal < 1) _____ (0.05; p. 7-10)

j. Crushed stone cost ($)
Line 10c x Line 10h x (1 + Line 10i) 0

11. Mobilization/Demobilization

a. Heavy equipment mobilization/demobilization cost ($) 700 ($700; p. 7-32)

12. Final Cover Subtotal ($)
Line 1i + Line 2o + Line 3p + Line 4h + Line 5j + Line 6j + Line 7f + Line 8g + Line 9j + Line 10j + Line 11a

$4939.83

WORKSHEET D-13

Revegetation

1. Soil Preparation and Grading

   a. Area to be revegetated, including closed area that needs replanting (acres) — 0.02

   b. Soil preparation and grading unit cost ($/acre) — 1002 ($1002/acre; p. 7-31)

   c. Soil preparation and grading cost ($)
   Line 1a x Line 1b — 22

2. Seeding

   a. Type of vegetation — Fescue

   b. Seed unit cost ($/acre) — 795 ($795/acre; p. 7-31)

   c. Seed cost ($)
   Line 1a x Line 2b — 16

3. Fertilizing

   a. Type of fertilizer — 20-3-3

   b. Fertilizer unit cost ($/acre) — 176 ($176/acre; p. 7-31)

   c. Fertilizing cost ($)
   Line 1a x Line 3b — 4

4. Mulching

   a. Mulch unit cost ($/acre) — 1048 ($1048/acre; p. 7-31)

   b. Mulching cost ($)
   Line 1a x Line 4a — 21

5. Mobilization/Demobilization

   a. Heavy equipment mobilization/demobilization cost ($) — 105 ($105; p. 7-32)

6. Revegetation Subtotal ($)
   Line 1c + Line 2c + Line 3c + Line 4b + Line 5a — 168

Total Cost = 12,664 + 33,400 + 9901 + 54,868 + 168 + 4940
= $115,941

Bin 1 (90 yd³)

WBS-300

WORKSHEET D-1

Inventory Management

1. Removing Waste Pile Inventory (Maximum)

   a. Maximum waste pile volume (yd^3) 90

   b. Moving/loading unit cost ($/$yd^3$) .0.98 (p. 4-7)

   c. Mobilization/demobilization cost ($) 115 (p. 4-7)

   d. Waste pile inventory removal cost ($) (Line 1a x Line 1b) + Line 1c 203.20

2. Containerization of Bulk Waste

   a. Quantity of waste to be containerized (gal) 0 *

   b. Container capacity (gal/container) _____ (55 gal/container; p. 4-6)

   c. Number of containers needed Line 2a ÷ Line 2b _____

   d. Containerization unit cost ($/container) _____ (pp. 4-6 and 4-8)

   e. Containerization cost ($) Line 2c x Line 2d 0

3. Container Loading

   a. Number of pallets Line 2c ÷ 4 (round up to nearest integer) 0

   b. Loading unit cost ($/pallet) _____ ($4.66/pallet; p. 4-8)

   c. Container loading cost ($) Line 3a x Line 3b 0

* Conversion factors are provided in the Volume III appendix.

WORKSHEET D-1 (page 2)

4. Off-Site Management of Inventory

a. Quantity to be managed off-site (tons) 0 *

b. Off-site management method _____

c. Transportation unit cost ($/mi) _____ ($4.50/mi; p. 4-15)**

d. One-way travel distance (mi/load) _____

e. Truck capacity (tons) _____

f. Number of loads
Line 4a ÷ Line 4e
(round up to nearest integer) _____

g. Transportation cost ($)
Line 4c x Line 4d x Line 4f _____

h. Off-site management unit cost ($/ton) _____ (pp. 4-13 - 4-20)

i. Off-site management cost ($)
Line 4g + (Line 4a x Line 4h) 0

5. On-Site Disposal

Include volume on one or more worksheets:
Landfill Inventory - Line 1e
Incinerator Inventory - Line 1c
Land Treatment Inventory - Line 1a, Line 1c

Assume $250/yd3
cost = $22,500

6. Waste Pile Inventory Management Subtotal ($)
Line 1d + Line 2e + Line 3c + Line 4i

$22,703.20

* Conversion factors are provided in the Volume III appendix.

** Based on a 250-mile one-way distance.

WORKSHEET D-5

Decontamination

1. Protective Clothing and Safety Equipment for Facility Personnel

   a. Number of personnel requiring protective clothing and safety equipment for decontamination ___2___

   b. Safety equipment and protective clothing unit cost ($/person) ___80___ ($80/person; p. 5-6)

   c. Safety equipment and protective clothing cost ($)
      Line 1a x Line 1b ___160___

2. Equipment Decontamination

   a. Equipment needing decontamination:

      - pumps and feed lines
      - heavy equipment (e.g., fork lifts, dozers, etc.)
      - other equipment (list) ___1½ yd³ loader___

   b. Number of pumps and lines ___0___

   c. Pumps and lines decontamination cost ($) ___0___ (p. 5-4)

   d. Residual generation rate for pump and line decontamination ___0___ (50 gal/pump and line; p. 5-1)

   e. Residual generated from pump and line decontamination (gal)
      Line 2b x Line 2d ___0___

   f. Heavy equipment decontamination cost ($) ___79___ (p. 5-2)

   g. Total heavy equipment decontamination time (hrs) ___3___ (p. 5-2)

   h. Residual generation rate for heavy equipment decontamination (gal/hr) ___100___ (100 gal/hr; p. 5-1)

WORKSHEET D-5 (page 2)

i. Residual generated from heavy equipment decontamination (gal)
Line 2g x Line 2h — 300

j. Equipment decontamination cost ($)
Line 2c + Line 2f — 79

k. Contaminated fluid and/or residues generated (gal)
Line 2e + Line 2i — 300

3. Tank Decontamination (Bin)

a. Number of personnel entering tanks — 2

b. Additional personnel safety equipment unit cost ($/person) — 172 ($172/person; p. 5-6)

c. Additional personnel safety equipment cost ($)
Line 3a x Line 3b — 344

d. Method of tank decontamination — High Pressure Wash

e. Tank area to be decontaminated (ft^2) — 2180

f. Tank decontamination unit cost ($\$/ft^2$) — 0.88 (p. 5-3)

g. Tank decontamination cost ($)
Line 3e x Line 3f — 1917.90

h. Tank decontamination subtotal before surcharge ($)
Line 3c + Line 3g — 2261.90

i. Surcharge factor (factor ≥ 1) — 0 (2.0; p. 5-6)

j. Tank decontamination subtotal ($)
Line 3h x (1 + Line 3i) — 2261.90

k. Volume of tank(s) to be filled with sand (gal) — 0

WORKSHEET D-5 (page 3)

l. Sand purchase and placement unit cost ($/gal) 0 ($0.10/gal; p. 5-7)

m. Tank decontamination and sand filling cost ($)
Line 3j + (Line 3k x Line 3l) $2261.90

n. Residual generation rate for tank decontamination (gal/ft^2) 4 (p. 5-3)

o. Contaminated fluid and/or residues generated (gal)
Line 3e x Line 3n 8720

4. Pad or Foundation Decontamination

a. Method of pad decontamination NA

b. Pad area to be decontaminated (ft^2) 0

c. Pad decontamination unit cost ($/ft^2) _____ (p. 5-3)

d. Pad decontamination subtotal ($)
Line 4b x Line 4c 0

e. Residual generation rate for pad/foundation decontamination (gal/ft^2) _____ (p. 5-3)

f. Contaminated fluid and/or residues generated (gal)
Line 4b x Line 4e 0

5. Sump Decontamination (Temporary Sump)

a. Method of sump decontamination High Pressure Wash

b. Volume to be pumped from sump(s) (gal) 8720

c. Time required for pumping (hrs)
Line 5b ÷ 8000
(round up to nearest integer) 2

d. Pumping unit cost ($/hr) 23 ($23/hr; p. 4-11)

WORKSHEET D-5 (page 4)

e. Pump rental cost, optional ($/hr) 2.70 ($2.70/hr; p. 4-11)

f. Pumping cost ($) (Line 5c x Line 5d) + Line 5e 51.40

g. Sump area to be decontaminated (ft^2) .750

h. Sump decontamination unit cost ($/$ft^2$) 0.88 (p. 5-3)

i. Sump decontamination cost ($) Line 5g x Line 5h 660

j. Sump decontamination subtotal ($) Line 5f + Line 5i 711.40

k. Residual generation rate for sump decontamination (gal/ft^2) 4 (p. 5-3)

l. Contaminated fluid and/or residues generated (gal) Line 5b + (Line 5g x Line 5k) 11720

6. Container Rinsing

a. Number of containers 0

b. Container rinsing time required (hrs) 0.083 x Line 6a _____

c. Container rinsing unit cost ($/hr) _____ ($32.75/hr; p. 5-10)

d. Container rinsing subtotal ($) Line 6b x Line 6c 0

e. Residual generation rate for container rinsing (gal/drum) _____ (10 gal/drum; p. 5-10)

f. Contaminated fluid/residual generated (gal) Line 6a x Line 6e _____

7. Other Items Needing Decontamination

a. List items None

WORKSHEET D-5 (page 5)

b. Method of decontamination for other items NA

c. Surface area of other items to be decontaminated (ft^2) _____

d. Decontamination unit cost ($/$ft^2$) _____ (p. 5-3)

e. Decontamination of other items subtotal ($)
Line 7c x Line 7d 0

f. Residual generation rate for decontamination of other items (gal/ft^2) _____ (p. 5-3)

g. Contaminated fluid and/or residues generated (gal)
Line 7c x Line 7f _____

8. On-Site Treatment of Decontamination Residues

a. Quantity of residue to be treated (gal) 0

b. Chemicals required for treatment (lb/gal residue or gal/gal residue) _____ (pp. 4-12 - 4-13)

c. Chemicals unit cost ($/lb or $/gal) _____

d. Chemicals cost ($)
Line 8a x Line 8b x Line 8c _____

e. Electricity required for treatment (kwh/gal residue) _____ (pp. 4-12 - 4-13)

f. Electricity unit cost ($/kwh) _____ ($0.05/kwh; p. 4-2)

g. Electricity cost ($)
Line 8a x Line 8e x Line 8f _____

h. Water required for treatment (gal/gal residue) _____ (pp. 4-12 - 4-13)

i. Water unit cost ($/1000 gal) _____ ($1.22/1000 gal; p. 4-2)

j. Water cost ($)
[(Line 8a x Line 8h) ÷ 1000] x Line 8i _____

WORKSHEET D-5 (page 6)

k. Fuel required for treatment (MMBtu/gal residue) _____ (pp. 4-12 - 4-13)

l. Fuel unit cost ($/MMBtu) _____ (p. 4-2)

m. Fuel cost ($)
Line 8a x Line 8k x Line 8l _____

n. Labor required for treatment (hrs/gallon residue) _____ (pp. 4-12 - 4-13)

o. Process operator unit labor cost ($/hr) _____ ($26.50/hr; p. 9-3)

p. Labor cost ($)
Line 8a x Line 8n x Line 8o _____

q. On-site treatment cost ($)
Line 8d + Line 8g + Line 8j + Line 8m + Line 8p _____ 0

r. Residue generated from treatment (gal) _____ 0

9. Testing for Success of Decontamination

a. Number of Samples _____ 29 _____ 1 per 100 ft²

b. Sample collection time required (hrs/sample) _____ 0.5

c. Technician unit labor cost ($/hr) _____ 20.50 _____ ($20-50/hr; p. 9-3)

d. Sample collection time (hrs)
Line 9a x Line 9b _____ 14.5

e. Sampling cost ($)
Line 9c x Line 9d _____ 297.25

f. Cost to test each sample ($/sample) _____ $152 _____ (pp. 5-10 - 5-11)(ICP Metals)

g. Testing cost ($)
Line 9a x Line 9f _____ 4408

h. Testing for success of decontamination cost ($)
Line 9e + Line 9g _____ 4705.25

2. Sample Transportation (2 coolers @ $75 ea) _____ 150.00

4855.25

WORKSHEET D-5 (page 7)

10. Treated Residue Discharge to Sewer

a. Volume of liquid discharged (gal) 0

b. Sewer discharge unit cost ($/1000 gal) _____ ($1.50/1000 gal; p. 4-2)

c. Sewer discharge cost ($) (Line 10a ÷ 1000) x Line 10b 0

11. Off-Site Management of Decontamination Fluid/Residues and/or Treatment Residue

a. Off-site management method Precipitation

b. Quantity to be managed off-site (tons) 11720 * gallons

c. Truck capacity (tons) 5000 gallons

d. Number of loads Line 11b ÷ Line 11c (round up to nearest integer) 3

e. One-way distance (mi/load) 50

f. Transportation unit cost ($/mi) 5.61 ($4.50/mi; p. 4-15)**

g. Transportation cost ($) Line 11d x Line 11e x Line 11f 841.50

h. Off-site management unit cost ($/ton) $2.50/gal (pp. 4-13 - 4-20)

i. Off-site management cost ($) Line 11b x Line 11h $29,300

j. Contaminated fluid and residue disposal subtotal ($) Line 11g + Line 11i $30,141.50

12. On-Site Disposal

Include volume on one or more worksheets:
Landfill Inventory - Line 1n, Line 1p
Incinerator Inventory - Line 1l, Line 1n
Land Treatment Inventory - Line 1k, Line 1o

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* Conversion factors are provided in the Volume III appendix.
** Based on a 250-mile one-way distance.

WORKSHEET D-5 (page 8)

13. Facility Decontamination Subtotal ($)
Line 1c + Line 2j + Line 3m + Line 4d +
Line 5j + Line 6d + Line 7e + Line 8q +
Line 9h + Line 10c + Line 11j

$38209

WORKSHEET D-6

Foundation/Pad Removal

1. Protective Clothing

   a. Number of personnel requiring protective clothing for demolition — 4

   b. Protective clothing unit cost ($/person) — 77 ($77/person; p. 6-8)

   c. Protective clothing cost ($) Line 1a x Line 1b — 308

2. Pad or Foundation Demolition

   a. Volume of pad/foundation to be demolished (yd^3) — 50 (2000 ft^2 8" thick)

   b. Demoliton unit cost ($/$yd^3$) — 82 ($82/yd^3; p. 6-1)

   c. Pad/foundation loading unit cost ($/$yd^3$) — 0.98 (p. 4-7)

   d. Demolition and loading cost ($) Line 2a x (Line 2b + Line 2c) — 4149

   e. Mobilization/demolition cost ($) — 115 (p. 4-7)

   f. Pad/foundation demolition and loading cost before surcharge ($) Line 2d + Line 2e — 4264

   g. Surcharge factor — 0 (1.0; pp. 6-8 - 6-9)

   h. Foundation demolition cost ($) Line 2f x (1 + Line 2g) — 4264

3. Equipment Decontamination

   a. Total heavy equipment decontamination time (hrs) — 3 (p. 5-2)

   b. Heavy equipment decontamination cost ($) — 79 (p. 5-2)

   c. Residual generation rate for heavy equipment decontamination (gal/hr) — 100 (100 gal/hr; p. 5-1)

   d. Contaminated fluid and/or residue generated (gal) Line 3a x Line 3c — 300

WORKSHEET D-6 (page 2)

4. On-Site Treatment of Decontamination Residues

a.	Quantity of residue to be treated (gal)	0	
b.	Chemicals required for treatment (lb/gal residue or gal/gal residue)	_____	(pp. 4-12 - 4-13)
c.	Chemicals unit cost ($/lb or $/gal)	_____	
d.	Chemicals cost ($) Line 4a x Line 4b x Line 4c	_____	
e.	Electricity required for treatment (kwh/gal residue)	_____	(pp. 4-12 - 4-13)
f.	Electricity unit cost ($/kwh)	_____	($0.05/kwh; p. 4-2)
g.	Electricity cost ($) Line 4a x Line 4e x Line 4f	_____	
h.	Water required for treatment (gal/gal residue)	_____	(pp. 4-12 - 4-13)
i.	Water unit cost ($/1000 gal)	_____	($1.22/1000 gal; 4-2)
j.	Water cost ($) [(Line 4a x Line 4h) ÷ 1000] x Line 4i	_____	
k.	Fuel required for treatment (MMBtu/gal residue)	_____	(pp. 4-12 - 4-13)
l.	Fuel unit cost ($/MMBtu)	_____	(p. 4-2)
m.	Fuel cost ($) Line 4a x Line 4k x Line 4l	_____	
n.	Labor required for treatment (hrs/gallon residue)	_____	(pp. 4-12 - 4-13)
o.	Process operator unit labor cost ($/hr)	_____	($26.50/hr; p. 9-3)
p.	Labor cost ($) Line 4a x Line 4n x Line 4o	_____	
q.	On-site treatment cost ($) Line 4d + Line 4g + Line 4j + Line 4m + Line 4p		0
r.	Residue generated from treatment (gal)	0	

WORKSHEET D-6 (page 3)

5. Treated Residue Discharge to Sewer

   a. Volume of liquid discharged (gal) — 0

   b. Sewer discharge unit cost ($/1000 gal) — _____ ($1.50/1000 gal; p. 4-2)

   c. Sewer discharge cost ($) (Line 5a ÷ 1000) x Line 5b — 0

6. Off-Site Management of Rubble, Decontamination Residue, and/or Treatment Residue

   a. Volume to be managed off-site (tons) — 50 yd³ concrete; 300 gal liq ***

   b. Truck capacity (tons) — 40 yd³

   c. Number of loads Line 6a ÷ Line 6b (round up to nearest integer) — 2

   d. Transportation unit cost ($/mi) — $4.50 ($4.50/mi; p. 4-15)**

   e. One-way distance (mi/load) — 100

   f. Transportation cost ($) Line 6c x Line 6d x Line 6e — 900

   g. Off-site management unit cost ($/ton) — $275/yd³; $0.38/gal (pp. 4-13 - 4-20)

   h. Off-site management cost ($) Line 6a x Line 6g — 13864

   i. Off-site management subtotal ($) Line 6f + Line 6i — 14764

7. On-Site Disposal

   Include volume on one or more worksheets:
   Landfill Inventory - Line 1m, Line 1n, Line 1p
   Incinerator Inventory - Line 1l, Line 1n
   Land Treatment Inventory - Line 1k, Line 1o — 0

8. Demolition and Removal Subtotal ($) Line 1c + Line 2h + Line 3b + Line 4q + Line 5c + Line 6i — $19415

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* Conversion factors are provided in the Volume III appendix.
** Based on a 250-mile one-way distance.

*** transportation costed with other liquids

WORKSHEET D-7 (page 3)

5. Treated Residue Discharge to Sewer

   a. Volume of liquid discharged (gal) 0

   b. Sewer discharge unit cost ($/1000 gal) _____ ($1.50/1000 gal; p. 4-2)

   c. Sewer discharge cost ($) (Line 5a ÷ 1000) x Line 5b 0

6. Off-Site Management of Rubble, Decontamination Residue, and/or Treatment Residue

   a. Volume to be managed off-site (tons) 0 *

   b. Truck capacity (tons) _____

   c. Number of loads Line 6a ÷ Line 6b (round up to nearest integer) _____

   d. Transportation unit cost ($/mi) _____ ($4.50/mi; p. 4-15)**

   e. One-way distance (mi/load) _____

   f. Transportation cost ($) Line 6c x Line 6d x Line 6e _____

   g. Off-site management unit cost ($/ton) _____ (pp. 4-13 - 4-20)

   h. Off-site management cost ($) Line 6a x Line 6g _____

   i. Off-site management subtotal ($) Line 6f + Line 6h 0

7. On-Site Disposal

   Include volume on one or more worksheets:
   Landfill Inventory - Line 1m, Line 1n, Line 1p
   Incinerator Inventory - Line 1l, Line 1n
   Land Treatment Inventory - Line 1k, Line 1o

8. Containment/Liner System Removal Subtotal ($) Line 1c + Line 2g + Line 3b + Line 4q + Line 5c + Line 6i 0

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* Conversion factors are provided in the Volume III appendix.
** Based on a 250-mile one-way distance.

WORKSHEET D-8

Removal of Contaminated Soil

1. Protective Clothing

   a. Number of personnel requiring protective clothing for excavation and decontaminating: 4

   b. Protective clothing unit cost ($/person): 77 ($77/person; p. 6-8)

   c. Protective clothing cost ($) Line 1a x Line 1b: 308

2. Excavation of Contaminated Soil and Earthen Berms

   a. Volume of contaminated soil/berms to be removed (yd^3): 370

   b. Excavation unit cost, including loading ($/$yd^3$): 5.47 (pp. 6-3 - 6-7)

   c. Mobilization/demobilization cost ($): 230 (pp. 4-5, 4-7, 4-10, and 6-3)

   d. Contaminated soil/berm removal cost before surcharge ($) (Line 2a x Line 2b) + Line 2c: 2253.90

   e. Surcharge factor: 0 (1.0; pp. 6-8 - 6-9)

   f. Contaminated soil/berm removal subtotal ($) Line 2d x (1 + Line 2e): 2253.90

3. Equipment Decontamination

   a. Total heavy equipment decontamination time (hrs): 3 (p. 5-2)

   b. Heavy equipment decontamination cost ($): 79 (p. 5-2)

   c. Residual generation rate for heavy equipment decontamination (gal/hr): 100 (100 gal/hr; p. 5-1)

   d. Contaminated fluid and/or residues generated (gal) Line 3a x Line 3c: 300

WORKSHEET D-8 (page 2)

4. On-Site Treatment of Decontamination Residues

a. Quantity of residue to be treated (gal)	0	
b. Chemicals required for treatment (lb/gal residue or gal/gal residue)	_____	(pp. 4-12 - 4-13)
c. Chemicals unit cost ($/lb or $/gal)	_____	
d. Chemicals cost ($) Line 4a x Line 4b x Line 4c	_____	
e. Electricity required for treatment (kwh/gal residue)	_____	(pp. 4-12 - 4-13)
f. Electricity unit cost ($/kwh)	_____	($0.05/kwh; p. 4-2)
g. Electricity cost ($) Line 4a x Line 4e x Line 4f	_____	
h. Water required for treatment (gal/gal residue)	_____	(pp. 4-12 - 4-13)
i. Water unit cost ($/1000 gal)	_____	($1.22/1000 gal; p. 4-2)
j. Water cost ($) [(Line 4a x Line 4h) ÷ 1000] x Line 4i	_____	
k. Fuel required for treatment (MMBtu/gal residue)	_____	(pp. 4-12 - 4-13)
l. Fuel unit cost ($/MMBtu)	_____	(p. 4-2)
m. Fuel cost ($) Line 4a x Line 4k x Line 4l	_____	
n. Labor required for treatment (hrs/gallon residue)	_____	(pp. 4-12 - 4-13)
o. Process operator unit labor cost ($/hr)	_____	($26.50/hr; p. 9-3)
p. Labor cost ($) Line 4a x Line 4n x Line 4o	_____	

WORKSHEET D-8 (page 3)

q. On-site treatment cost ($)
Line 4d + Line 4g + Line 4j + Line 4m + Line 4p — 0

r. Residue generated from treatment (gal) — 0

5. Treated Residue Discharge to Sewer

a. Volume of liquid discharged (gal) — 0

b. Sewer discharge unit cost ($/1000 gal) — ($1.50/1000 gal; p. 4-2)

c. Sewer discharge cost ($)
(Line 5a ÷ 1000) x Line 5b — 0

6. Off-Site Management of Contaminated Soil, Decontamination Residue, and/or Treatment Residue

a. Quantity to be managed off-site (tons) — 370 yd3 soil; 300 gal liq * — 2000 ft2 x 5 ft

b. Truck capacity (tons) — 40 yd3

c. Number of loads
Line 6a ÷ Line 6b
(round up to nearest integer) — 10

d. One-way distance (mi/load) — 700

e. Transportation unit cost ($/mi) — 4.50 ($4.50/mi; p. 4-15)**

f. Transportation cost ($)
Line 6c x Line 6d x Line 6e — 4500

g. Off-site management unit cost ($/ton) — $0.38/gal; $225/yd3 (pp. 4-13 - 4-20)

h. Off-site management cost ($)
Line 6a x Line 6g — 101,864

i. Off-site management subtotal ($)
Line 6f + Line 6h — $106,364

* Conversion factors are provided in the Volume III appendix.
** Based on a 250-mile one-way distance.

WORKSHEET D-8 (page 4)

7. On-Site Disposal

Include volume on one or more worksheets:
Landfill Inventory - Line 1n, Line 1o, Line 1p
Incinerator Inventory - Line 1l, Line 1n, Line 1o
Land Treatment Inventory - Line 1k, Line 1l, Line 1o

8. Contaminated Soil Removal Subtotal ($)
Line 1c + Line 2f + Line 3b + Line 4q +
Line 5c + Line 6i

$109,005

WORKSHEET D-12 (page 2)

h. Percent compaction (decimal < 1) _____ (0.25; p. 7-10)

i. Clay lift thickness (yd) _____ (0.22 yd; p. 7-12)

j. Number of lifts
Line 2b ÷ Line 2i _____

k. Number of samples to be tested/lift (samples/lift) _____ (3 samples/lift; p. 7-12)

l. Number of samples to be tested
Line 2j x Line 2k _____

m. Clay testing unit cost ($/sample) _____ ($230/sample; p. 7-12)

n. Clay testing cost
Line 2l x Line 2m _____

o. On-site clay cost ($)
Line 2c x Line 2g x (1 + Line 2h) + Line 2n _____

3. Off-Site Clay

a. Area to be capped (yd^2)
Line 1a x Line 1b _____

b. Depth of clay needed (yd) _____ (0.67 yd; p. 7-4)

c. Quantity needed (yd^3)
Line 3a x Line 3b 370

d. Purchase unit cost ($/$yd^3$) _____ ($4.75/yd^3; p. 7-13)

e. Delivery unit cost ($/$yd^3$) _____ ($10.16/yd^3; p. 7-13)

f. Spreading unit cost ($/$yd^3$) _____ ($1.03/yd^3; p. 7-13)

g. Compaction unit cost ($/$yd^3$) _____ ($2.41/yd^3; p. 7-13)

h. Total off-site clay unit cost ($/$yd^3$)
Line 3d + Line 3e + Line 3f + Line 3g 18.35 ($18.35/$yd^3$; pp. 7-13 - 7-14)

i. Percent compaction (decimal < 1) _____ (0.40; p. 7-10)

j. Clay lift thickness (yd) _____ (0.22 yd; p. 7-12)

WORKSHEET D-12 (page 3)

k. Number of lifts
Line 3b ÷ Line 3j _____

l. Number of samples to be tested/lift (samples/lift) _____ (3 samples/lift; p. 7-12)

m. Number of samples to be tested
Line 3k x Line 3l _____

n. Clay testing unit cost ($/sample) _____ ($230/sample; p. 7-12)

o. Clay testing cost
Line 3m x Line 3n _____

p. Off-site clay cost ($)
Line 3c x Line 3h x (1 + Line 3i) + Line 3o 6789.50

4. Synthetic Membrane

a. Type of membrane NA

b. Quantity needed (yd^2) _____

c. Purchase unit cost ($/$yd^2$) _____ ($2.60/yd^2; p. 7-16)

d. Delivery unit cost ($/$yd^2$) _____ ($0.25/yd^2; p. 7-16)

e. Installation unit cost ($/$yd^2$) _____ ($0.50/yd^2; p. 7-16)

f. Total synthetic membrane unit cost ($/$yd^2$)
Line 4c + Line 4d + Line 4e _____ ($3.35/$yd^2$; p. 7-16)

g. Synthetic liner testing (percent of total synthetic membrane unit cost) _____ (0.25; p. 7-15)

h. Synthetic membrane cost ($)
Line 4b x Line 4f x (1 + Line 4g) 0

5. Sand

a. Area to be capped (yd^2)
Line 1a x Line 1b NA

b. Depth of sand needed (yd) _____ (0.33 yd; p. 7-4)

WORKSHEET D-12 (page 4)

c. Quantity needed (yd^3)
Line 5a x Line 5b _____

d. Purchase unit cost ($/$yd^3$) _____ ($5.50/yd^3; p. 7-20)

e. Delivery unit cost ($/$yd^3$) _____ ($2.61/yd^3; p. 7-20)

f. Spreading unit cost ($/$yd^3$) _____ ($1.03/yd^3; p. 7-20)

g. Compaction unit cost ($/$yd^3$) _____ ($1.49/yd^3; p. 7-20)

h. Total sand unit cost ($/$yd^3$)
Line 5d + Line 5e + Line 5f
+ Line 5g _____ ($10.63/$yd^3$; pp. 7-20 - 7-21)

i. Percent compaction (decimal < 1) _____ (0.10; p. 7-10)

j. Sand cost ($)
Line 5c x Line 5h x (1 + Line 5i) 0

6. Gravel

a. Area to be capped (yd^2)
Line 1a x Line 1b NA

b. Depth of gravel needed (yd) _____ (0.33 yd; p. 7-4)

c. Quantity needed (yd^3)
Line 6a x Line 6b _____

d. Purchase unit cost ($/$yd^3$) _____ ($3.85/yd^3; p. 7-17)

e. Delivery unit cost ($/$yd^3$) _____ ($2.61/yd^3; p. 7-17)

f. Spreading unit cost ($/$yd^3$) _____ ($1.03/yd^3; p. 7-17)

g. Compaction unit cost ($/$yd^3$) _____ ($1.22/yd^3; p. 7-17)

h. Total gravel unit cost ($/$yd^3$)
Line 6d + Line 6e + Line 6f
+ Line 6g _____ ($8.71/$yd^3$; pp. 7-17 - 7-18)

i. Percent compaction (decimal < 1) _____ (0.05; p. 7-10)

j. Gravel cost ($)
Line 6c x Line 6h x (1 + Line 6i) 0

WORKSHEET D-12 (page 5)

7. Drainage Tile

a. Type of tile NA

b. Length needed (L.F.) _____

c. Tile unit cost ($/L.F.) _____ ($0.50/L.F.; p. 7-22)

d. Trenching and backfilling unit cost ($/L.F.) _____ ($0.56/L.F.; p. 7-22)

e. Total drainage tile unit cost ($/L.F.)
Line 7c + Line 7d _____ ($1.06/L.F.; pp. 7-22 - 7-23)

f. Drainage tile cost ($)
Line 7b x Line 7e 0

8. Geotextile Filter Fabric

a. Type of geotextile NA

b. Quantity needed (yd^2) _____

c. Purchase unit cost ($/$yd^2$) _____ ($0.69/yd^2; p. 7-24)

d. Delivery unit cost ($/$yd^2$) _____ ($0.05/yd^2; p. 7-24)

e. Installation unit cost ($/$yd^2$) _____ ($0.09/yd^2; p. 7-24)

f. Total geotextile filter fabric unit cost ($/$yd^2$)
Line 8c + Line 8d + Line 8e _____ ($0.83/$yd^2$; p. 7-24)

g. Geotextile filter fabric cost ($)
Line 8b x Line 8f 0

9. Topsoil

a. Area to be capped (yd^2)
Line 1a x Line 1b 222

b. Depth of topsoil needed (yd) 0.67 (0.67 yd; p. 7-4)

c. Quantity needed (yd^3)
Line 9a x Line 9b 149

d. Purchase unit cost ($/$yd^3$) _____ ($6.56/yd^3; p. 7-26)

e. Delivery unit cost ($/$yd^3$) _____ ($2.61/yd^3; p. 7-26)

WORKSHEET D-12 (page 6)

f. Spreading unit cost ($/yd^3) _____ ($1.03/yd^3; p. 7-26)

g. Compaction unit cost ($/yd^3) _____ ($1.22/yd^3; p. 7-26)

h. Total topsoil unit cost ($/yd^3)
Line 9d + Line 9e + Line 9f + Line 9g 11.42 ($11.42/yd^3; p. 7-26 - 7-27)

i. Percent compaction (decimal < 1) 0 (0.25; p. 7-10)

j. Topsoil cost ($)
Line 9c x Line 9h x (1 + Line 9i) $1700.31

10. Crushed Stone

a. Area to be capped (yd^2)
Line 1a x Line 1b 0

b. Depth of crushed stone needed (yd) _____ (0.33 yd; p. 7-4)

c. Quantity needed (yd^3)
Line 10a x Line 10b _____

d. Purchase unit cost ($/yd^3) _____ ($11.55/yd^3; p. 7-28)

e. Delivery unit cost ($/yd^3) _____ ($2.61/yd^3; p. 7-28)

f. Spreading unit cost ($/yd^3) _____ ($1.03/yd^3; p. 7-28)

g. Compaction unit cost ($/yd^3) _____ ($1.22/yd^3; p. 7-28)

h. Total crushed stone unit cost ($/yd^3)
Line 10d + Line 10e + Line 10f + Line 10g _____ ($16.41/yd^3; pp. 7-28 - 7-29)

i. Percent compaction (decimal < 1) _____ (0.05; p. 7-10)

j. Crushed stone cost ($)
Line 10c x Line 10h x (1 + Line 10i) 0

11. Mobilization/Demobilization

a. Heavy equipment mobilization/demobilization cost ($) 700 ($700; p. 7-32)

12. Final Cover Subtotal ($)
Line 1i + Line 2o + Line 3p + Line 4h + Line 5j + Line 6j + Line 7f + Line 8g + Line 9j + Line 10j + Line 11a

$9189.83

WORKSHEET D-13

Revegetation

1. Soil Preparation and Grading

   a. Area to be revegetated, including closed area that needs replanting (acres) — 0.04

   b. Soil preparation and grading unit cost ($/acre) — 1002 ($1002/acre; p. 7-31)

   c. Soil preparation and grading cost ($)
   Line 1a x Line 1b — 44

2. Seeding

   a. Type of vegetation — Fescue

   b. Seed unit cost ($/acre) — 795 ($795/acre; p. 7-31)

   c. Seed cost ($)
   Line 1a x Line 2b — 32

3. Fertilizing

   a. Type of fertilizer — 20-3-3

   b. Fertilizer unit cost ($/acre) — 176 ($176/acre; p. 7-31)

   c. Fertilizing cost ($)
   Line 1a x Line 3b — 8

4. Mulching

   a. Mulch unit cost ($/acre) — 1048 ($1048/acre; p. 7-31)

   b. Mulching cost ($)
   Line 1a x Line 4a — 42

5. Mobilization/Demobilization

   a. Heavy equipment mobilization/demobilization cost ($) — 105 ($105; p. 7-32)

6. Revegetation Subtotal ($)
   Line 1c + Line 2c + Line 3c + Line 4b + Line 5a — 231

Total Cost = $22703 + $38209 + $19415 + $109,005 + $9190

$231 = $198,753

WBS-400

Bin 2 Closure

Cost Estimated to Be the Same as Bin 1

Total Cost = $198,753

WBS-500
Bins 3, 4, and 5

Cost Estimate Will be Identical to that Prepared for Bins 6, 7, and 8

Total Cost = $ 366,413

Bins 6, 7, and 8 (90 yd³ each)
WBS - 600

WORKSHEET D-1

Inventory Management

1. Removing Waste Pile Inventory (Maximum)

   a. Maximum waste pile volume (yd^3) 270

   b. Moving/loading unit cost ($/$yd^3$) 0.98 (p. 4-7)

   c. Mobilization/demobilization cost ($) 115 (p. 4-7)

   d. Waste pile inventory removal cost ($) (Line 1a x Line 1b) + Line 1c 379.60

2. Containerization of Bulk Waste

   a. Quantity of waste to be containerized (gal) NA *

   b. Container capacity (gal/container) _____ (55 gal/container; p. 4-6)

   c. Number of containers needed Line 2a ÷ Line 2b _____

   d. Containerization unit cost ($/container) _____ (pp. 4-6 and 4-8)

   e. Containerization cost ($) Line 2c x Line 2d 0

3. Container Loading

   a. Number of pallets Line 2c ÷ 4 (round up to nearest integer) NA

   b. Loading unit cost ($/pallet) _____ ($4.66/pallet; p. 4-3)

   c. Container loading cost ($) Line 3a x Line 3b 0

* Conversion factors are provided in the Volume III appendix.

WORKSHEET D-1 (page 2)

4. Off-Site Management of Inventory

a. Quantity to be managed off-site (tons) NA *

b. Off-site management method _____

c. Transportation unit cost ($/mi) _____ ($4.50/mi; p. 4-15)**

d. One-way travel distance (mi/load) _____

e. Truck capacity (tons) _____

f. Number of loads
Line 4a ÷ Line 4e
(round up to nearest integer) _____

g. Transportation cost ($)
Line 4c x Line 4d x Line 4f _____

h. Off-site management unit cost ($/ton) _____ (pp. 4-13 - 4-20)

i. Off-site management cost ($)
Line 4g + (Line 4a x Line 4h) 0

5. On-Site Disposal

Include volume on one or more worksheets:
Landfill Inventory - Line 1e
Incinerator Inventory - Line 1c
Land Treatment Inventory - Line 1a, Line 1c

Assume $250/yd³
cost = $ 67,500

6. Waste Pile Inventory Management Subtotal ($)
Line 1d + Line 2e + Line 3c + Line 4i

$67,880

* Conversion factors are provided in the Volume III appendix.

** Based on a 250-mile one-way distance.

WORKSHEET D-5

Decontamination

1. Protective Clothing and Safety Equipment for Facility Personnel

   a. Number of personnel requiring protective clothing and safety equipment for decontamination ___2___

   b. Safety equipment and protective clothing unit cost ($/person) ___80___ ($80/person; p. 5-6)

   c. Safety equipment and protective clothing cost ($)
   Line 1a x Line 1b ___160___

2. Equipment Decontamination

   a. Equipment needing decontamination:

   - pumps and feed lines
   - heavy equipment (e.g., fork lifts, dozers, etc.)
   - other equipment (list) ___1½ yd³ loader___

   b. Number of pumps and lines ___0___

   c. Pumps and lines decontamination cost ($) ___0___ (p. 5-4)

   d. Residual generation rate for pump and line decontamination ___0___ (50 gal/pump and line; p. 5-1)

   e. Residual generated from pump and line decontamination (gal)
   Line 2b x Line 2d ___0___

   f. Heavy equipment decontamination cost ($) ___79___ (p. 5-2)

   g. Total heavy equipment decontamination time (hrs) ___3___ (p. 5-2)

   h. Residual generation rate for heavy equipment decontamination (gal/hr) ___100___ (100 gal/hr; p. 5-1)

WORKSHEET D-5 (page 2)

i. Residual generated from heavy equipment decontamination (gal)
Line 2g x Line 2h — 300

j. Equipment decontamination cost ($)
Line 2c + Line 2f — 79

k. Contaminated fluid and/or residues generated (gal)
Line 2e + Line 2i — 300

3. Tank Decontamination (Bin Decon)

a. Number of personnel entering tanks — 2

b. Additional personnel safety equipment unit cost ($/person) — 172 ($172/person; p. 5-6)

c. Additional personnel safety equipment cost ($)
Line 3a x Line 3b — 344

d. Method of tank decontamination — High Pressure Wash

e. Tank area to be decontaminated (ft^2) — 6538

f. Tank decontamination unit cost ($\$/ft^2$) — 0.88 (p. 5-3)

g. Tank decontamination cost ($)
Line 3e x Line 3f — 5753.71

h. Tank decontamination subtotal before surcharge ($)
Line 3c + Line 3g — 6098

i. Surcharge factor (factor ≥ 1) — 0 (2.0; p. 5-6)

j. Tank decontamination subtotal ($)
Line 3h x (1 + Line 3i) — 6098

k. Volume of tank(s) to be filled with sand (gal) — 0

WORKSHEET D-5 (page 3)

l. Sand purchase and placement unit cost ($/gal) 0 ($0.10/gal; p. 5-7)

m. Tank decontamination and sand filling cost ($)
Line 3j + (Line 3k x Line 3l) 6098

n. Residual generation rate for tank decontamination (gal/ft^2) 4 (p. 5-3)

o. Contaminated fluid and/or residues generated (gal)
Line 3e x Line 3n 26152

4. Pad or Foundation Decontamination

a. Method of pad decontamination NA

b. Pad area to be decontaminated (ft^2) 0

c. Pad decontamination unit cost ($/ft^2) – (p. 5-3)

d. Pad decontamination subtotal ($)
Line 4b x Line 4c 0

e. Residual generation rate for pad/foundation decontamination (gal/ft^2) (p. 5-3)

f. Contaminated fluid and/or residues generated (gal)
Line 4b x Line 4e 0

5. Sump Decontamination

a. Method of sump decontamination High Pressure Wash

b. Volume to be pumped from sump(s) (gal) 26152

c. Time required for pumping (hrs)
Line 5b ÷ 8000
(round up to nearest integer) 4

d. Pumping unit cost ($/hr) 23 ($23/hr; p. 4-11)

WORKSHEET D-5 (page 4)

e. Pump rental cost, optional ($/hr) 2.70 ($2.70/hr; p. 4-11)

f. Pumping cost ($) (Line 5c x Line 5d) + Line 5e 102.80

g. Sump area to be decontaminated (ft^2) 750

h. Sump decontamination unit cost ($/$ft^2$) 0.88 (p. 5-3)

i. Sump decontamination cost ($) Line 5g x Line 5h 660

j. Sump decontamination subtotal ($) Line 5f + Line 5i 762.80

k. Residual generation rate for sump decontamination (gal/ft^2) 4 (p. 5-3)

l. Contaminated fluid and/or residues generated (gal) Line 5b + (Line 5g x Line 5k) 29152

6. Container Rinsing

a. Number of containers 0

b. Container rinsing time required (hrs) 0.083 x Line 6a _____

c. Container rinsing unit cost ($/hr) _____ ($32.75/hr; p. 5-10)

d. Container rinsing subtotal ($) Line 6b x Line 6c 0

e. Residual generation rate for container rinsing (gal/drum) _____ (10 gal/drum; p. 5-10)

f. Contaminated fluid/residual generated (gal) Line 6a x Line 6e _____

7. Other Items Needing Decontamination

a. List items None

WORKSHEET D-5 (page 5)

b. Method of decontamination for other items _____

c. Surface area of other items to be decontaminated (ft^2) _____

d. Decontamination unit cost ($/$ft^2$) _____ (p. 5-3)

e. Decontamination of other items subtotal ($)
Line 7c x Line 7d _____ 0 _____

f. Residual generation rate for decontamination of other items (gal/ft^2) _____ (p. 5-3)

g. Contaminated fluid and/or residues generated (gal)
Line 7c x Line 7f _____

8. On-Site Treatment of Decontamination Residues

a. Quantity of residue to be treated (gal) _____ 0 _____

b. Chemicals required for treatment (lb/gal residue or gal/gal residue) _____ (pp. 4-12 - 4-13)

c. Chemicals unit cost ($/lb or $/gal) _____

d. Chemicals cost ($)
Line 8a x Line 8b x Line 8c _____

e. Electricity required for treatment (kwh/gal residue) _____ (pp. 4-12 - 4-13)

f. Electricity unit cost ($/kwh) _____ ($0.05/kwh; p. 4-2)

g. Electricity cost ($)
Line 8a x Line 8e x Line 8f _____

h. Water required for treatment (gal/gal residue) _____ (pp. 4-12 - 4-13)

i. Water unit cost ($/1000 gal) _____ ($1.22/1000 gal; p. 4-2)

j. Water cost ($)
[(Line 8a x Line 8h) ÷ 1000] x Line 8i _____

WORKSHEET D-5 (page 6)

k. Fuel required for treatment (MMBtu/gal residue) _____ (pp. 4-12 - 4-13)

l. Fuel unit cost ($/MMBtu) _____ (p. 4-2)

m. Fuel cost ($)
Line 8a x Line 8k x Line 8l _____

n. Labor required for treatment (hrs/gallon residue) _____ (pp. 4-12 - 4-13)

o. Process operator unit labor cost ($/hr) _____ ($26.50/hr; p. 9-3)

p. Labor cost ($)
Line 8a x Line 8n x Line 8o _____

q. On-site treatment cost ($)
Line 8d + Line 8g + Line 8j + Line 8m + Line 8p 0

r. Residue generated from treatment (gal) _____

9. Testing for Success of Decontamination

a. Number of Samples 73 1 per 100 ft²

b. Sample collection time required (hrs/sample) 0.5

c. Technician unit labor cost ($/hr) 20.50 ($20-50/hr; p. 9-3)

d. Sample collection time (hrs)
Line 9a x Line 9b 36.5

e. Sampling cost ($)
Line 9c x Line 9d 748.25

f. Cost to test each sample ($/sample) 152 (pp. 5-10 - 5-11) (ICP metals)

g. Testing cost ($)
Line 9a x Line 9f $11096

h. Testing for success of decontamination cost ($)
Line 9e + Line 9g 11844.25

i. Sample Transportation (4 coolers @ $75) 300.00

$12144.25

WORKSHEET D-5 (page 7)

10. Treated Residue Discharge to Sewer

a. Volume of liquid discharged (gal) 0

b. Sewer discharge unit cost ($/1000 gal) _____ ($1.50/1000 gal; p. 4-2)

c. Sewer discharge cost ($) (Line 10a ÷ 1000) x Line 10b 0

11. Off-Site Management of Decontamination Fluid/Residues and/or Treatment Residue

a. Off-site management method Precipitation

b. Quantity to be managed off-site (tons) 29152 gallons*

c. Truck capacity (tons) 5000 gallons

d. Number of loads Line 11b ÷ Line 11c (round up to nearest integer) 6

e. One-way distance (mi/load) 50

f. Transportation unit cost ($/mi) 5.61 ($4.50/mi; p. 4-15)**

g. Transportation cost ($) Line 11d x Line 11e x Line 11f 1683

h. Off-site management unit cost ($/ton) $2.50/gal (pp. 4-13 - 4-20)

i. Off-site management cost ($) Line 11b x Line 11h 72,880

j. Contaminated fluid and residue disposal subtotal ($) Line 11g + Line 11i 74563

12. On-Site Disposal

Include volume on one or more worksheets:
Landfill Inventory - Line 1n, Line 1p
Incinerator Inventory - Line 1l, Line 1n
Land Treatment Inventory - Line 1k, Line 1o

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* Conversion factors are provided in the Volume III appendix.
** Based on a 250-mile one-way distance.

WORKSHEET D-5 (page 8)

13. Facility Decontamination Subtotal ($)
Line 1c + Line 2j + Line 3m + Line 4d +
Line 5j + Line 6d + Line 7e + Line 8q +
Line 9h + Line 10c + Line 11j

$93,807

WORKSHEET D-6

Foundation/Pad Removal

1. Protective Clothing

   a. Number of personnel requiring protective clothing for demolition — 4

   b. Protective clothing unit cost ($/person) — 77 ($77/person; p. 6-8)

   c. Protective clothing cost ($) Line 1a x Line 1b — 308

2. Pad or Foundation Demolition

   a. Volume of pad/foundation to be demolished (yd^3) — 74 (3000 ft^2, 8" thick)

   b. Demoliton unit cost ($/$yd^3$) — 82 ($82/yd^3; p. 6-1)

   c. Pad/foundation loading unit cost ($/$yd^3$) — 0.98 (p. 4-7)

   d. Demolition and loading cost ($) Line 2a x (Line 2b + Line 2c) — 6140.52

   e. Mobilization/demolition cost ($) — 115 (p. 4-7)

   f. Pad/foundation demolition and loading cost before surcharge ($) Line 2d + Line 2e — 6255.52

   g. Surcharge factor — 0 (1.0; pp. 6-8 - 6-9)

   h. Foundation demolition cost ($) Line 2f x (1 + Line 2g) — 6255.52

3. Equipment Decontamination

   a. Total heavy equipment decontamination time (hrs) — 3 (p. 5-2)

   b. Heavy equipment decontamination cost ($) — 79 (p. 5-2)

   c. Residual generation rate for heavy equipment decontamination (gal/hr) — 100 (100 gal/hr; p. 5-1)

   d. Contaminated fluid and/or residue generated (gal) Line 3a x Line 3c — 300

WORKSHEET D-6 (page 2)

4. On-Site Treatment of Decontamination Residues

a. Quantity of residue to be treated (gal)	NA	
b. Chemicals required for treatment (lb/gal residue or gal/gal residue)	_____	(pp. 4-12 - 4-13)
c. Chemicals unit cost ($/lb or $/gal)	_____	
d. Chemicals cost ($) Line 4a x Line 4b x Line 4c	_____	
e. Electricity required for treatment (kwh/gal residue)	_____	(pp. 4-12 - 4-13)
f. Electricity unit cost ($/kwh)	_____	($0.05/kwh; p. 4-2)
g. Electricity cost ($) Line 4a x Line 4e x Line 4f	_____	
h. Water required for treatment (gal/gal residue)	_____	(pp. 4-12 - 4-13)
i. Water unit cost ($/1000 gal)	_____	($1.22/1000 gal; 4-2)
j. Water cost ($) [(Line 4a x Line 4h) ÷ 1000] x Line 4i	_____	
k. Fuel required for treatment (MMBtu/gal residue)	_____	(pp. 4-12 - 4-13)
l. Fuel unit cost ($/MMBtu)	_____	(p. 4-2)
m. Fuel cost ($) Line 4a x Line 4k x Line 4l	_____	
n. Labor required for treatment (hrs/gallon residue)	_____	(pp. 4-12 - 4-13)
o. Process operator unit labor cost ($/hr)	_____	($26.50/hr; p. 9-3)
p. Labor cost ($) Line 4a x Line 4n x Line 4o	_____	
q. On-site treatment cost ($) Line 4d + Line 4g + Line 4j + Line 4m + Line 4p		0
r. Residue generated from treatment (gal)	0	

WORKSHEET D-6 (page 3)

5. Treated Residue Discharge to Sewer

   a. Volume of liquid discharged (gal) — 0

   b. Sewer discharge unit cost ($/1000 gal) — _____ ($1.50/1000 gal; p. 4-2)

   c. Sewer discharge cost ($) (Line 5a ÷ 1000) x Line 5b — 0

6. Off-Site Management of Rubble, Decontamination Residue, and/or Treatment Residue

   a. Volume to be managed off-site (tons) — 74 yd³ concrete; 300 gal liquid * * *

   b. Truck capacity (tons) — 40 yd 3

   c. Number of loads Line 6a ÷ Line 6b (round up to nearest integer) — 2

   d. Transportation unit cost ($/mi) — 4.50 ($4.50/mi; p. 4-15)**

   e. One-way distance (mi/load) — 100

   f. Transportation cost ($) Line 6c x Line 6d x Line 6e — 900

   g. Off-site management unit cost ($/ton) — $275/yd3; $0.38/gal (pp. 4-13 - 4-20)

   h. Off-site management cost ($) Line 6a x Line 6g — 20464

   i. Off-site management subtotal ($) Line 6f + Line 6i — 21364

7. On-Site Disposal

   Include volume on one or more worksheets:
   Landfill Inventory - Line 1m, Line 1n, Line 1p
   Incinerator Inventory - Line 1l, Line 1n
   Land Treatment Inventory - Line 1k, Line 1o

8. Demolition and Removal Subtotal ($) Line 1c + Line 2h + Line 3b + Line 4q + Line 5c + Line 6i — 28007

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* Conversion factors are provided in the Volume III appendix.
** Based on a 250-mile one-way distance.

* * * transportation costed with other liquids

WORKSHEET D-7 (page 3)

5. Treated Residue Discharge to Sewer

   a. Volume of liquid discharged (gal) 0

   b. Sewer discharge unit cost ($/1000 gal) _____ ($1.50/1000 gal; p. 4-2)

   c. Sewer discharge cost ($)
      (Line 5a ÷ 1000) x Line 5b 0

6. Off-Site Management of Rubble, Decontamination Residue, and/or Treatment Residue

   a. Volume to be managed off-site (tons) 0 *

   b. Truck capacity (tons) _____

   c. Number of loads
      Line 6a ÷ Line 6b
      (round up to nearest integer) _____

   d. Transportation unit cost ($/mi) _____ ($4.50/mi; p. 4-15)**

   e. One-way distance (mi/load) _____

   f. Transportation cost ($)
      Line 6c x Line 6d x Line 6e _____

   g. Off-site management unit cost ($/ton) _____ (pp. 4-13 - 4-20)

   h. Off-site management cost ($)
      Line 6a x Line 6g _____

   i. Off-site management subtotal ($)
      Line 6f + Line 6h 0

7. On-Site Disposal

   Include volume on one or more worksheets:
   Landfill Inventory - Line 1m, Line 1n, Line 1p
   Incinerator Inventory - Line 1l, Line 1n
   Land Treatment Inventory - Line 1k, Line 1o

8. Containment/Liner System Removal Subtotal ($)
   Line 1c + Line 2g + Line 3b + Line 4q +
   Line 5c + Line 6i 0

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* Conversion factors are provided in the Volume III appendix.
** Based on a 250-mile one-way distance.

WORKSHEET D-8

Removal of Contaminated Soil

1. Protective Clothing

   a. Number of personnel requiring protective clothing for excavation and decontaminating — 4

   b. Protective clothing unit cost ($/person) — 77 ($77/person; p. 6-8)

   c. Protective clothing cost ($) Line 1a x Line 1b — 308

2. Excavation of Contaminated Soil and Earthen Berms

   a. Volume of contaminated soil/berms to be removed (yd^3) — 556 (3000 ft² x 5 ft)

   b. Excavation unit cost, including loading ($/$yd^3$) — 5.47 (pp. 6-3 - 6-7)

   c. Mobilization/demobilization cost ($) — 230 (pp. 4-5, 4-7, 4-10, and 6-3)

   d. Contaminated soil/berm removal cost before surcharge ($) (Line 2a x Line 2b) + Line 2c — $3271.32

   e. Surcharge factor — 0 (1.0; pp. 6-8 - 6-9)

   f. Contaminated soil/berm removal subtotal ($) Line 2d x (1 + Line 2e) — $3271.32

3. Equipment Decontamination

   a. Total heavy equipment decontamination time (hrs) — 3 (p. 5-2)

   b. Heavy equipment decontamination cost ($) — 79 (p. 5-2)

   c. Residual generation rate for heavy equipment decontamination (gal/hr) — 100 (100 gal/hr; p. 5-1)

   d. Contaminated fluid and/or residues generated (gal) Line 3a x Line 3c — 300

WORKSHEET D-8 (page 2)

4. On-Site Treatment of Decontamination Residues

a. Quantity of residue to be treated (gal)	0	
b. Chemicals required for treatment (lb/gal residue or gal/gal residue)	_____	(pp. 4-12 - 4-13)
c. Chemicals unit cost ($/lb or $/gal)	_____	
d. Chemicals cost ($) Line 4a x Line 4b x Line 4c	_____	
e. Electricity required for treatment (kwh/gal residue)	_____	(pp. 4-12 - 4-13)
f. Electricity unit cost ($/kwh)	_____	($0.05/kwh; p. 4-2)
g. Electricity cost ($) Line 4a x Line 4e x Line 4f	_____	
h. Water required for treatment (gal/gal residue)	_____	(pp. 4-12 - 4-13)
i. Water unit cost ($/1000 gal)	_____	($1.22/1000 gal; p. 4-2)
j. Water cost ($) [(Line 4a x Line 4h) ÷ 1000] x Line 4i	_____	
k. Fuel required for treatment (MMBtu/gal residue)	_____	(pp. 4-12 - 4-13)
l. Fuel unit cost ($/MMBtu)	_____	(p. 4-2)
m. Fuel cost ($) Line 4a x Line 4k x Line 4l	_____	
n. Labor required for treatment (hrs/gallon residue)	_____	(pp. 4-12 - 4-13)
o. Process operator unit labor cost ($/hr)	_____	($26.50/hr; p. 9-3)
p. Labor cost ($) Line 4a x Line 4n x Line 4o	_____	

WORKSHEET D-8 (page 3)

q. On-site treatment cost ($)
Line 4d + Line 4g + Line 4j +
Line 4m + Line 4p — 0

r. Residue generated from treatment (gal) — 0

5. Treated Residue Discharge to Sewer

a. Volume of liquid discharged (gal) — 0

b. Sewer discharge unit cost ($/1000 gal) — _____ ($1.50/1000 gal; p. 4-2)

c. Sewer discharge cost ($)
(Line 5a ÷ 1000) x Line 5b — 0

6. Off-Site Management of Contaminated Soil, Decontamination Residue, and/or Treatment Residue

a. Quantity to be managed off-site (tons) — 556 yd³ soil; 300 gal liq *

b. Truck capacity (tons) — 40 yd³

c. Number of loads
Line 6a ÷ Line 6b
(round up to nearest integer) — 14

d. One-way distance (mi/load) — 100

e. Transportation unit cost ($/mi) — 4.50 ($4.50/mi; p. 4-15)**

f. Transportation cost ($)
Line 6c x Line 6d x Line 6e — 6,300

g. Off-site management unit cost ($/ton) — $275/yd³; $0.38/gal (pp. 4-13 - 4-20)

h. Off-site management cost ($)
Line 6a x Line 6g — 153,014

i. Off-site management subtotal ($)
Line 6f + Line 6h — 159,314

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* Conversion factors are provided in the Volume III appendix.
** Based on a 250-mile one-way distance.

*** transportation costed with other liquids

WORKSHEET D-8 (page 4)

7. On-Site Disposal

Include volume on one or more worksheets:
Landfill Inventory - Line 1n, Line 1o, Line 1p
Incinerator Inventory - Line 1l, Line 1n, Line 1o
Land Treatment Inventory - Line 1k, Line 1l, Line 1o

8. Contaminated Soil Removal Subtotal ($)
Line 1c + Line 2f + Line 3b + Line 4q +
Line 5c + Line 6i

$162,972

WORKSHEET D-12 (page 2)

h. Percent compaction (decimal < 1) _____ (0.25; p. 7-10)

i. Clay lift thickness (yd) _____ (0.22 yd; p. 7-12)

j. Number of lifts
Line 2b ÷ Line 2i _____

k. Number of samples to be tested/lift (samples/lift) _____ (3 samples/lift; p. 7-12)

l. Number of samples to be tested
Line 2j x Line 2k _____

m. Clay testing unit cost ($/sample) _____ ($230/sample; p. 7-12)

n. Clay testing cost
Line 2l x Line 2m _____

o. On-site clay cost ($)
Line 2c x Line 2g x (1 + Line 2h) + Line 2n _____

3. Off-Site Clay

a. Area to be capped (yd^2)
Line 1a x Line 1b _____

b. Depth of clay needed (yd) _____ (0.67 yd; p. 7-4)

c. Quantity needed (yd^3)
Line 3a x Line 3b 556

d. Purchase unit cost ($/$yd^3$) _____ ($4.75/yd^3; p. 7-13)

e. Delivery unit cost ($/$yd^3$) _____ ($10.16/yd^3; p. 7-13)

f. Spreading unit cost ($/$yd^3$) _____ ($1.03/yd^3; p. 7-13)

g. Compaction unit cost ($/$yd^3$) _____ ($2.41/yd^3; p. 7-13)

h. Total off-site clay unit cost ($/$yd^3$)
Line 3d + Line 3e + Line 3f + Line 3g 18.35 ($18.35/$yd^3$; pp. 7-13 - 7-14)

i. Percent compaction (decimal < 1) _____ (0.40; p. 7-10)

j. Clay lift thickness (yd) _____ (0.22 yd; p. 7-12)

WORKSHEET D-12 (page 3)

k. Number of lifts
Line 3b ÷ Line 3j _____

l. Number of samples to be tested/lift (samples/lift) _____ (3 samples/lift; p. 7-12)

m. Number of samples to be tested
Line 3k x Line 3l _____

n. Clay testing unit cost ($/sample) _____ ($230/sample; p. 7-12)

o. Clay testing cost
Line 3m x Line 3n _____

p. Off-site clay cost ($)
Line 3c x Line 3h x (1 + Line 3i) + Line 3o $10,202.60

4. Synthetic Membrane

a. Type of membrane NA

b. Quantity needed (yd^2) _____

c. Purchase unit cost ($/$yd^2$) _____ ($2.60/yd^2; p. 7-16)

d. Delivery unit cost ($/$yd^2$) _____ ($0.25/yd^2; p. 7-16)

e. Installation unit cost ($/$yd^2$) _____ ($0.50/yd^2; p. 7-16)

f. Total synthetic membrane unit cost ($/$yd^2$)
Line 4c + Line 4d + Line 4e _____ ($3.35/$yd^2$; p. 7-16)

g. Synthetic liner testing (percent of total synthetic membrane unit cost) _____ (0.25; p. 7-15)

h. Synthetic membrane cost ($)
Line 4b x Line 4f x (1 + Line 4g) 0

5. Sand

a. Area to be capped (yd^2)
Line 1a x Line 1b NA

b. Depth of sand needed (yd) _____ (0.33 yd; p. 7-4)

WORKSHEET D-12 (page 4)

c. Quantity needed (yd^3)
Line 5a x Line 5b _____

d. Purchase unit cost ($/$yd^3$) _____ ($5.50/yd^3; p. 7-20)

e. Delivery unit cost ($/$yd^3$) _____ ($2.61/yd^3; p. 7-20)

f. Spreading unit cost ($/$yd^3$) _____ ($1.03/yd^3; p. 7-20)

g. Compaction unit cost ($/$yd^3$) _____ ($1.49/yd^3; p. 7-20)

h. Total sand unit cost ($/$yd^3$)
Line 5d + Line 5e + Line 5f
+ Line 5g _____ ($10.63/$yd^3$; pp. 7-20 - 7-21)

i. Percent compaction (decimal < 1) _____ (0.10; p. 7-10)

j. Sand cost ($)
Line 5c x Line 5h x (1 + Line 5i) 0

6. Gravel

a. Area to be capped (yd^2)
Line 1a x Line 1b NA

b. Depth of gravel needed (yd) _____ (0.33 yd; p. 7-4)

c. Quantity needed (yd^3)
Line 6a x Line 6b _____

d. Purchase unit cost ($/$yd^3$) _____ ($3.85/yd^3; p. 7-17)

e. Delivery unit cost ($/$yd^3$) _____ ($2.61/yd^3; p. 7-17)

f. Spreading unit cost ($/$yd^3$) _____ ($1.03/yd^3; p. 7-17)

g. Compaction unit cost ($/$yd^3$) _____ ($1.22/yd^3; p. 7-17)

h. Total gravel unit cost ($/$yd^3$)
Line 6d + Line 6e + Line 6f
+ Line 6g _____ ($8.71/$yd^3$; pp. 7-17 - 7-18)

i. Percent compaction (decimal < 1) _____ (0.05; p. 7-10)

j. Gravel cost ($)
Line 6c x Line 6h x (1 + Line 6i) 0

WORKSHEET D-12 (page 5)

7. Drainage Tile

a. Type of tile NA

b. Length needed (L.F.) _____

c. Tile unit cost ($/L.F.) _____ ($0.50/L.F.; p. 7-22)

d. Trenching and backfilling unit cost ($/L.F.) _____ ($0.56/L.F.; p. 7-22)

e. Total drainage tile unit cost ($/L.F.)
Line 7c + Line 7d _____ ($1.06/L.F.; pp. 7-22 - 7-23)

f. Drainage tile cost ($)
Line 7b x Line 7e 0

8. Geotextile Filter Fabric

a. Type of geotextile NA

b. Quantity needed (yd^2) _____

c. Purchase unit cost ($/$yd^2$) _____ ($0.69/yd^2; p. 7-24)

d. Delivery unit cost ($/$yd^2$) _____ ($0.05/yd^2; p. 7-24)

e. Installation unit cost ($/$yd^2$) _____ ($0.09/yd^2; p. 7-24)

f. Total geotextile filter fabric unit cost ($/$yd^2$)
Line 8c + Line 8d + Line 8e _____ ($0.83/$yd^2$; p. 7-24)

g. Geotextile filter fabric cost ($)
Line 8b x Line 8f 0

9. Topsoil

a. Area to be capped (yd^2)
Line 1a x Line 1b 333

b. Depth of topsoil needed (yd) 0.67 (0.67 yd; p. 7-4)

c. Quantity needed (yd^3)
Line 9a x Line 9b 223

d. Purchase unit cost ($/$yd^3$) _____ ($6.56/yd^3; p. 7-26)

e. Delivery unit cost ($/$yd^3$) _____ ($2.61/yd^3; p. 7-26)

WORKSHEET D-12 (page 6)

f. Spreading unit cost ($/yd^3) _____ ($1.03/yd^3; p. 7-26)

g. Compaction unit cost ($/yd^3) _____ ($1.22/yd^3; p. 7-26)

h. Total topsoil unit cost ($/yd^3)
Line 9d + Line 9e + Line 9f + Line 9g 11.42 ($11.42/yd^3; p. 7-26 - 7-27)

i. Percent compaction (decimal < 1) _____ (0.25; p. 7-10)

j. Topsoil cost ($)
Line 9c x Line 9h x (1 + Line 9i) $2550.47

10. Crushed Stone

a. Area to be capped (yd^2)
Line 1a x Line 1b NA

b. Depth of crushed stone needed (yd) _____ (0.33 yd; p. 7-4)

c. Quantity needed (yd^3)
Line 10a x Line 10b _____

d. Purchase unit cost ($/yd^3) _____ ($11.55/yd^3; p. 7-28)

e. Delivery unit cost ($/yd^3) _____ ($2.61/yd^3; p. 7-28)

f. Spreading unit cost ($/yd^3) _____ ($1.03/yd^3; p. 7-28)

g. Compaction unit cost ($/yd^3) _____ ($1.22/yd^3; p. 7-28)

h. Total crushed stone unit cost ($/yd^3)
Line 10d + Line 10e + Line 10f + Line 10g _____ ($16.41/yd^3; pp. 7-28 - 7-29)

i. Percent compaction (decimal < 1) _____ (0.05; p. 7-10)

j. Crushed stone cost ($)
Line 10c x Line 10h x (1 + Line 10i) 0

11. Mobilization/Demobilization

a. Heavy equipment mobilization/demobilization cost ($) 700 ($700; p. 7-32)

12. Final Cover Subtotal ($)
Line 1i + Line 2o + Line 3p + Line 4h + Line 5j + Line 6j + Line 7f + Line 8g + Line 9j + Line 10j + Line 11a

$13453.07

WORKSHEET D-13

Revegetation

1. Soil Preparation and Grading

   a. Area to be revegetated, including closed area that needs replanting (acres) — 0.06

   b. Soil preparation and grading unit cost ($/acre) — 1002 ($1002/acre; p. 7-31)

   c. Soil preparation and grading cost ($)
   Line 1a x Line 1b — 66

2. Seeding

   a. Type of vegetation — Fescue

   b. Seed unit cost ($/acre) — 795 ($795/acre; p. 7-31)

   c. Seed cost ($)
   Line 1a x Line 2b — 48

3. Fertilizing

   a. Type of fertilizer — 20-3-3

   b. Fertilizer unit cost ($/acre) — 176 ($176/acre; p. 7-31)

   c. Fertilizing cost ($)
   Line 1a x Line 3b — 12

4. Mulching

   a. Mulch unit cost ($/acre) — 1048 ($1048/acre; p. 7-31)

   b. Mulching cost ($)
   Line 1a x Line 4a — 63

5. Mobilization/Demobilization

   a. Heavy equipment mobilization/demobilization cost ($) — 105 ($105; p. 7-32)

6. Revegetation Subtotal ($)
   Line 1c + Line 2c + Line 3c + Line 4b + Line 5a — $294

Total Cost = $67,880 + $93,807 + $28,007 + $162,972 + $13,453 + $294 = $366,413

Storage Bins 10 and 11
WBS-700

WORKSHEET D-1

Inventory Management

1. Removing Waste Pile Inventory (Maximum)

   a. Maximum waste pile volume (yd^3) 360

   b. Moving/loading unit cost ($/$yd^3$) 0.98 (p. 4-7)

   c. Mobilization/demobilization cost ($) 115 (p. 4-7)

   d. Waste pile inventory removal cost ($) (Line 1a x Line 1b) + Line 1c $467.80

2. Containerization of Bulk Waste

   a. Quantity of waste to be containerized (gal) NA *

   b. Container capacity (gal/container) (55 gal/container; p. 4-6)

   c. Number of containers needed Line 2a ÷ Line 2b

   d. Containerization unit cost ($/container) (pp. 4-6 and 4-8)

   e. Containerization cost ($) Line 2c x Line 2d 0

3. Container Loading

   a. Number of pallets Line 2c ÷ 4 (round up to nearest integer) NA

   b. Loading unit cost ($/pallet) ($4.66/pallet; p. 4-3)

   c. Container loading cost ($) Line 3a x Line 3b 0

* Conversion factors are provided in the Volume III appendix.

WORKSHEET D-1 (page 2)

4. Off-Site Management of Inventory

a. Quantity to be managed off-site (tons) NA *

b. Off-site management method _____

c. Transportation unit cost ($/mi) _____ ($4.50/mi; p. 4-15)**

d. One-way travel distance (mi/load) _____

e. Truck capacity (tons) _____

f. Number of loads
Line 4a ÷ Line 4e
(round up to nearest integer) _____

g. Transportation cost ($)
Line 4c x Line 4d x Line 4f _____

h. Off-site management unit cost ($/ton) _____ (pp. 4-13 - 4-20)

i. Off-site management cost ($)
Line 4g + (Line 4a x Line 4h) 0

5. On-Site Disposal

Include volume on one or more worksheets:
Landfill Inventory - Line 1e
Incinerator Inventory - Line 1c
Land Treatment Inventory - Line 1a, Line 1c

assume $250/yd3
$90,000

6. Waste Pile Inventory Management Subtotal ($)
Line 1d + Line 2e + Line 3c + Line 4i $ 90,467.80

* Conversion factors are provided in the Volume III appendix.

** Based on a 250-mile one-way distance.

WORKSHEET D-5

Decontamination

1. Protective Clothing and Safety Equipment for Facility Personnel

   a. Number of personnel requiring protective clothing and safety equipment for decontamination ___2___

   b. Safety equipment and protective clothing unit cost ($/person) ___80___ ($80/person; p. 5-6)

   c. Safety equipment and protective clothing cost ($)
   Line 1a x Line 1b ___160___

2. Equipment Decontamination

   a. Equipment needing decontamination:

   - pumps and feed lines
   - heavy equipment (e.g., fork lifts, dozers, etc.)
   - other equipment (list) ___1 1/2 yd3 loader___

   b. Number of pumps and lines ___0___

   c. Pumps and lines decontamination cost ($) ___0___ (p. 5-4)

   d. Residual generation rate for pump and line decontamination ___0___ (50 gal/pump and line; p. 5-1)

   e. Residual generated from pump and line decontamination (gal)
   Line 2b x Line 2d ___0___

   f. Heavy equipment decontamination cost ($) ___79___ (p. 5-2)

   g. Total heavy equipment decontamination time (hrs) ___3___ (p. 5-2)

   h. Residual generation rate for heavy equipment decontamination (gal/hr) ___100___ (100 gal/hr; p. 5-1)

WORKSHEET D-5 (page 2)

i. Residual generated from heavy equipment decontamination (gal)
Line 2g x Line 2h — 300

j. Equipment decontamination cost ($)
Line 2c + Line 2f — 79

k. Contaminated fluid and/or residues generated (gal)
Line 2e + Line 2i — 300

3. Tank Decontamination (Bin Decon)

a. Number of personnel entering tanks — 2

b. Additional personnel safety equipment unit cost ($/person) — 172 ($172/person; p. 5-6)

c. Additional personnel safety equipment cost ($)
Line 3a x Line 3b — 344

d. Method of tank decontamination — High Pressure Wash

e. Tank area to be decontaminated (ft^2) — 4400

f. Tank decontamination unit cost ($/$ft^2$) — 0.88 (p. 5-3)

g. Tank decontamination cost ($)
Line 3e x Line 3f — 3872

h. Tank decontamination subtotal before surcharge ($)
Line 3c + Line 3g — 4216

i. Surcharge factor (factor ≥ 1) — 0 (2.0; p. 5-6)

j. Tank decontamination subtotal ($)
Line 3h x (1 + Line 3i) — 4216

k. Volume of tank(s) to be filled with sand (gal) — 0

WORKSHEET D-5 (page 3)

l. Sand purchase and placement unit cost ($/gal) 0 ($0.10/gal; p. 5-7)

m. Tank decontamination and sand filling cost ($)
Line 3j + (Line 3k x Line 3l) 4216

n. Residual generation rate for tank decontamination (gal/ft^2) 4 (p. 5-3)

o. Contaminated fluid and/or residues generated (gal)
Line 3e x Line 3n 17600

4. Pad or Foundation Decontamination

a. Method of pad decontamination NA

b. Pad area to be decontaminated (ft^2) 0

c. Pad decontamination unit cost ($/ft^2) _____ (p. 5-3)

d. Pad decontamination subtotal ($)
Line 4b x Line 4c 0

e. Residual generation rate for pad/foundation decontamination (gal/ft^2) _____ (p. 5-3)

f. Contaminated fluid and/or residues generated (gal)
Line 4b x Line 4e 0

5. Sump Decontamination (temporary sump for decon fluid)

a. Method of sump decontamination High Pressure Wash

b. Volume to be pumped from sump(s) (gal) 17600

c. Time required for pumping (hrs)
Line 5b ÷ 8000
(round up to nearest integer) 3

d. Pumping unit cost ($/hr) 23 ($23/hr; p. 4-11)

WORKSHEET D-5 (page 4)

e. Pump rental cost, optional ($/hr) 2.70 ($2.70/hr; p. 4-11)

f. Pumping cost ($) (Line 5c x Line 5d) + Line 5e 77.10

g. Sump area to be decontaminated (ft^2) 750

h. Sump decontamination unit cost ($/$ft^2$) 0.88 (p. 5-3)

i. Sump decontamination cost ($) Line 5g x Line 5h 660

j. Sump decontamination subtotal ($) Line 5f + Line 5i 737.10

k. Residual generation rate for sump decontamination (gal/ft^2) 4 (p. 5-3)

l. Contaminated fluid and/or residues generated (gal) Line 5b + (Line 5g x Line 5k) 20.600

6. Container Rinsing

a. Number of containers 0

b. Container rinsing time required (hrs) 0.083 x Line 6a

c. Container rinsing unit cost ($/hr) ($32.75/hr; p. 5-10)

d. Container rinsing subtotal ($) Line 6b x Line 6c 0

e. Residual generation rate for container rinsing (gal/drum) (10 gal/drum; p. 5-10)

f. Contaminated fluid/residual generated (gal) Line 6a x Line 6e

7. Other Items Needing Decontamination

a. List items None

WORKSHEET D-5 (page 5)

b. Method of decontamination for other items _____

c. Surface area of other items to be decontaminated (ft^2) _____

d. Decontamination unit cost ($/$ft^2$) _____ (p. 5-3)

e. Decontamination of other items subtotal ($)
Line 7c x Line 7d _____ 0 _____

f. Residual generation rate for decontamination of other items (gal/ft^2) _____ (p. 5-3)

g. Contaminated fluid and/or residues generated (gal)
Line 7c x Line 7f _____

8. On-Site Treatment of Decontamination Residues

a. Quantity of residue to be treated (gal) _____ NA _____

b. Chemicals required for treatment (lb/gal residue or gal/gal residue) _____ (pp. 4-12 - 4-13)

c. Chemicals unit cost ($/lb or $/gal) _____

d. Chemicals cost ($)
Line 8a x Line 8b x Line 8c _____

e. Electricity required for treatment (kwh/gal residue) _____ (pp. 4-12 - 4-13)

f. Electricity unit cost ($/kwh) _____ ($0.05/kwh; p. 4-2)

g. Electricity cost ($)
Line 8a x Line 8e x Line 8f _____

h. Water required for treatment (gal/gal residue) _____ (pp. 4-12 - 4-13)

i. Water unit cost ($/1000 gal) _____ ($1.22/1000 gal; p. 4-2)

j. Water cost ($)
[(Line 8a x Line 8h) ÷ 1000] x Line 8i _____

WORKSHEET D-5 (page 6)

k. Fuel required for treatment (MMBtu/gal residue) _____ (pp. 4-12 - 4-13)

l. Fuel unit cost ($/MMBtu) _____ (p. 4-2)

m. Fuel cost ($)
Line 8a x Line 8k x Line 8l _____

n. Labor required for treatment (hrs/gallon residue) _____ (pp. 4-12 - 4-13)

o. Process operator unit labor cost ($/hr) _____ ($26.50/hr; p. 9-3)

p. Labor cost ($)
Line 8a x Line 8n x Line 8o _____

q. On-site treatment cost ($)
Line 8d + Line 8g + Line 8j + Line 8m + Line 8p 0

r. Residue generated from treatment (gal) _____

9. Testing for Success of Decontamination

a. Number of Samples 52 1 per 100 ft²

b. Sample collection time required (hrs/sample) 0.5

c. Technician unit labor cost ($/hr) 20.50 ($20-50/hr; p. 9-3)

d. Sample collection time (hrs)
Line 9a x Line 9b 26

e. Sampling cost ($)
Line 9c x Line 9d 533

f. Cost to test each sample ($/sample) 152 (pp. 5-10 - 5-11) (ICP metals)

g. Testing cost ($)
Line 9a x Line 9f $ 7904

h. Testing for success of decontamination cost ($)
Line 9e + Line 9g $8437

2. Sample Transportation (3 coolers x $75) 225

$ 8662

WORKSHEET D-5 (page 7)

10. Treated Residue Discharge to Sewer

a. Volume of liquid discharged (gal) NA

b. Sewer discharge unit cost ($/1000 gal) _____ ($1.50/1000 gal; p. 4-2)

c. Sewer discharge cost ($) (Line 10a ÷ 1000) x Line 10b 0

11. Off-Site Management of Decontamination Fluid/Residues and/or Treatment Residue

a. Off-site management method Precipitation

b. Quantity to be managed off-site (tons) 20,600 * gal

c. Truck capacity (tons) 5,000 gal

d. Number of loads Line 11b ÷ Line 11c (round up to nearest integer) 5

e. One-way distance (mi/load) 50

f. Transportation unit cost ($/mi) $5.61 ($4.50/mi; p. 4-15)**

g. Transportation cost ($) Line 11d x Line 11e x Line 11f $1402.50

h. Off-site management unit cost ($/ton) $0.38/gal (pp. 4-13 - 4-20)

i. Off-site management cost ($) Line 11b x Line 11h 7828

j. Contaminated fluid and residue disposal subtotal ($) Line 11g + Line 11i 9231.

12. On-Site Disposal

Include volume on one or more worksheets:
Landfill Inventory - Line 1n, Line 1p
Incinerator Inventory - Line 1l, Line 1n
Land Treatment Inventory - Line 1k, Line 1o

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* Conversion factors are provided in the Volume III appendix.
** Based on a 250-mile one-way distance.

WORKSHEET D-5 (page 8)

13. Facility Decontamination Subtotal ($)
Line 1c + Line 2j + Line 3m + Line 4d +
Line 5j + Line 6d + Line 7e + Line 8q +
Line 9h + Line 10c + Line 11j

$23085

WORKSHEET D-6

Foundation/Pad Removal

1. Protective Clothing

   a. Number of personnel requiring protective clothing for demolition — 4

   b. Protective clothing unit cost ($/person) — 77 ($77/person; p. 6-8)

   c. Protective clothing cost ($) Line 1a x Line 1b — 308

2. Pad or Foundation Demolition

   a. Volume of pad/foundation to be demolished (yd^3) — 37 (1500 ft^2, 8" thick)

   b. Demoliton unit cost ($/$yd^3$) — 82 ($82/yd^3; p. 6-1)

   c. Pad/foundation loading unit cost ($/$yd^3$) — 0.98 (p. 4-7)

   d. Demolition and loading cost ($) Line 2a x (Line 2b + Line 2c) — 3070.26

   e. Mobilization/demolition cost ($) — 115 (p. 4-7)

   f. Pad/foundation demolition and loading cost before surcharge ($) Line 2d + Line 2e — 3185.26

   g. Surcharge factor — 0 (1.0; pp. 6-8 - 6-9)

   h. Foundation demolition cost ($) Line 2f x (1 + Line 2g) — 3185.26

3. Equipment Decontamination

   a. Total heavy equipment decontamination time (hrs) — 3 (p. 5-2)

   b. Heavy equipment decontamination cost ($) — 79 (p. 5-2)

   c. Residual generation rate for heavy equipment decontamination (gal/hr) — 100 (100 gal/hr; p. 5-1)

   d. Contaminated fluid and/or residue generated (gal) Line 3a x Line 3c — 300

WORKSHEET D-6 (page 2)

4. On-Site Treatment of Decontamination Residues

a. Quantity of residue to be treated (gal)	NA	
b. Chemicals required for treatment (lb/gal residue or gal/gal residue)	_____	(pp. 4-12 - 4-13)
c. Chemicals unit cost ($/lb or $/gal)	_____	
d. Chemicals cost ($) Line 4a x Line 4b x Line 4c	_____	
e. Electricity required for treatment (kwh/gal residue)	_____	(pp. 4-12 - 4-13)
f. Electricity unit cost ($/kwh)	_____	($0.05/kwh; p. 4-2)
g. Electricity cost ($) Line 4a x Line 4e x Line 4f	_____	
h. Water required for treatment (gal/gal residue)	_____	(pp. 4-12 - 4-13)
i. Water unit cost ($/1000 gal)	_____	($1.22/1000 gal; 4-2)
j. Water cost ($) [(Line 4a x Line 4h) ÷ 1000] x Line 4i	_____	
k. Fuel required for treatment (MMBtu/gal residue)	_____	(pp. 4-12 - 4-13)
l. Fuel unit cost ($/MMBtu)	_____	(p. 4-2)
m. Fuel cost ($) Line 4a x Line 4k x Line 4l	_____	
n. Labor required for treatment (hrs/gallon residue)	_____	(pp. 4-12 - 4-13)
o. Process operator unit labor cost ($/hr)	_____	($26.50/hr; p. 9-3)
p. Labor cost ($) Line 4a x Line 4n x Line 4o	_____	
q. On-site treatment cost ($) Line 4d + Line 4g + Line 4j + Line 4m + Line 4p		0
r. Residue generated from treatment (gal)	_____	

WORKSHEET D-6 (page 3)

5. Treated Residue Discharge to Sewer

   a. Volume of liquid discharged (gal) — NA

   b. Sewer discharge unit cost ($/1000 gal) — _____ ($1.50/1000 gal; p. 4-2)

   c. Sewer discharge cost ($) (Line 5a ÷ 1000) x Line 5b — 0

6. Off-Site Management of Rubble, Decontamination Residue, and/or Treatment Residue

   a. Volume to be managed off-site (tons) — 37 yd3 concrete; 300 gal liquid ***

   b. Truck capacity (tons) — 40 yd3

   c. Number of loads Line 6a ÷ Line 6b (round up to nearest integer) — 1

   d. Transportation unit cost ($/mi) — 4.50 ($4.50/mi; p. 4-15)**

   e. One-way distance (mi/load) — 100

   f. Transportation cost ($) Line 6c x Line 6d x Line 6e — 450

   g. Off-site management unit cost ($/ton) — $0.38/gal; $275/yd3 (pp. 4-13 - 4-20)

   h. Off-site management cost ($) Line 6a x Line 6g — 10289

   i. Off-site management subtotal ($) Line 6f + Line 6i — 10739

7. On-Site Disposal

   Include volume on one or more worksheets:
   Landfill Inventory - Line 1m, Line 1n, Line 1p
   Incinerator Inventory - Line 1l, Line 1n
   Land Treatment Inventory - Line 1k, Line 1o

8. Demolition and Removal Subtotal ($) Line 1c + Line 2h + Line 3b + Line 4q + Line 5c + Line 6i — $14,311

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* Conversion factors are provided in the Volume III appendix.
** Based on a 250-mile one-way distance.

*** transported and costed 2-36 with other liquids

WORKSHEET D-8

Removal of Contaminated Soil

1. Protective Clothing

   a. Number of personnel requiring protective clothing for excavation and decontaminating — 4

   b. Protective clothing unit cost ($/person) — 77 ($77/person; p. 6-8)

   c. Protective clothing cost ($) Line 1a x Line 1b — 308

2. Excavation of Contaminated Soil and Earthen Berms

   a. Volume of contaminated soil/berms to be removed (yd^3) — 278 — 1500 ft^2 x 5 ft deep

   b. Excavation unit cost, including loading ($/$yd^3$) — $5.47 (pp. 6-3 - 6-7)

   c. Mobilization/demobilization cost ($) — $230 (pp. 4-5, 4-7, 4-10, and 6-3)

   d. Contaminated soil/berm removal cost before surcharge ($) (Line 2a x Line 2b) + Line 2c — $1750.66

   e. Surcharge factor — 0 (1.0; pp. 6-8 - 6-9)

   f. Contaminated soil/berm removal subtotal ($) Line 2d x (1 + Line 2e) — $1750.66

3. Equipment Decontamination

   a. Total heavy equipment decontamination time (hrs) — 3 (p. 5-2)

   b. Heavy equipment decontamination cost ($) — 79 (p. 5-2)

   c. Residual generation rate for heavy equipment decontamination (gal/hr) — 100 (100 gal/hr; p. 5-1)

   d. Contaminated fluid and/or residues generated (gal) Line 3a x Line 3c — 300

WORKSHEET D-8 (page 2)

4. On-Site Treatment of Decontamination Residues

a. Quantity of residue to be treated (gal)	NA	
b. Chemicals required for treatment (lb/gal residue or gal/gal residue)	_____	(pp. 4-12 - 4-13)
c. Chemicals unit cost ($/lb or $/gal)	_____	
d. Chemicals cost ($) Line 4a x Line 4b x Line 4c	_____	
e. Electricity required for treatment (kwh/gal residue)	_____	(pp. 4-12 - 4-13)
f. Electricity unit cost ($/kwh)	_____	($0.05/kwh; p. 4-2)
g. Electricity cost ($) Line 4a x Line 4e x Line 4f	_____	
h. Water required for treatment (gal/gal residue)	_____	(pp. 4-12 - 4-13)
i. Water unit cost ($/1000 gal)	_____	($1.22/1000 gal; p. 4-2)
j. Water cost ($) [(Line 4a x Line 4h) ÷ 1000] x Line 4i	_____	
k. Fuel required for treatment (MMBtu/gal residue)	_____	(pp. 4-12 - 4-13)
l. Fuel unit cost ($/MMBtu)	_____	(p. 4-2)
m. Fuel cost ($) Line 4a x Line 4k x Line 4l	_____	
n. Labor required for treatment (hrs/gallon residue)	_____	(pp. 4-12 - 4-13)
o. Process operator unit labor cost ($/hr)	_____	($26.50/hr; p. 9-3)
p. Labor cost ($) Line 4a x Line 4n x Line 4o	_____	

WORKSHEET D-8 (page 3)

q. On-site treatment cost ($)
Line 4d + Line 4g + Line 4j + Line 4m + Line 4p — 0

r. Residue generated from treatment (gal) — NA

5. Treated Residue Discharge to Sewer

a. Volume of liquid discharged (gal) — NA

b. Sewer discharge unit cost ($/1000 gal) — ($1.50/1000 gal; p. 4-2)

c. Sewer discharge cost ($)
(Line 5a ÷ 1000) x Line 5b — 0

6. Off-Site Management of Contaminated Soil, Decontamination Residue, and/or Treatment Residue

a. Quantity to be managed off-site (tons) — 278 yd³ soil; 300 gal liq * ****

b. Truck capacity (tons) — 40 yd³

c. Number of loads
Line 6a ÷ Line 6b
(round up to nearest integer) — 7

d. One-way distance (mi/load) — 100

e. Transportation unit cost ($/mi) — $4.50 ($4.50/mi; p. 4-15)**

f. Transportation cost ($)
Line 6c x Line 6d x Line 6e — 3150

g. Off-site management unit cost ($/ton) — $0.38/gal liq; $275/yd³ (pp. 4-13 - 4-20)

h. Off-site management cost ($)
Line 6a x Line 6g — 76,564

i. Off-site management subtotal ($)
Line 6f + Line 6h — $79,714

* Conversion factors are provided in the Volume III appendix.
** Based on a 250-mile one-way distance.

**** transported and costed with other liquids

WORKSHEET D-8 (page 4)

7. On-Site Disposal

Include volume on one or more worksheets:
Landfill Inventory - Line 1n, Line 1o, Line 1p
Incinerator Inventory - Line 1l, Line 1n, Line 1o
Land Treatment Inventory - Line 1k, Line 1l, Line 1o

8. Contaminated Soil Removal Subtotal ($)
Line 1c + Line 2f + Line 3b + Line 4q + Line 5c + Line 6i

$81,852

WORKSHEET D-12

Final Cover

1. Native Soil for Slope and Fill

a. Length of area to be capped (yd) 0

b. Width of area to be capped (yd) _____

c. Quantity needed (yd^3) _____ (*)

d. Excavation unit cost ($/$yd^3$) _____

e. Placement and spreading unit cost ($/$yd^3$) _____ ($2.48/yd^3; p. 7-6)

f. Compaction unit cost ($/$yd^3$) _____ ($2.25/yd^3; p. 7-6)

g. Total native soil unit cost ($/$yd^3$)
Line 1d + Line 1e + Line 1f _____ ($1.04/$yd^3$; p. 7-6)

h. Percent compaction (decimal < 1) _____ (0.25; p. 7-10)

i. Native soil cost ($)
Line 1c x Line 1g x (1 + Line 1h) 0

2. On-Site Clay

a. Area to be capped (yd^2)
Line 1a x Line 1b 0

b. Depth of clay needed (yd) _____

c. Quantity needed (yd^3)
Line 2a x Line 2b _____

d. Excavation unit cost ($/$yd^3$) _____ ($4.05/yd^3; p. 7-10)

e. Placement/spreading unit cost ($/$yd^3$) _____ ($2.25/yd^3; p. 7-10)

f. Compaction unit cost ($/$yd^3$) _____ ($2.41/yd^3; p. 7-10)

g. Total on-site clay unit cost ($/$yd^3$)
Line 2d + Line 2e + Line 2f _____ ($8.71/$yd^3$; pp. 7-10 - 7-11)

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* Formula provided in Final Cover and Revegetation chapter of Volume III.

WORKSHEET D-12 (page 2)

h.	Percent compaction (decimal < 1)	_____	(0.25; p. 7-10)
i.	Clay lift thickness (yd)	_____	(0.22 yd; p. 7-12)
j.	Number of lifts Line 2b ÷ Line 2i	_____	
k.	Number of samples to be tested/lift (samples/lift)	_____	(3 samples/lift; p. 7-12)
l.	Number of samples to be tested Line 2j x Line 2k	_____	
m.	Clay testing unit cost ($/sample)	_____	($230/sample; p. 7-12)
n.	Clay testing cost Line 2l x Line 2m	_____	
o.	On-site clay cost ($) Line 2c x Line 2g x (1 + Line 2h) + Line 2n		0

3. Off-Site Clay

a.	Area to be capped (yd^2) Line 1a x Line 1b	_____	
b.	Depth of clay needed (yd)	_____	(0.67 yd; p. 7-4)
c.	Quantity needed (yd^3) Line 3a x Line 3b	278	
d.	Purchase unit cost ($/$yd^3$)	4.75	($4.75/$yd^3$; p. 7-13)
e.	Delivery unit cost ($/$yd^3$)	10.16	($10.16/$yd^3$; p. 7-13)
f.	Spreading unit cost ($/$yd^3$)	1.03	($1.03/$yd^3$; p. 7-13)
g.	Compaction unit cost ($/$yd^3$)	2.41	($2.41/$yd^3$; p. 7-13)
h.	Total off-site clay unit cost ($/$yd^3$) Line 3d + Line 3e + Line 3f + Line 3g	18.35	($18.35/$yd^3$; pp. 7-13 - 7-14)
i.	Percent compaction (decimal < 1)	NA	(0.40; p. 7-10)
j.	Clay lift thickness (yd)	NA	(0.22 yd; p. 7-12)

WORKSHEET D-12 (page 3)

k. Number of lifts
Line 3b ÷ Line 3j. NA

l. Number of samples to be tested/lift (samples/lift) NA (3 samples/lift; p. 7-12)

m. Number of samples to be tested
Line 3k x Line 3l NA

n. Clay testing unit cost ($/sample) NA ($230/sample; p. 7-12)

o. Clay testing cost
Line 3m x Line 3n NA

p. Off-site clay cost ($)
Line 3c x Line 3h x (1 + Line 3i) + Line 3o $5101.30

4. Synthetic Membrane

a. Type of membrane NA

b. Quantity needed (yd^2) _____

c. Purchase unit cost ($/$yd^2$) _____ ($2.60/yd^2; p. 7-16)

d. Delivery unit cost ($/$yd^2$) _____ ($0.25/yd^2; p. 7-16)

e. Installation unit cost ($/$yd^2$) _____ ($0.50/yd^2; p. 7-16)

f. Total synthetic membrane unit cost ($/$yd^2$)
Line 4c + Line 4d + Line 4e _____ ($3.35/$yd^2$; p. 7-16)

g. Synthetic liner testing (percent of total synthetic membrane unit cost) _____ (0.25; p. 7-15)

h. Synthetic membrane cost ($)
Line 4b x Line 4f x (1 + Line 4g) 0

5. Sand

a. Area to be capped (yd^2)
Line 1a x Line 1b NA

b. Depth of sand needed (yd) _____ (0.33 yd; p. 7-4)

WORKSHEET D-12 (page 4)

c. Quantity needed (yd^3)
Line 5a x Line 5b _____

d. Purchase unit cost ($/$yd^3$) _____ ($5.50/yd^3; p. 7-20)

e. Delivery unit cost ($/$yd^3$) _____ ($2.61/yd^3; p. 7-20)

f. Spreading unit cost ($/$yd^3$) _____ ($1.03/yd^3; p. 7-20)

g. Compaction unit cost ($/$yd^3$) _____ ($1.49/yd^3; p. 7-20)

h. Total sand unit cost ($/$yd^3$)
Line 5d + Line 5e + Line 5f
+ Line 5g _____ ($10.63/$yd^3$; pp. 7-20 - 7-21)

i. Percent compaction (decimal < 1) _____ (0.10; p. 7-10)

j. Sand cost ($)
Line 5c x Line 5h x (1 + Line 5i) 0

6. Gravel

a. Area to be capped (yd^2)
Line 1a x Line 1b NA

b. Depth of gravel needed (yd) _____ (0.33 yd; p. 7-4)

c. Quantity needed (yd^3)
Line 6a x Line 6b _____

d. Purchase unit cost ($/$yd^3$) _____ ($3.85/yd^3; p. 7-17)

e. Delivery unit cost ($/$yd^3$) _____ ($2.61/yd^3; p. 7-17)

f. Spreading unit cost ($/$yd^3$) _____ ($1.03/yd^3; p. 7-17)

g. Compaction unit cost ($/$yd^3$) _____ ($1.22/yd^3; p. 7-17)

h. Total gravel unit cost ($/$yd^3$)
Line 6d + Line 6e + Line 6f
+ Line 6g _____ ($8.71/$yd^3$; pp. 7-17 - 7-18)

i. Percent compaction (decimal < 1) _____ (0.05; p. 7-10)

j. Gravel cost ($)
Line 6c x Line 6h x (1 + Line 6i) 0

WORKSHEET D-12 (page 5)

7. Drainage Tile

a. Type of tile NA

b. Length needed (L.F.) _____

c. Tile unit cost ($/L.F.) _____ ($0.50/L.F.; p. 7-22)

d. Trenching and backfilling unit cost ($/L.F.) _____ ($0.56/L.F.; p. 7-22)

e. Total drainage tile unit cost ($/L.F.)
Line 7c + Line 7d _____ ($1.06/L.F.; pp. 7-22 - 7-23)

f. Drainage tile cost ($)
Line 7b x Line 7e 0

8. Geotextile Filter Fabric

a. Type of geotextile NA

b. Quantity needed (yd^2) _____

c. Purchase unit cost ($/$yd^2$) _____ ($0.69/yd^2; p. 7-24)

d. Delivery unit cost ($/$yd^2$) _____ ($0.05/yd^2; p. 7-24)

e. Installation unit cost ($/$yd^2$) _____ ($0.09/yd^2; p. 7-24)

f. Total geotextile filter fabric unit cost ($/$yd^2$)
Line 8c + Line 8d + Line 8e _____ ($0.83/$yd^2$; p. 7-24)

g. Geotextile filter fabric cost ($)
Line 8b x Line 8f 0

9. Topsoil

a. Area to be capped (yd^2)
Line 1a x Line 1b 167

b. Depth of topsoil needed (yd) 0.67 (0.67 yd; p. 7-4)

c. Quantity needed (yd^3)
Line 9a x Line 9b 112

d. Purchase unit cost ($/$yd^3$) 6.56 ($6.56/yd^3; p. 7-26)

e. Delivery unit cost ($/$yd^3$) 2.61 ($2.61/yd^3; p. 7-26)

WORKSHEET D-12 (page 6)

f. Spreading unit cost ($/yd^3) 1.03 ($1.03/yd^3; p. 7-26)

g. Compaction unit cost ($/yd^3) 1.22 ($1.22/yd^3; p. 7-26)

h. Total topsoil unit cost ($/yd^3)
Line 9d + Line 9e + Line 9f + Line 9g $11.42 ($11.42/yd^3; p. 7-26 - 7-27)

i. Percent compaction (decimal < 1) 0 (0.25; p. 7-10)

j. Topsoil cost ($)
Line 9c x Line 9h x (1 + Line 9i) $1907.14

10. Crushed Stone

a. Area to be capped (yd^2)
Line 1a x Line 1b NA

b. Depth of crushed stone needed (yd) _____ (0.33 yd; p. 7-4)

c. Quantity needed (yd^3)
Line 10a x Line 10b _____

d. Purchase unit cost ($/yd^3) _____ ($11.55/yd^3; p. 7-28)

e. Delivery unit cost ($/yd^3) _____ ($2.61/yd^3; p. 7-28)

f. Spreading unit cost ($/yd^3) _____ ($1.03/yd^3; p. 7-28)

g. Compaction unit cost ($/yd^3) _____ ($1.22/yd^3; p. 7-28)

h. Total crushed stone unit cost ($/yd^3)
Line 10d + Line 10e + Line 10f + Line 10g _____ ($16.41/yd^3; pp. 7-28 - 7-29)

i. Percent compaction (decimal < 1) _____ (0.05; p. 7-10)

j. Crushed stone cost ($)
Line 10c x Line 10h x (1 + Line 10i) 0

11. Mobilization/Demobilization

a. Heavy equipment mobilization/demobilization cost ($) 700 ($700; p. 7-32)

12. Final Cover Subtotal ($)
Line 1i + Line 2o + Line 3p + Line 4h + Line 5j + Line 6j + Line 7f + Line 8g + Line 9j + Line 10j + Line 11a

$7708.44

WORKSHEET D-13

Revegetation

1. Soil Preparation and Grading

   a. Area to be revegetated, including closed area that needs replanting (acres) — 0.03

   b. Soil preparation and grading unit cost ($/acre) — 1002 ($1002/acre; p. 7-31)

   c. Soil preparation and grading cost ($)
   Line 1a x Line 1b — 33

2. Seeding

   a. Type of vegetation — Fescue

   b. Seed unit cost ($/acre) — 795 ($795/acre; p. 7-31)

   c. Seed cost ($)
   Line 1a x Line 2b — 24

3. Fertilizing

   a. Type of fertilizer — 20-3-3

   b. Fertilizer unit cost ($/acre) — 176 ($176/acre; p. 7-31)

   c. Fertilizing cost ($)
   Line 1a x Line 3b — 6

4. Mulching

   a. Mulch unit cost ($/acre) — 1048 ($1048/acre; p. 7-31)

   b. Mulching cost ($)
   Line 1a x Line 4a — 31

5. Mobilization/Demobilization

   a. Heavy equipment mobilization/demobilization cost ($) — 105 ($105; p. 7-32)

6. Revegetation Subtotal ($)
   Line 1c + Line 2c + Line 3c + Line 4b + Line 5a — $199

Total Cost = $99,468 - $23,085 + $14,311 + $81,852 + $7708 + $199 = $217,623

Bins 9, 15, 16, and 17
WBS-800

WORKSHEET D-1

Inventory Management

1. Removing Waste Pile Inventory (Maximum)

   a. Maximum waste pile volume (yd^3) 210

   b. Moving/loading unit cost ($/$yd^3$) 0.98 (p. 4-7)

   c. Mobilization/demobilization cost ($) 115 (p. 4-7)

   d. Waste pile inventory removal cost ($) (Line 1a x Line 1b) + Line 1c 320.80

2. Containerization of Bulk Waste

   a. Quantity of waste to be containerized (gal) NA *

   b. Container capacity (gal/container) _____ (55 gal/container; p. 4-6)

   c. Number of containers needed Line 2a ÷ Line 2b _____

   d. Containerization unit cost ($/container) _____ (pp. 4-6 and 4-8)

   e. Containerization cost ($) Line 2c x Line 2d 0

3. Container Loading

   a. Number of pallets Line 2c ÷ 4 (round up to nearest integer) NA

   b. Loading unit cost ($/pallet) _____ ($4.66/pallet; p. 4-8)

   c. Container loading cost ($) Line 3a x Line 3b 0

* Conversion factors are provided in the Volume III appendix.

WORKSHEET D-1 (page 2)

4. Off-Site Management of Inventory

a. Quantity to be managed off-site (tons) NA *

b. Off-site management method _____

c. Transportation unit cost ($/mi) _____ ($4.50/mi; p. 4-15)**

d. One-way travel distance (mi/load) _____

e. Truck capacity (tons) _____

f. Number of loads
Line 4a ÷ Line 4e
(round up to nearest integer) _____

g. Transportation cost ($)
Line 4c x Line 4d x Line 4f _____

h. Off-site management unit cost ($/ton) _____ (pp. 4-13 - 4-20)

i. Off-site management cost ($)
Line 4g + (Line 4a x Line 4h) 0

5. On-Site Disposal

Include volume on one or more worksheets:
Landfill Inventory - Line 1e
Incinerator Inventory - Line 1c
Land Treatment Inventory - Line 1a, Line 1c

Assume $250/yd^3
cost = $ 52,500

6. Waste Pile Inventory Management Subtotal ($)
Line 1d + Line 2e + Line 3c + Line 4i $52,820.80

* Conversion factors are provided in the Volume III appendix.

** Based on a 250-mile one-way distance.

WORKSHEET D-5

Decontamination

1. Protective Clothing and Safety Equipment for Facility Personnel

   a. Number of personnel requiring protective clothing and safety equipment for decontamination: 4

   b. Safety equipment and protective clothing unit cost ($/person): 80 ($80/person; p. 5-6)

   c. Safety equipment and protective clothing cost ($)
   Line 1a x Line 1b: 320

2. Equipment Decontamination

   a. Equipment needing decontamination:

   - pumps and feed lines
   - heavy equipment (e.g., fork lifts, dozers, etc.)
   - other equipment (list) 1 1/2 yd3 loader

   b. Number of pumps and lines: 0

   c. Pumps and lines decontamination cost ($): 0 (p. 5-4)

   d. Residual generation rate for pump and line decontamination: 0 (50 gal/pump and line; p. 5-1)

   e. Residual generated from pump and line decontamination (gal)
   Line 2b x Line 2d: 0

   f. Heavy equipment decontamination cost ($): 79 (p. 5-2)

   g. Total heavy equipment decontamination time (hrs): 3 (p. 5-2)

   h. Residual generation rate for heavy equipment decontamination (gal/hr): 100 (100 gal/hr; p. 5-1)

WORKSHEET D-5 (page 2)

i. Residual generated from heavy equipment decontamination (gal)
Line 2g x Line 2h — 300

j. Equipment decontamination cost ($)
Line 2c + Line 2f — 79

k. Contaminated fluid and/or residues generated (gal)
Line 2e + Line 2i — 300

3. Tank Decontamination (Bin Decon)

a. Number of personnel entering tanks — 4

b. Additional personnel safety equipment unit cost ($/person) — 172 ($172/person; p. 5-6)

c. Additional personnel safety equipment cost ($)
Line 3a x Line 3b — 688

d. Method of tank decontamination — High Pressure Wash

e. Tank area to be decontaminated (ft^2) — 7170

f. Tank decontamination unit cost ($\$/ft^2$) — 0.88 (p. 5-3)

g. Tank decontamination cost ($)
Line 3e x Line 3f — 6310

h. Tank decontamination subtotal before surcharge ($)
Line 3c + Line 3g — 6998

i. Surcharge factor (factor ≥ 1) — 0 (2.0; p. 5-6)

j. Tank decontamination subtotal ($)
Line 3h x (1 + Line 3i) — 6998

k. Volume of tank(s) to be filled with sand (gal) — 0

WORKSHEET D-5 (page 3)

l. Sand purchase and placement unit cost ($/gal) 0 ($0.10/gal; p. 5-7)

m. Tank decontamination and sand filling cost ($)
Line 3j + (Line 3k x Line 3l) 6998

n. Residual generation rate for tank decontamination (gal/ft^2) 4 (p. 5-3)

o. Contaminated fluid and/or residues generated (gal)
Line 3e x Line 3n 28,680

4. Pad or Foundation Decontamination

a. Method of pad decontamination NA

b. Pad area to be decontaminated (ft^2) 0

c. Pad decontamination unit cost ($/ft^2) 0.88 (p. 5-3)

d. Pad decontamination subtotal ($)
Line 4b x Line 4c 0

e. Residual generation rate for pad/foundation decontamination (gal/ft^2) 4 (p. 5-3)

f. Contaminated fluid and/or residues generated (gal)
Line 4b x Line 4e 0

5. Sump Decontamination (temporary sump for decon fluid)

a. Method of sump decontamination High Pressure Wash

b. Volume to be pumped from sump(s) (gal) 28680

c. Time required for pumping (hrs)
Line 5b ÷ 8000
(round up to nearest integer) 4

d. Pumping unit cost ($/hr) 23.00 ($23/hr; p. 4-11)

WORKSHEET D-5 (page 4)

e. Pump rental cost, optional ($/hr) 2.70 ($2.70/hr; p. 4-11)

f. Pumping cost ($)
(Line 5c x Line 5d) + Line 5e 102.80

g. Sump area to be decontaminated (ft^2) 750

h. Sump decontamination unit cost ($/$ft^2$) 0.88 (p. 5-3)

i. Sump decontamination cost ($)
Line 5g x Line 5h 660

j. Sump decontamination subtotal ($)
Line 5f + Line 5i 762.80

k. Residual generation rate for sump decontamination (gal/ft^2) 4 (p. 5-3)

l. Contaminated fluid and/or residues generated (gal)
Line 5b + (Line 5g x Line 5k) 31680

6. Container Rinsing

a. Number of containers 0

b. Container rinsing time required (hrs)
0.083 x Line 6a _____

c. Container rinsing unit cost ($/hr) _____ ($32.75/hr; p. 5-10)

d. Container rinsing subtotal ($)
Line 6b x Line 6c 0

e. Residual generation rate for container rinsing (gal/drum) _____ (10 gal/drum; p. 5-10)

f. Contaminated fluid/residual generated (gal)
Line 6a x Line 6e _____

7. Other Items Needing Decontamination

a. List items None

WORKSHEET D-5 (page 5)

b. Method of decontamination for other items _____

c. Surface area of other items to be decontaminated (ft^2) _____

d. Decontamination unit cost ($\$/ft^2$) _____ (p. 5-3)

e. Decontamination of other items subtotal ($)
Line 7c x Line 7d _____ 0 _____

f. Residual generation rate for decontamination of other items (gal/ft^2) _____ (p. 5-3)

g. Contaminated fluid and/or residues generated (gal)
Line 7c x Line 7f _____

8. On-Site Treatment of Decontamination Residues

a. Quantity of residue to be treated (gal) _____

b. Chemicals required for treatment (lb/gal residue or gal/gal residue) _____ (pp. 4-12 - 4-13)

c. Chemicals unit cost ($/lb or $/gal) _____

d. Chemicals cost ($)
Line 8a x Line 8b x Line 8c _____

e. Electricity required for treatment (kwh/gal residue) _____ (pp. 4-12 - 4-13)

f. Electricity unit cost ($/kwh) _____ ($0.05/kwh; p. 4-2)

g. Electricity cost ($)
Line 8a x Line 8e x Line 8f _____

h. Water required for treatment (gal/gal residue) _____ (pp. 4-12 - 4-13)

i. Water unit cost ($/1000 gal) _____ ($1.22/1000 gal; p. 4-2)

j. Water cost ($)
[(Line 8a x Line 8h) ÷ 1000] x Line 8i _____

WORKSHEET D-5 (page 6)

k. Fuel required for treatment (MMBtu/gal residue) _____ (pp. 4-12 - 4-13)

l. Fuel unit cost ($/MMBtu) _____ (p. 4-2)

m. Fuel cost ($)
Line 8a x Line 8k x Line 8l _____

n. Labor required for treatment (hrs/gallon residue) _____ (pp. 4-12 - 4-13)

o. Process operator unit labor cost ($/hr) _____ ($26.50/hr; p. 9-3)

p. Labor cost ($)
Line 8a x Line 8n x Line 8o _____

q. On-site treatment cost ($)
Line 8d + Line 8g + Line 8j + Line 8m + Line 8p _____ 0

r. Residue generated from treatment (gal) _____

9. Testing for Success of Decontamination

a. Number of Samples 79 1 per 100 ft²

b. Sample collection time required (hrs/sample) 0.5

c. Technician unit labor cost ($/hr) 20.50 ($20-50/hr; p. 9-3)

d. Sample collection time (hrs)
Line 9a x Line 9b 39.5

e. Sampling cost ($)
Line 9c x Line 9d 809.75

f. Cost to test each sample ($/sample) 152 (pp. 5-10 - 5-11) (ICP metals)

g. Testing cost ($)
Line 9a x Line 9f 12008

h. Testing for success of decontamination cost ($)
Line 9e + Line 9g 12817.75

i. Transportation of Samples (5 coolers @ $75 each) 375.00

$13192.75

WORKSHEET D-5 (page 7)

10. Treated Residue Discharge to Sewer

a. Volume of liquid discharged (gal) NA

b. Sewer discharge unit cost ($/1000 gal) _____ ($1.50/1000 gal; p. 4-2)

c. Sewer discharge cost ($)
(Line 10a ÷ 1000) x Line 10b 0

11. Off-Site Management of Decontamination Fluid/Residues and/or Treatment Residue

a. Off-site management method Precipitation

b. Quantity to be managed off-site (tons) 31680 * gallons

c. Truck capacity (tons) 5000 gallons

d. Number of loads
Line 11b ÷ Line 11c
(round up to nearest integer) 7

e. One-way distance (mi/load) 50

f. Transportation unit cost ($/mi) 5.61 ($4.50/mi; p. 4-15)**

g. Transportation cost ($)
Line 11d x Line 11e x Line 11f 1963.50

h. Off-site management unit cost ($/ton) $0.38/gal (pp. 4-13 - 4-20)

i. Off-site management cost ($)
Line 11b x Line 11h 12038

j. Contaminated fluid and residue disposal subtotal ($)
Line 11g + Line 11i $14002

12. On-Site Disposal

Include volume on one or more worksheets:
Landfill Inventory - Line 1n, Line 1p
Incinerator Inventory - Line 1l, Line 1n
Land Treatment Inventory - Line 1k, Line 1o

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* Conversion factors are provided in the Volume III appendix.
** Based on a 250-mile one-way distance.

WORKSHEET D-5 (page 8)

13. Facility Decontamination Subtotal ($)
Line 1c + Line 2j + Line 3m + Line 4d +
Line 5j + Line 6d + Line 7e + Line 8q +
Line 9h + Line 10c + Line 11j

$35,355

WORKSHEET D-6

Foundation/Pad Removal

1. Protective Clothing

   a. Number of personnel requiring protective clothing for demolition — 4

   b. Protective clothing unit cost ($/person) — 77 ($77/person; p. 6-8)

   c. Protective clothing cost ($) Line 1a x Line 1b — 308

2. Pad or Foundation Demolition

   a. Volume of pad/foundation to be demolished (yd^3) — 50 — assume 8" pad 2000 ft²

   b. Demoliton unit cost ($/$yd^3$) — 82 ($82/yd^3; p. 6-1)

   c. Pad/foundation loading unit cost ($/$yd^3$) — 0.98 (p. 4-7)

   d. Demolition and loading cost ($) Line 2a x (Line 2b + Line 2c) — 4149

   e. Mobilization/demolition cost ($) — 115 (p. 4-7)

   f. Pad/foundation demolition and loading cost before surcharge ($) Line 2d + Line 2e — 4264

   g. Surcharge factor — 0 (1.0; pp. 6-8 - 6-9)

   h. Foundation demolition cost ($) Line 2f x (1 + Line 2g) — 4264

3. Equipment Decontamination

   a. Total heavy equipment decontamination time (hrs) — 3 (p. 5-2)

   b. Heavy equipment decontamination cost ($) — 79 (p. 5-2)

   c. Residual generation rate for heavy equipment decontamination (gal/hr) — 100 (100 gal/hr; p. 5-1)

   d. Contaminated fluid and/or residue generated (gal) Line 3a x Line 3c — 300

WORKSHEET D-6 (page 2)

4. On-Site Treatment of Decontamination Residues

a. Quantity of residue to be treated (gal)	NA	
b. Chemicals required for treatment (lb/gal residue or gal/gal residue)	_____	(pp. 4-12 - 4-13)
c. Chemicals unit cost ($/lb or $/gal)	_____	
d. Chemicals cost ($) Line 4a x Line 4b x Line 4c	_____	
e. Electricity required for treatment (kwh/gal residue)	_____	(pp. 4-12 - 4-13)
f. Electricity unit cost ($/kwh)	_____	($0.05/kwh; p. 4-2)
g. Electricity cost ($) Line 4a x Line 4e x Line 4f	_____	
h. Water required for treatment (gal/gal residue)	_____	(pp. 4-12 - 4-13)
i. Water unit cost ($/1000 gal)	_____	($1.22/1000 gal; 4-2)
j. Water cost ($) [(Line 4a x Line 4h) ÷ 1000] x Line 4i	_____	
k. Fuel required for treatment (MMBtu/gal residue)	_____	(pp. 4-12 - 4-13)
l. Fuel unit cost ($/MMBtu)	_____	(p. 4-2)
m. Fuel cost ($) Line 4a x Line 4k x Line 4l	_____	
n. Labor required for treatment (hrs/gallon residue)	_____	(pp. 4-12 - 4-13)
o. Process operator unit labor cost ($/hr)	_____	($26.50/hr; p. 9-3)
p. Labor cost ($) Line 4a x Line 4n x Line 4o	_____	
q. On-site treatment cost ($) Line 4d + Line 4g + Line 4j + Line 4m + Line 4p		0
r. Residue generated from treatment (gal)	_____	

WORKSHEET D-6 (page 3)

5. Treated Residue Discharge to Sewer

a. Volume of liquid discharged (gal) — NA

b. Sewer discharge unit cost ($/1000 gal) — _____ ($1.50/1000 gal; p. 4-2)

c. Sewer discharge cost ($) (Line 5a ÷ 1000) x Line 5b — 0

6. Off-Site Management of Rubble, Decontamination Residue, and/or Treatment Residue

a. Volume to be managed off-site (tons) — 50 yd3 concrete; 300 gal liq. * ~~**~~

b. Truck capacity (tons) — 40

c. Number of loads Line 6a ÷ Line 6b (round up to nearest integer) — 2

d. Transportation unit cost ($/mi) — 4.50 ($4.50/mi; p. 4-15)**

e. One-way distance (mi/load) — 100

f. Transportation cost ($) Line 6c x Line 6d x Line 6e — 900

g. Off-site management unit cost ($/ton) — $0.38/gal; $275/yd3 (pp. 4-13 - 4-20)

h. Off-site management cost ($) Line 6a x Line 6g — $73864

i. Off-site management subtotal ($) Line 6f + Line 6i — $14764

7. On-Site Disposal

Include volume on one or more worksheets:
Landfill Inventory - Line 1m, Line 1n, Line 1p
Incinerator Inventory - Line 1l, Line 1n
Land Treatment Inventory - Line 1k, Line 1o — 0

8. Demolition and Removal Subtotal ($) Line 1c + Line 2h + Line 3b + Line 4q + Line 5c + Line 6i — $19,415

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* Conversion factors are provided in the Volume III appendix.
** Based on a 250-mile one-way distance.

~~[illegible]~~ transported and costed with other liquids

WORKSHEET D-8

Removal of Contaminated Soil

1. Protective Clothing

   a. Number of personnel requiring protective clothing for excavation and decontaminating: 4

   b. Protective clothing unit cost ($/person): 77 ($77/person; p. 6-8)

   c. Protective clothing cost ($) Line 1a x Line 1b: 308

2. Excavation of Contaminated Soil and Earthen Berms

   a. Volume of contaminated soil/berms to be removed (yd^3): 370 — 2000 ft^2 x 5 ft deep

   b. Excavation unit cost, including loading ($/$yd^3$): 5.47 (pp. 6-3 - 6-7)

   c. Mobilization/demobilization cost ($): 230 (pp. 4-5, 4-7, 4-10, and 6-3)

   d. Contaminated soil/berm removal cost before surcharge ($) (Line 2a x Line 2b) + Line 2c: 2254

   e. Surcharge factor: 0 (1.0; pp. 6-8 - 6-9)

   f. Contaminated soil/berm removal subtotal ($) Line 2d x (1 + Line 2e): 2254

3. Equipment Decontamination

   a. Total heavy equipment decontamination time (hrs): 3 (p. 5-2)

   b. Heavy equipment decontamination cost ($): 79 (p. 5-2)

   c. Residual generation rate for heavy equipment decontamination (gal/hr): 100 (100 gal/hr; p. 5-1)

   d. Contaminated fluid and/or residues generated (gal) Line 3a x Line 3c: 300

WORKSHEET D-8 (page 2)

4. On-Site Treatment of Decontamination Residues

a. Quantity of residue to be treated (gal)	NA	
b. Chemicals required for treatment (lb/gal residue or gal/gal residue)	_____	(pp. 4-12 - 4-13)
c. Chemicals unit cost ($/lb or $/gal)	_____	
d. Chemicals cost ($) Line 4a x Line 4b x Line 4c	_____	
e. Electricity required for treatment (kwh/gal residue)	_____	(pp. 4-12 - 4-13)
f. Electricity unit cost ($/kwh)	_____	($0.05/kwh; p. 4-2)
g. Electricity cost ($) Line 4a x Line 4e x Line 4f	_____	
h. Water required for treatment (gal/gal residue)	_____	(pp. 4-12 - 4-13)
i. Water unit cost ($/1000 gal)	_____	($1.22/1000 gal; p. 4-2)
j. Water cost ($) [(Line 4a x Line 4h) ÷ 1000] x Line 4i	_____	
k. Fuel required for treatment (MMBtu/gal residue)	_____	(pp. 4-12 - 4-13)
l. Fuel unit cost ($/MMBtu)	_____	(p. 4-2)
m. Fuel cost ($) Line 4a x Line 4k x Line 4l	_____	
n. Labor required for treatment (hrs/gallon residue)	_____	(pp. 4-12 - 4-13)
o. Process operator unit labor cost ($/hr)	_____	($26.50/hr; p. 9-3)
p. Labor cost ($) Line 4a x Line 4n x Line 4o	_____	

WORKSHEET D-8 (page 3)

q. On-site treatment cost ($)
Line 4d + Line 4g + Line 4j + Line 4m + Line 4p — 0

r. Residue generated from treatment (gal) — _____

5. Treated Residue Discharge to Sewer

a. Volume of liquid discharged (gal) — NA

b. Sewer discharge unit cost ($/1000 gal) — _____ ($1.50/1000 gal; p. 4-2)

c. Sewer discharge cost ($)
(Line 5a ÷ 1000) x Line 5b — 0

6. Off-Site Management of Contaminated Soil, Decontamination Residue, and/or Treatment Residue

a. Quantity to be managed off-site (tons) — 370 yd³ soil; 300 gal liq * ***

b. Truck capacity (tons) — 40 yd³

c. Number of loads
Line 6a ÷ Line 6b
(round up to nearest integer) — 10

d. One-way distance (mi/load) — 100

e. Transportation unit cost ($/mi) — 4.50 ($4.50/mi; p. 4-15)**

f. Transportation cost ($)
Line 6c x Line 6d x Line 6e — 4500

g. Off-site management unit cost ($/ton) — $275/yd³; $0.38/gal (pp. 4-13 - 4-20)

h. Off-site management cost ($)
Line 6a x Line 6g — $101,864

i. Off-site management subtotal ($)
Line 6f + Line 6h — $106,364

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* Conversion factors are provided in the Volume III appendix.
** Based on a 250-mile one-way distance.

*** transported and costed with other liquids.

WORKSHEET D-8 (page 4)

7. On-Site Disposal

Include volume on one or more worksheets:
Landfill Inventory - Line 1n, Line 1o, Line 1p
Incinerator Inventory - Line 1l, Line 1n, Line 1o
Land Treatment Inventory - Line 1k, Line 1l, Line 1o

8. Contaminated Soil Removal Subtotal ($)
Line 1c + Line 2f + Line 3b + Line 4q +
Line 5c + Line 6i

$109,005

WORKSHEET D-12

Final Cover

1. Native Soil for Slope and Fill

a. Length of area to be capped (yd)	_____	
b. Width of area to be capped (yd)	_____	
c. Quantity needed (yd^3)	_____	(*)
d. Excavation unit cost ($\$/yd^3$)	_____	
e. Placement and spreading unit cost ($\$/yd^3$)	_____	($\$2.48/yd^3$; p. 7-6)
f. Compaction unit cost ($\$/yd^3$)	_____	($\$2.25/yd^3$; p. 7-6)
g. Total native soil unit cost ($\$/yd^3$) Line 1d + Line 1e + Line 1f	_____	($\$1.04/yd^3$; p. 7-6)
h. Percent compaction (decimal < 1)	_____	(0.25; p. 7-10)
i. Native soil cost ($) Line 1c x Line 1g x (1 + Line 1h)		_____

2. On-Site Clay

a. Area to be capped (yd^2) Line 1a x Line 1b	_____	
b. Depth of clay needed (yd)	_____	
c. Quantity needed (yd^3) Line 2a x Line 2b	_____	
d. Excavation unit cost ($\$/yd^3$)	_____	($\$4.05/yd^3$; p. 7-10)
e. Placement/spreading unit cost ($\$/yd^3$)	_____	($\$2.25/yd^3$; p. 7-10)
f. Compaction unit cost ($\$/yd^3$)	_____	($\$2.41/yd^3$; p. 7-10)
g. Total on-site clay unit cost ($\$/yd^3$) Line 2d + Line 2e + Line 2f	_____	($\$8.71/yd^3$; pp. 7-10 - 7-11)

* Formula provided in Final Cover and Revegetation chapter of Volume III.

WORKSHEET D-12 (page 2)

h. Percent compaction (decimal < 1) _____ (0.25; p. 7-10)

i. Clay lift thickness (yd) _____ (0.22 yd; p. 7-12)

j. Number of lifts
Line 2b ÷ Line 2i _____

k. Number of samples to be tested/lift (samples/lift) _____ (3 samples/lift; p. 7-12)

l. Number of samples to be tested
Line 2j x Line 2k _____

m. Clay testing unit cost ($/sample) _____ ($230/sample; p. 7-12)

n. Clay testing cost
Line 2l x Line 2m _____

o. On-site clay cost ($)
Line 2c x Line 2g x (1 + Line 2h) + Line 2n _____

3. Off-Site Clay

a. Area to be capped (yd^2)
Line 1a x Line 1b _____

b. Depth of clay needed (yd) _____ (0.67 yd; p. 7-4)

c. Quantity needed (yd^3)
Line 3a x Line 3b 370

d. Purchase unit cost ($/$yd^3$) 4.75 ($4.75/yd^3; p. 7-13)

e. Delivery unit cost ($/$yd^3$) 10.16 ($10.16/yd^3; p. 7-13)

f. Spreading unit cost ($/$yd^3$) 1.03 ($1.03/yd^3; p. 7-13)

g. Compaction unit cost ($/$yd^3$) 2.41 ($2.41/yd^3; p. 7-13)

h. Total off-site clay unit cost ($/$yd^3$)
Line 3d + Line 3e + Line 3f + Line 3g 18.35 ($18.35/$yd^3$; pp. 7-13 - 7-14)

i. Percent compaction (decimal < 1) NA (0.40; p. 7-10)

j. Clay lift thickness (yd) NA (0.22 yd; p. 7-12)

WORKSHEET D-12 (page 3)

k. Number of lifts
Line 3b ÷ Line 3j ___NA___

l. Number of samples to be tested/lift (samples/lift) ___NA___ (3 samples/lift; p. 7-12)

m. Number of samples to be tested
Line 3k x Line 3l ___NA___

n. Clay testing unit cost ($/sample) ___NA___ ($230/sample; p. 7-12)

o. Clay testing cost
Line 3m x Line 3n ___NA___

p. Off-site clay cost ($)
Line 3c x Line 3h x (1 + Line 3i) + Line 3o ___$6789.50___

4. Synthetic Membrane

a. Type of membrane ___NA___

b. Quantity needed (yd^2) _____

c. Purchase unit cost ($/$yd^2$) _____ ($2.60/yd^2; p. 7-16)

d. Delivery unit cost ($/$yd^2$) _____ ($0.25/yd^2; p. 7-16)

e. Installation unit cost ($/$yd^2$) _____ ($0.50/yd^2; p. 7-16)

f. Total synthetic membrane unit cost ($/$yd^2$)
Line 4c + Line 4d + Line 4e _____ ($3.35/$yd^2$; p. 7-16)

g. Synthetic liner testing (percent of total synthetic membrane unit cost) _____ (0.25; p. 7-15)

h. Synthetic membrane cost ($)
Line 4b x Line 4f x (1 + Line 4g) ___0___

5. Sand

a. Area to be capped (yd^2)
Line 1a x Line 1b ___NA___

b. Depth of sand needed (yd) _____ (0.33 yd; p. 7-4)

WORKSHEET D-12 (page 4)

c. Quantity needed (yd^3)
Line 5a x Line 5b _____

d. Purchase unit cost ($/$yd^3$) _____ ($5.50/yd^3; p. 7-20)

e. Delivery unit cost ($/$yd^3$) _____ ($2.61/yd^3; p. 7-20)

f. Spreading unit cost ($/$yd^3$) _____ ($1.03/yd^3; p. 7-20)

g. Compaction unit cost ($/$yd^3$) _____ ($1.49/yd^3; p. 7-20)

h. Total sand unit cost ($/$yd^3$)
Line 5d + Line 5e + Line 5f
+ Line 5g _____ ($10.63/$yd^3$; pp. 7-20 - 7-21)

i. Percent compaction (decimal < 1) _____ (0.10; p. 7-10)

j. Sand cost ($)
Line 5c x Line 5h x (1 + Line 5i) 0

6. Gravel

a. Area to be capped (yd^2)
Line 1a x Line 1b NA

b. Depth of gravel needed (yd) _____ (0.33 yd; p. 7-4)

c. Quantity needed (yd^3)
Line 6a x Line 6b _____

d. Purchase unit cost ($/$yd^3$) _____ ($3.85/yd^3; p. 7-17)

e. Delivery unit cost ($/$yd^3$) _____ ($2.61/yd^3; p. 7-17)

f. Spreading unit cost ($/$yd^3$) _____ ($1.03/yd^3; p. 7-17)

g. Compaction unit cost ($/$yd^3$) _____ ($1.22/yd^3; p. 7-17)

h. Total gravel unit cost ($/$yd^3$)
Line 6d + Line 6e + Line 6f
+ Line 6g _____ ($8.71/$yd^3$; pp. 7-17 - 7-18)

i. Percent compaction (decimal < 1) _____ (0.05; p. 7-10)

j. Gravel cost ($)
Line 6c x Line 6h x (1 + Line 6i) 0

WORKSHEET D-12 (page 5)

7. Drainage Tile

a. Type of tile NA

b. Length needed (L.F.) _____

c. Tile unit cost ($/L.F.) _____ ($0.50/L.F.; p. 7-22)

d. Trenching and backfilling unit cost ($/L.F.) _____ ($0.56/L.F.; p. 7-22)

e. Total drainage tile unit cost ($/L.F.)
Line 7c + Line 7d _____ ($1.06/L.F.; pp. 7-22 - 7-23)

f. Drainage tile cost ($)
Line 7b x Line 7e 0

8. Geotextile Filter Fabric

a. Type of geotextile NA

b. Quantity needed (yd^2) _____

c. Purchase unit cost ($/$yd^2$) _____ ($0.69/yd^2; p. 7-24)

d. Delivery unit cost ($/$yd^2$) _____ ($0.05/yd^2; p. 7-24)

e. Installation unit cost ($/$yd^2$) _____ ($0.09/yd^2; p. 7-24)

f. Total geotextile filter fabric unit cost ($/$yd^2$)
Line 8c + Line 8d + Line 8e _____ ($0.83/$yd^2$; p. 7-24)

g. Geotextile filter fabric cost ($)
Line 8b x Line 8f 0

9. Topsoil

a. Area to be capped (yd^2)
Line 1a x Line 1b 222

b. Depth of topsoil needed (yd) 0.67 (0.67 yd; p. 7-4)

c. Quantity needed (yd^3)
Line 9a x Line 9b 148

d. Purchase unit cost ($/$yd^3$) 6.56 ($6.56/yd^3; p. 7-26)

e. Delivery unit cost ($/$yd^3$) 2.61 ($2.61/yd^3; p. 7-26)

WORKSHEET D-12 (page 6)

f. Spreading unit cost ($/yd^3) 1.03 ($1.03/yd^3; p. 7-26)

g. Compaction unit cost ($/yd^3) 1.22 ($1.22/yd^3; p. 7-26)

h. Total topsoil unit cost ($/yd^3)
Line 9d + Line 9e + Line 9f + Line 9g 11.42 ($11.42/yd^3; p. 7-26 - 7-27)

i. Percent compaction (decimal < 1) 0 (0.25; p. 7-10)

j. Topsoil cost ($)
Line 9c x Line 9h x (1 + Line 9i) 1690.16

10. Crushed Stone

a. Area to be capped (yd^2)
Line 1a x Line 1b NA

b. Depth of crushed stone needed (yd) _____ (0.33 yd; p. 7-4)

c. Quantity needed (yd^3)
Line 10a x Line 10b _____

d. Purchase unit cost ($/yd^3) _____ ($11.55/yd^3; p. 7-28)

e. Delivery unit cost ($/yd^3) _____ ($2.61/yd^3; p. 7-28)

f. Spreading unit cost ($/yd^3) _____ ($1.03/yd^3; p. 7-28)

g. Compaction unit cost ($/yd^3) _____ ($1.22/yd^3; p. 7-28)

h. Total crushed stone unit cost ($/yd^3)
Line 10d + Line 10e + Line 10f + Line 10g _____ ($16.41/yd^3; pp. 7-28 - 7-29)

i. Percent compaction (decimal < 1) _____ (0.05; p. 7-10)

j. Crushed stone cost ($)
Line 10c x Line 10h x (1 + Line 10i) 0

11. Mobilization/Demobilization

a. Heavy equipment mobilization/demobilization cost ($) 700 ($700; p. 7-32)

12. Final Cover Subtotal ($)
Line 1i + Line 2o + Line 3p + Line 4h + Line 5j + Line 6j + Line 7f + Line 8g + Line 9j + Line 10j + Line 11a

$9179.66

WORKSHEET D-13

Revegetation

1. Soil Preparation and Grading

   a. Area to be revegetated, including closed area that needs replanting (acres) — 0.04

   b. Soil preparation and grading unit cost ($/acre) — 1002 ($1002/acre; p. 7-31)

   c. Soil preparation and grading cost ($)
   Line 1a x Line 1b — 44

2. Seeding

   a. Type of vegetation — Fescue

   b. Seed unit cost ($/acre) — 795 ($795/acre; p. 7-31)

   c. Seed cost ($)
   Line 1a x Line 2b — 32

3. Fertilizing

   a. Type of fertilizer — 20-3-3

   b. Fertilizer unit cost ($/acre) — 176 ($176/acre; p. 7-31)

   c. Fertilizing cost ($)
   Line 1a x Line 3b — 8

4. Mulching

   a. Mulch unit cost ($/acre) — 1048 ($1048/acre; p. 7-31)

   b. Mulching cost ($)
   Line 1a x Line 4a — 42

5. Mobilization/Demobilization

   a. Heavy equipment mobilization/demobilization cost ($) — 105 ($105; p. 7-32)

6. Revegetation Subtotal ($)
   Line 1c + Line 2c + Line 3c + Line 4b + Line 5a — 231

Total Cost = $52,821 + $35,355 + $19,415 + $109,005 + $9180 + $231 = $226,007

WORKSHEET D-6

Foundation/Pad Removal

1. Protective Clothing

   a. Number of personnel requiring protective clothing for demolition — 4

   b. Protective clothing unit cost ($/person) — 77 ($77/person; p. 6-8)

   c. Protective clothing cost ($) Line 1a x Line 1b — 308

2. Pad or Foundation Demolition

   a. Volume of pad/foundation to be demolished (yd^3) — 259 (7000 ft² 12" thick)

   b. Demoliton unit cost ($/$yd^3$) — 82 ($82/yd^3; p. 6-1)

   c. Pad/foundation loading unit cost ($/$yd^3$) — 0.98 (p. 4-7)

   d. Demolition and loading cost ($) Line 2a x (Line 2b + Line 2c) — 21491.82

   e. Mobilization/demolition cost ($) — 115 (p. 4-7)

   f. Pad/foundation demolition and loading cost before surcharge ($) Line 2d + Line 2e — 21606.82

   g. Surcharge factor — 0 (1.0; pp. 6-8 - 6-9)

   h. Foundation demolition cost ($) Line 2f x (1 + Line 2g) — 21606 82

3. Equipment Decontamination

   a. Total heavy equipment decontamination time (hrs) — 3 (p. 5-2)

   b. Heavy equipment decontamination cost ($) — 79 (p. 5-2)

   c. Residual generation rate for heavy equipment decontamination (gal/hr) — 100 (100 gal/hr; p. 5-1)

   d. Contaminated fluid and/or residue generated (gal) Line 3a x Line 3c — 300

WORKSHEET D-6 (page 2)

4. On-Site Treatment of Decontamination Residues

a. Quantity of residue to be treated (gal)	0	
b. Chemicals required for treatment (lb/gal residue or gal/gal residue)	_____	(pp. 4-12 - 4-13)
c. Chemicals unit cost ($/lb or $/gal)	_____	
d. Chemicals cost ($) Line 4a x Line 4b x Line 4c	_____	
e. Electricity required for treatment (kwh/gal residue)	_____	(pp. 4-12 - 4-13)
f. Electricity unit cost ($/kwh)	_____	($0.05/kwh; p. 4-2)
g. Electricity cost ($) Line 4a x Line 4e x Line 4f	_____	
h. Water required for treatment (gal/gal residue)	_____	(pp. 4-12 - 4-13)
i. Water unit cost ($/1000 gal)	_____	($1.22/1000 gal; 4-2)
j. Water cost ($) [(Line 4a x Line 4h) ÷ 1000] x Line 4i	_____	
k. Fuel required for treatment (MMBtu/gal residue)	_____	(pp. 4-12 - 4-13)
l. Fuel unit cost ($/MMBtu)	_____	(p. 4-2)
m. Fuel cost ($) Line 4a x Line 4k x Line 4l	_____	
n. Labor required for treatment (hrs/gallon residue)	_____	(pp. 4-12 - 4-13)
o. Process operator unit labor cost ($/hr)	_____	($26.50/hr; p. 9-3)
p. Labor cost ($) Line 4a x Line 4n x Line 4o	_____	
q. On-site treatment cost ($) Line 4d + Line 4g + Line 4j + Line 4m + Line 4p		0
r. Residue generated from treatment (gal)	0	

WORKSHEET D-6 (page 3)

5. Treated Residue Discharge to Sewer

   a. Volume of liquid discharged (gal) — 0

   b. Sewer discharge unit cost ($/1000 gal) — ($1.50/1000 gal; p. 4-2)

   c. Sewer discharge cost ($) (Line 5a ÷ 1000) x Line 5b — 0

6. Off-Site Management of Rubble, Decontamination Residue, and/or Treatment Residue

   a. Volume to be managed off-site (tons) — 259 yd³ concrete; 300 gal liquid*

   b. Truck capacity (tons) — 40 yd³

   c. Number of loads Line 6a ÷ Line 6b (round up to nearest integer) — 7

   d. Transportation unit cost ($/mi) — 4.50 ($4.50/mi; p. 4-15)**

   e. One-way distance (mi/load) — 100

   f. Transportation cost ($) Line 6c x Line 6d x Line 6e — 3150

   g. Off-site management unit cost ($/ton) — $275/yd³; $0.38/gal (pp. 4-13 - 4-20)

   h. Off-site management cost ($) Line 6a x Line 6g — 71,339

   i. Off-site management subtotal ($) Line 6f + Line 6i — 74,489

7. On-Site Disposal

   Include volume on one or more worksheets:
   Landfill Inventory - Line 1m, Line 1n, Line 1p
   Incinerator Inventory - Line 1l, Line 1n
   Land Treatment Inventory - Line 1k, Line 1o

8. Demolition and Removal Subtotal ($) Line 1c + Line 2h + Line 3b + Line 4q + Line 5c + Line 6i — $96,483

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* Conversion factors are provided in the Volume III appendix.
** Based on a 250-mile one-way distance.

WORKSHEET D-8

Removal of Contaminated Soil

1. Protective Clothing

   a. Number of personnel requiring protective clothing for excavation and decontaminating: 4

   b. Protective clothing unit cost ($/person): 77 ($77/person; p. 6-8)

   c. Protective clothing cost ($) Line 1a x Line 1b: 308

2. Excavation of Contaminated Soil and Earthen Berms

   a. Volume of contaminated soil/berms to be removed (yd^3): 1296 (7000 ft² x 5 ft)

   b. Excavation unit cost, including loading ($/$yd^3$): 5.47 (pp. 6-3 - 6-7)

   c. Mobilization/demobilization cost ($): 230 (pp. 4-5, 4-7, 4-10, and 6-3)

   d. Contaminated soil/berm removal cost before surcharge ($) (Line 2a x Line 2b) + Line 2c: 7320.74

   e. Surcharge factor: 0 (1.0; pp. 6-8 - 6-9)

   f. Contaminated soil/berm removal subtotal ($) Line 2d x (1 + Line 2e): 7320.74

3. Equipment Decontamination

   a. Total heavy equipment decontamination time (hrs): 3 (p. 5-2)

   b. Heavy equipment decontamination cost ($): 79 (p. 5-2)

   c. Residual generation rate for heavy equipment decontamination (gal/hr): 100 (100 gal/hr; p. 5-1)

   d. Contaminated fluid and/or residues generated (gal) Line 3a x Line 3c: 300

WORKSHEET D-8 (page 2)

4. On-Site Treatment of Decontamination Residues

a. Quantity of residue to be treated (gal)	0	
b. Chemicals required for treatment (lb/gal residue or gal/gal residue)	_____	(pp. 4-12 - 4-13)
c. Chemicals unit cost ($/lb or $/gal)	_____	
d. Chemicals cost ($) Line 4a x Line 4b x Line 4c	_____	
e. Electricity required for treatment (kwh/gal residue)	_____	(pp. 4-12 - 4-13)
f. Electricity unit cost ($/kwh)	_____	($0.05/kwh; p. 4-2)
g. Electricity cost ($) Line 4a x Line 4e x Line 4f	_____	
h. Water required for treatment (gal/gal residue)	_____	(pp. 4-12 - 4-13)
i. Water unit cost ($/1000 gal)	_____	($1.22/1000 gal; p. 4-2)
j. Water cost ($) [(Line 4a x Line 4h) ÷ 1000] x Line 4i	_____	
k. Fuel required for treatment (MMBtu/gal residue)	_____	(pp. 4-12 - 4-13)
l. Fuel unit cost ($/MMBtu)	_____	(p. 4-2)
m. Fuel cost ($) Line 4a x Line 4k x Line 4l	_____	
n. Labor required for treatment (hrs/gallon residue)	_____	(pp. 4-12 - 4-13)
o. Process operator unit labor cost ($/hr)	_____	($26.50/hr; p. 9-3)
p. Labor cost ($) Line 4a x Line 4n x Line 4o	_____	

WORKSHEET D-8 (page 3)

q. On-site treatment cost ($)
Line 4d + Line 4g + Line 4j + Line 4m + Line 4p — 0

r. Residue generated from treatment (gal) — 0

5. Treated Residue Discharge to Sewer

a. Volume of liquid discharged (gal) — 0

b. Sewer discharge unit cost ($/1000 gal) — ($1.50/1000 gal; p. 4-2)

c. Sewer discharge cost ($)
(Line 5a ÷ 1000) x Line 5b — 0

6. Off-Site Management of Contaminated Soil, Decontamination Residue, and/or Treatment Residue

a. Quantity to be managed off-site (tons) — 1296 yd3 soil; 300 gal liq * ***

b. Truck capacity (tons) — 40 yd3

c. Number of loads
Line 6a ÷ Line 6b
(round up to nearest integer) — 33

d. One-way distance (mi/load) — 100

e. Transportation unit cost ($/mi) — 4.50 ($4.50/mi; p. 4-15)**

f. Transportation cost ($)
Line 6c x Line 6d x Line 6e — 14,850

g. Off-site management unit cost ($/ton) — $275/yd3; $0.38/gal (pp. 4-13 - 4-20)

h. Off-site management cost ($)
Line 6a x Line 6g — $356,514

i. Off-site management subtotal ($)
Line 6f + Line 6h — $371,364

* Conversion factors are provided in the Volume III appendix.
** Based on a 250-mile one-way distance.

*** transportation costed with other liquids

WORKSHEET D-8 (page 4)

7. On-Site Disposal

Include volume on one or more worksheets:
Landfill Inventory - Line 1n, Line 1o, Line 1p
Incinerator Inventory - Line 1l, Line 1n, Line 1o
Land Treatment Inventory - Line 1k, Line 1l, Line 1o

8. Contaminated Soil Removal Subtotal ($)
Line 1c + Line 2f + Line 3b + Line 4q + Line 5c + Line 6i

$ 379,072

WORKSHEET D-12 (page 2)

h. Percent compaction (decimal < 1) _____ (0.25; p. 7-10)

i. Clay lift thickness (yd) _____ (0.22 yd; p. 7-12)

j. Number of lifts
Line 2b ÷ Line 2i _____

k. Number of samples to be tested/lift (samples/lift) _____ (3 samples/lift; p. 7-12)

l. Number of samples to be tested
Line 2j x Line 2k _____

m. Clay testing unit cost ($/sample) _____ ($230/sample; p. 7-12)

n. Clay testing cost
Line 2l x Line 2m _____

o. On-site clay cost ($)
Line 2c x Line 2g x (1 + Line 2h) + Line 2n _____

3. Off-Site Clay

a. Area to be capped (yd^2)
Line 1a x Line 1b _____

b. Depth of clay needed (yd) _____ (0.67 yd; p. 7-4)

c. Quantity needed (yd^3)
Line 3a x Line 3b 1296

d. Purchase unit cost ($/$yd^3$) _____ ($4.75/yd^3; p. 7-13)

e. Delivery unit cost ($/$yd^3$) _____ ($10.16/yd^3; p. 7-13)

f. Spreading unit cost ($/$yd^3$) _____ ($1.03/yd^3; p. 7-13)

g. Compaction unit cost ($/$yd^3$) _____ ($2.41/yd^3; p. 7-13)

h. Total off-site clay unit cost ($/$yd^3$)
Line 3d + Line 3e + Line 3f + Line 3g 18.35 ($18.35/$yd^3$; pp. 7-13 - 7-14)

i. Percent compaction (decimal < 1) _____ (0.40; p. 7-10)

j. Clay lift thickness (yd) _____ (0.22 yd; p. 7-12)

WORKSHEET D-12 (page 3)

k. Number of lifts
Line 3b ÷ Line 3j _____

l. Number of samples to be tested/lift (samples/lift) _____ (3 samples/lift; p. 7-12)

m. Number of samples to be tested
Line 3k x Line 3l _____

n. Clay testing unit cost ($/sample) _____ ($230/sample; p. 7-12)

o. Clay testing cost
Line 3m x Line 3n _____

p. Off-site clay cost ($)
Line 3c x Line 3h x (1 + Line 3i) + Line 3o $23,781.60

4. Synthetic Membrane

a. Type of membrane NA

b. Quantity needed (yd^2) _____

c. Purchase unit cost ($/$yd^2$) _____ ($2.60/yd^2; p. 7-16)

d. Delivery unit cost ($/$yd^2$) _____ ($0.25/yd^2; p. 7-16)

e. Installation unit cost ($/$yd^2$) _____ ($0.50/yd^2; p. 7-16)

f. Total synthetic membrane unit cost ($/$yd^2$)
Line 4c + Line 4d + Line 4e _____ ($3.35/$yd^2$; p. 7-16)

g. Synthetic liner testing (percent of total synthetic membrane unit cost) _____ (0.25; p. 7-15)

h. Synthetic membrane cost ($)
Line 4b x Line 4f x (1 + Line 4g) 0

5. Sand

a. Area to be capped (yd^2)
Line 1a x Line 1b NA

b. Depth of sand needed (yd) _____ (0.33 yd; p. 7-4)

WORKSHEET D-12 (page 4)

c. Quantity needed (yd^3)
Line 5a x Line 5b _____

d. Purchase unit cost ($/$yd^3$) _____ ($5.50/yd^3; p. 7-20)

e. Delivery unit cost ($/$yd^3$) _____ ($2.61/yd^3; p. 7-20)

f. Spreading unit cost ($/$yd^3$) _____ ($1.03/yd^3; p. 7-20)

g. Compaction unit cost ($/$yd^3$) _____ ($1.49/yd^3; p. 7-20)

h. Total sand unit cost ($/$yd^3$)
Line 5d + Line 5e + Line 5f
+ Line 5g _____ ($10.63/$yd^3$; pp. 7-20 - 7-21)

i. Percent compaction (decimal < 1) _____ (0.10; p. 7-10)

j. Sand cost ($)
Line 5c x Line 5h x (1 + Line 5i) 0

6. Gravel

a. Area to be capped (yd^2)
Line 1a x Line 1b NA

b. Depth of gravel needed (yd) _____ (0.33 yd; p. 7-4)

c. Quantity needed (yd^3)
Line 6a x Line 6b _____

d. Purchase unit cost ($/$yd^3$) _____ ($3.85/yd^3; p. 7-17)

e. Delivery unit cost ($/$yd^3$) _____ ($2.61/yd^3; p. 7-17)

f. Spreading unit cost ($/$yd^3$) _____ ($1.03/yd^3; p. 7-17)

g. Compaction unit cost ($/$yd^3$) _____ ($1.22/yd^3; p. 7-17)

h. Total gravel unit cost ($/$yd^3$)
Line 6d + Line 6e + Line 6f
+ Line 6g _____ ($8.71/$yd^3$; pp. 7-17 - 7-18)

i. Percent compaction (decimal < 1) _____ (0.05; p. 7-10)

j. Gravel cost ($)
Line 6c x Line 6h x (1 + Line 6i) 0

WORKSHEET D-12 (page 5)

7. Drainage Tile

a. Type of tile NA

b. Length needed (L.F.) _____

c. Tile unit cost ($/L.F.) _____ ($0.50/L.F.; p. 7-22)

d. Trenching and backfilling unit cost ($/L.F.) _____ ($0.56/L.F.; p. 7-22)

e. Total drainage tile unit cost ($/L.F.)
Line 7c + Line 7d _____ ($1.06/L.F.; pp. 7-22 - 7-23)

f. Drainage tile cost ($)
Line 7b x Line 7e 0

8. Geotextile Filter Fabric

a. Type of geotextile NA

b. Quantity needed (yd^2) _____

c. Purchase unit cost ($/$yd^2$) _____ ($0.69/yd^2; p. 7-24)

d. Delivery unit cost ($/$yd^2$) _____ ($0.05/yd^2; p. 7-24)

e. Installation unit cost ($/$yd^2$) _____ ($0.09/yd^2; p. 7-24)

f. Total geotextile filter fabric unit cost ($/$yd^2$)
Line 8c + Line 8d + Line 8e _____ ($0.83/$yd^2$; p. 7-24)

g. Geotextile filter fabric cost ($)
Line 8b x Line 8f 0

9. Topsoil

a. Area to be capped (yd^2)
Line 1a x Line 1b 778

b. Depth of topsoil needed (yd) 0.67 (0.67 yd; p. 7-4)

c. Quantity needed (yd^3)
Line 9a x Line 9b 521

d. Purchase unit cost ($/$yd^3$) _____ ($6.56/yd^3; p. 7-26)

e. Delivery unit cost ($/$yd^3$) _____ ($2.61/yd^3; p. 7-26)

WORKSHEET D-12 (page 6)

f. Spreading unit cost ($/yd^3) _____ ($1.03/yd^3; p. 7-26)

g. Compaction unit cost ($/yd^3) _____ ($1.22/yd^3; p. 7-26)

h. Total topsoil unit cost ($/yd^3)
Line 9d + Line 9e + Line 9f + Line 9g 11.42 ($11.42/yd^3; p. 7-26 - 7-27)

i. Percent compaction (decimal < 1) _____ (0.25; p. 7-10)

j. Topsoil cost ($)
Line 9c x Line 9h x (1 + Line 9i) $5951.09

10. Crushed Stone

a. Area to be capped (yd^2)
Line 1a x Line 1b NA

b. Depth of crushed stone needed (yd) _____ (0.33 yd; p. 7-4)

c. Quantity needed (yd^3)
Line 10a x Line 10b _____

d. Purchase unit cost ($/yd^3) _____ ($11.55/yd^3; p. 7-28)

e. Delivery unit cost ($/yd^3) _____ ($2.61/yd^3; p. 7-28)

f. Spreading unit cost ($/yd^3) _____ ($1.03/yd^3; p. 7-28)

g. Compaction unit cost ($/yd^3) _____ ($1.22/yd^3; p. 7-28)

h. Total crushed stone unit cost ($/yd^3)
Line 10d + Line 10e + Line 10f + Line 10g _____ ($16.41/yd^3; pp. 7-28 - 7-29)

i. Percent compaction (decimal < 1) _____ (0.05; p. 7-10)

j. Crushed stone cost ($)
Line 10c x Line 10h x (1 + Line 10i) 0

11. Mobilization/Demobilization

a. Heavy equipment mobilization/demobilization cost ($) 700 ($700; p. 7-32)

12. Final Cover Subtotal ($)
Line 1i + Line 2o + Line 3p + Line 4h + Line 5j + Line 6j + Line 7f + Line 8g + Line 9j + Line 10j + Line 11a

$30432.69

WORKSHEET D-13

Revegetation

1. Soil Preparation and Grading

   a. Area to be revegetated, including closed area that needs replanting (acres) — 0.16

   b. Soil preparation and grading unit cost ($/acre) — 1002 ($1002/acre; p. 7-31)

   c. Soil preparation and grading cost ($)
   Line 1a x Line 1b — 160.32

2. Seeding

   a. Type of vegetation — Fescue

   b. Seed unit cost ($/acre) — 795 ($795/acre; p. 7-31)

   c. Seed cost ($)
   Line 1a x Line 2b — 127.20

3. Fertilizing

   a. Type of fertilizer — 20-3-3

   b. Fertilizer unit cost ($/acre) — 176 ($176/acre; p. 7-31)

   c. Fertilizing cost ($)
   Line 1a x Line 3b — 28.16

4. Mulching

   a. Mulch unit cost ($/acre) — 1048 ($1048/acre; p. 7-31)

   b. Mulching cost ($)
   Line 1a x Line 4a — 167.68

5. Mobilization/Demobilization

   a. Heavy equipment mobilization/demobilization cost ($) — 105 ($105; p. 7-32)

6. Revegetation Subtotal ($)
   Line 1c + Line 2c + Line 3c + Line 4b + Line 5a — $588.36

Total Cost = $96,483 + $379,072 + $30433 + $588 = $506,576

WBS 1000
Container Storage Area

OSWER Policy Directive
#9476.00-6

Assume inventory = 11,900 drums

WORKSHEET A-1

Inventory Management

1. Recontainerization of Waste

a. Number of damaged/leaking containers needing recontainerization: 238 — assume 2% of total

b. Recontainerization unit cost ($/container): $144 — ($144/container; p. 4-8)

c. Recontainerization cost ($) Line 1a x Line 1b: 34272

2. Inventory Quantity (Maximum)

a. Total number of full containers: 11,900

b. Container capacity (gal/container): 55

c. Containerized waste quantity (gal) Line 2a x Line 2b: 654,500

d. Total number of empty containers: 0

e. Container weight (lb/container): NA — (55 lb/container; p. 4-8)

f. Total container weight (tons) Line 2c ÷ (Line 2d x Line 2e): 5950 * — Assume 1000 lbs/drum

3. Container Loading

a. Number of pallets (Line 2a ÷ Line 2d) ÷ 4 (round up to nearest integer): 2975

b. Loading unit cost ($/pallet): 4.66 — ($4.66/pallet; p. 4-8)

c. Container loading cost ($) Line 3a x Line 3b: 13863.50

* Conversion factors are provided in the Volume III appendix.

WORKSHEET A-1 (page 2)

4. Off-Site Management of Inventory (include containers and waste)

   a. Quantity to be managed off-site (tons) — 0 *

   b. Truck capacity (tons) — _____

   c. Number of loads
      Line 4a ÷ Line 4b — _____

   d. One-way distance (mi/load) — _____

   e. Transportation unit cost ($/mi) — _____ ($4.50/mi; p. 4-15)*

   f. Transportation cost ($)
      Line 4c x Line 4d x Line 4e — _____

   g. Off-site management unit cost ($/ton) — _____ (pp. 4-13 - 4-20)

   h. Off-site management cost ($)
      Line 4a x Line 4g — _____

   i. Off-site management subtotal ($)
      Line 4f + Line 4h — 0

5. Solidification Prior to On-Site Landfill Disposal

   a. Number of containers to be solidified (containers) — 0

   b. Solidification unit cost ($/container) — _____ ($10.50/container; p. 4-9)

   c. Solidification cost ($)
      Line 5a x Line 5b — 0

6. On-Site Disposal

   Include volume on one or more worksheets:
   Landfill Inventory - Line 1h
   Incinerator Inventory - Line 1d
   Land Treatment Inventory - Line 1e

   Assume $ 75 / drum to process on-site
   Cost = $892,500

7. Container and Drum Inventory Management Subtotal ($)
   Line 1c + Line 3c + Line 4i + Line 5c — $940635.50

* Conversion factors are provided in the Volume III appendix.
* Based on a 250-mile one-way distance.

WORKSHEET A-2

Testing for Soil Contamination

1. Background Samples and Samples with Potential Contamination

a. Number of soil samples to be taken ___0___ testing has been performe

b. Number of samples requiring coring through concrete/asphalt foundations/pads ___0___

c. Thickness of foundation/pad (inches) ___NA___

d. Unit cost for coring through/removing concrete/asphalt foundations/pads ($/sample) ___NA___ ($15/inch; p. 6-1)

e. Sample collection time required (hrs/sample) ___0___ (1 hr/sample; p. 2-12)

f. Transportation time to and from site (hrs) ___NA___

g. Contract lab technician unit labor cost ($/hr) ___NA___ ($20.50/hr; p. 9-3)

h. Sample collection time (hrs) (Line 1a x Line 1e) + Line 1f ___NA___

i. Sampling cost ($) (Line 1b x Line 1c x Line 1d (Line 1g x Line 1h) ___NA___

j. Contract lab fee ($/sample) ___NA___ (p. 2-13)

k. Contract lab cost ($) Line 1a x Line 1j ___NA___

l. Sample cost ($) Line 1i + Line 1k ___NA___

2. Preparation of Isogram Plan

a. Engineer time required (hrs) ___NA___

b. Engineer unit labor cost ($/hr) ___NA___ ($45.50/hr; p. 9-3)

c. Engineer cost ($) Line 2a x Line 2b ___NA___

d. Draftsperson time required (hrs) ___NA___

e. Draftsperson unit labor cost ($/hr) ___NA___ ($24/hr; p. 9-3)

WORKSHEET A-2 (page 2)

f. Draftsperson cost ($)
Line 2d x Line 2e — NA

g. Clerical time required (hrs) — NA

h. Clerical unit labor cost ($/hr) — NA ($18/hr; p. 9-3)

i. Clerical cost ($)
Line 2g x Line 2h — NA

j. Isogram plan cost ($)
Line 2c + Line 2f + Line 2i — 0

3. Soil Testing Subtotal ($)
Line 1l + Line 2j — 0

WORKSHEET A-3

Decontamination

1. Protective Clothing and Safety Equipment for Facility Personnel

   a. Number of personnel requiring protective clothing and safety equipment for decontamination ___80___ 4 persons for 4 weeks each

   b. Safety equipment and protective clothing unit cost ($/person) ___80___ ($80/person; p. 5-5)

   c. Safety equipment and protective clothing cost ($)
   Line 1a x Line 1b ___6,400___

2. Equipment Decontamination

   a. Equipment needing decontamination:

   - pumps and feed lines
   - heavy equipment (e.g., fork lifts, dozers, etc.)
   - other equipment (list) Fork lift, loader

   b. Number of pumps and lines ___0___

   c. Pumps and lines decontamination cost ($) ___0___ (p. 5-4)

   d. Residual generation rate for pump and line decontamination ___0___ (50 gal/pump and line; p. 5-1)

   e. Residual generated from pump and line decontamination (gal)
   Line 2b x Line 2d ___0___

   f. Heavy equipment decontamination cost ($) ___158___ (p. 5-2)

   g. Total heavy equipment decontamination time (hrs) ___6___ (p. 5-2)

   h. Residual generation rate for heavy equipment decontamination (gal/hr) ___100___ (100 gal/hr; p. 5-1)

WORKSHEET A-3 (page 2)

i. Residual generated from heavy equipment decontamination (gal)
Line 2g x Line 2h — 600

j. Equipment decontamination cost ($)
Line 2c + Line 2f — 158

k. Contaminated fluid and/or residues generated (gal)
Line 2e + Line 2i — 600

3. Pad or Foundation Decontamination

a. Method of pad decontamination — NA

b. Pad area to be decontaminated (ft^2) — 0

c. Pad decontamination unit cost ($/$ft^2$) — 0.88 (p. 5-3)

d. Pad decontamination subtotal ($)
Line 3b x Line 3c — 0

e. Residual generation rate for pad/foundation decontamination (gal/ft^2) — 4 (p. 5-3)

f. Contaminated fluid and/or residues generated (gal)
Line 3b x Line 3e — 0

4. Sump Decontamination

a. Method of sump decontamination — High Pressure Wash

b. Volume to be pumped from sump(s) (gal) — 600

c. Time required for pumping (hrs)
Line 4b ÷ 8000
(round up to nearest integer) — 1

d. Pumping unit cost ($/hr) — 23 ($23/hr; p. 4-11)

e. Pump rental cost, optional ($/hr) — 2.70 ($2.70/hr; p. 4-11)

f. Pumping cost ($)
(Line 4c x Line 4d) + Line 4e — 25.70

WORKSHEET A-3 (page 3)

g. Sump area to be decontaminated (ft^2) 750

h. Sump decontamination unit cost ($/$ft^2$) 0.88 (p. 5-3)

i. Sump decontamination cost ($)
Line 4g x Line 4h 660

j. Sump decontamination subtotal ($)
Line 4f + Line 4i 685

k. Residual generation rate for sump decontamination (gal/ft^2) 4 (p. 5-3)

l. Contaminated fluid and/or residues generated (gal)
Line 4b + (Line 4g x Line 4k) 3600

5. Container Rinsing

a. Number of containers 11,900

b. Container rinsing time required (hrs)
0.083 x Line 5a 988

c. Container rinsing unit cost ($/hr) 32.75 ($32.75/hr; p. 5-10)

d. Container rinsing subtotal ($)
Line 5b x Line 5c 32357

e. Residual generation rate for container rinsing (gal/drum) 10 (10 gal/drum; p. 5-10)

f. Contaminated fluid/residual generated (gal)
Line 5a x Line 5e 119,000

6. Other Items Needing Decontamination

a. List items None

b. Method of decontamination for other items

WORKSHEET A-3 (page 4)

c. Surface area of other items to be decontaminated (ft^2) _____

d. Decontamination unit cost ($/$ft^2$) _____ (p. 5-3)

e. Decontamination of other items subtotal ($)
Line 6c x Line 6d _____ 0 _____

f. Residual generation rate for decontamination of other items (gal/ft^2) _____ (p. 5-3)

g. Contaminated fluid and/or residues generated (gal)
Line 6c x Line 6f _____

7. On-Site Treatment of Decontamination Residues

a. Quantity of residue to be treated (gal) _____ 0 _____

b. Chemicals required for treatment (lb/gal residue or gal/gal residue) _____ (pp. 4-12 - 4-13)

c. Chemicals unit cost ($/lb or $/gal) _____

d. Chemicals cost ($)
Line 7a x Line 7b x Line 7c _____

e. Electricity required for treatment (kwh/gal residue) _____ (pp. 4-12 - 4-13)

f. Electricity unit cost ($/kwh) _____ ($0.05/kwh; p. 4-2)

g. Electricity cost ($)
Line 7a x Line 7e x Line 7f _____

h. Water required for treatment (gal/gal residue) _____ (pp. 4-12 - 4-13)

i. Water unit cost ($/1000 gal) _____ ($1.22/1000 gal; p. 4-2)

j. Water cost ($)
[(Line 7a x Line 7h) ÷ 1000] x Line 7i _____

k. Fuel required for treatment (MMBtu/gal residue) _____ (pp. 4-12 - 4-13)

WORKSHEET A-3 (page 5)

l. Fuel unit cost ($/MMBtu) _____ (p. 4-2)

m. Fuel cost ($)
Line 7a x Line 7k x Line 7l _____

n. Labor required for treatment
(hrs/gallon residue) _____ (pp. 4-12 - 4-13)

o. Process operator unit labor cost
($/hr) _____ ($26.50/hr; p. 9-3)

p. Labor cost ($)
Line 7a x Line 7n x Line 7o _____

q. On-site treatment cost ($)
Line 7d + Line 7g + Line 7j +
Line 7m + Line 7p 0

r. Residue generated from treatment
(gal) 0

8. Testing for Success of Decontamination

a. Number of Samples 2 heavy equipment

b. Sample collection time required
(hrs/sample) 0.5

c. Technician unit labor cost ($/hr) 20.50 ($20.50/hr; p. 9-3)

d. Sample collection time (hrs)
Line 8a x Line 8b 1

e. Sampling cost ($)
Line 8c x Line 8d 20.50

f. Cost to test each sample ($/sample) 152 (pp. 5-10 - 5-11) (ICP Metals

g. Testing cost ($)
Line 8a x Line 8f 304

h. Testing for success of
decontamination cost ($)
Line 8e + Line 8g 324.50

9. Treated Residue Discharge to Sewer

a. Volume of liquid discharged (gal) 0

b. Sewer discharge unit cost
($/1000 gal) _____ ($1.50/1000 gal;
p. 4-2)

WORKSHEET A-3 (page 6)

c. Sewer discharge cost ($)
(Line 9a ÷ 1000) x Line 9b _____ 0 _____

10. Off-Site Management of Decontamination Fluid/Residues and/or Treatment Residue

a. Off-site management method Precipitation

b. Quantity to be managed off-site (tons) 122,600 * gallons

c. Truck capacity (tons) 5,000 gallons

d. Number of loads
Line 10b ÷ Line 10c
(round up to nearest integer) 25

e. One-way distance (mi/load) 50

f. Transportation unit cost ($/mi) 5.61 ($4.50/mi; p. 4-15)**

g. Transportation cost ($)
Line 10d x Line 10e x Line 10f 7012.50

h. Off-site management unit cost ($/ton) $0.38/gal (pp. 4-13 - 4-20)

i. Off-site management cost ($)
Line 10b x Line 10h 46,588

j. Contaminated fluid and residue disposal subtotal ($)
Line 10g + Line 10i _____ 53,601 _____

11. Off-Site Management of Rinsed Containers in a Sanitary Landfill

a. Quantity to be managed off-site (tons) 327 (55 lbs/container; p. 4-5)

b. Truck capacity (tons) 40

c. Number of loads
11a ÷ 11b
(round up to nearest integer) 8

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* Conversion factors are provided in the Volume III appendix.
** Based on a 250-mile one-way distance.

WORKSHEET A-3 (page 7)

d. One-way distance (mi/load) 50

e. Transportation unit cost ($/mi) 5.19 ($5.19/mi; p. 4-15)***

f. Transportation cost ($)
Line 11c x Line 11d x Line 11e 2076

g. Sanitary landfill disposal cost
($/ton) 12 ($12/ton; p. 5-10)

h. Off-site management cost ($)
Line 11a x Line 11g 3924

i. Empty container disposal
Subtotal ($)
Line 11n + Line 11e 6000

12. On-Site Disposal

Include volume on one or more worksheets:
Landfill Inventory - Line 1n, Line 1p
Incinerator Inventory - Line 1l, Line 1n
Land Treatment Inventory - Line 1k, Line 1o

13. Facility Decontamination Subtotal ($)
Line 1c + Line 2j + Line 3d + Line 4j +
Line 5c + Line 6e + Line 7g + Line 8h +
Line 9c + Line 10j + Line 11i $99,526

*** Based on a 25-mile one-way distance.

WORKSHEET A-4

Foundation/Pad Removal

1. Protective Clothing

a. Number of personnel requiring protective clothing for demolition — 40 — 4 workers 2 weeks each

b. Protective clothing unit cost ($/person) — 77 — ($77/person; p. 6-8)

c. Protective clothing cost ($) Line 1a x Line 1b — 3080

2. Pad or Foundation Demolition

a. Volume of pad/foundation to be demolished (yd^3) — 1389 — 75,000 ft2 6" thick assumed

b. Demoliton unit cost ($/$yd^3$) — 82 — ($82/yd^3; p. 6-1)

c. Pad/foundation loading unit cost ($/$yd^3$) — 0.98 — (p. 4-7)

d. Demolition and loading cost ($) Line 2a x (Line 2b + Line 2c) — 115,250

e. Mobilization/demolition cost ($) — 160 — (p. 4-7)

f. Pad/foundation demolition and loading cost before surcharge ($) Line 2d + Line 2e — 115,410

g. Surcharge factor — 0 — (1.0; pp. 6-8 - 6-9)

h. Foundation demolition cost ($) Line 2f x (1 + Line 2g) — 115,410

3. Equipment Decontamination

a. Total heavy equipment decontamination time (hrs) — 3 — (p. 5-2)

b. Heavy equipment decontamination cost ($) — 79 — (p. 5-2)

c. Residual generation rate for heavy equipment decontamination (gal/hr) — 100 — (100 gal/hr; p. 5-1)

d. Contaminated fluid and/or residue generated (gal) Line 3a x Line 3c — 300

WORKSHEET A-4 (page 2)

4. On-Site Treatment of Decontamination Residues

a.	Quantity of residue to be treated (gal)	0	
b.	Chemicals required for treatment (lb/gal residue or gal/gal residue)		(pp. 4-12 - 4-13)
c.	Chemicals unit cost ($/lb or $/gal)		
d.	Chemicals cost ($) Line 4a x Line 4b x Line 4c		
e.	Electricity required for treatment (kwh/gal residue)		(pp. 4-12 - 4-13)
f.	Electricity unit cost ($/kwh)		($0.05/kwh; p. 4-2)
g.	Electricity cost ($) Line 4a x Line 4e x Line 4f		
h.	Water required for treatment (gal/gal residue)		(pp. 4-12 - 4-13)
i.	Water unit cost ($/1000 gal)		($1.22/1000 gal; p. 4-2)
j.	Water cost ($) [(Line 4a x Line 4h) ÷ 1000] x Line 4i		
k.	Fuel required for treatment (MMBtu/gal residue)		(pp. 4-12 - 4-13)
l.	Fuel unit cost ($/MMBtu)		(p. 4-2)
m.	Fuel cost ($) Line 4a x Line 4k x Line 4l		
n.	Labor required for treatment (hrs/gallon residue)		(pp. 4-12 - 4-13)
o.	Process operator unit labor cost ($/hr)		($26.50/hr; p. 9-3)
p.	Labor cost ($) Line 4a x Line 4n x Line 4o		
q.	On-site treatment cost ($) Line 4d + Line 4g + Line 4j + Line 4m + Line 4p		0
r.	Residue generated from treatment (gal)	0	

WORKSHEET A-4 (page 3)

5. Treated Residue Discharge to Sewer

a. Volume of liquid discharged (gal) — 0

b. Sewer discharge unit cost ($/1000 gal) — _____ ($1.50/1000 gal; p. 4-2)

c. Sewer discharge cost ($) (Line 5a ÷ 1000) x Line 5b — 0

6. Off-Site Management of Rubble, Decontamination Residue, and/or Treatment Residue

a. Volume to be managed off-site (tons) — 1389 yd3 concrete; 300 gal liquid * **

b. Truck capacity (tons) — 40 yd3

c. Number of loads Line 6a ÷ Line 6b (round up to nearest integer) — 35

d. Transportation unit cost ($/mi) — 4.50 ($4.50/mi; p. 4-15)**

e. One-way distance (mi/load) — 100

f. Transportation cost ($) Line 6c x Line 6d x Line 6e — 15750

g. Off-site management unit cost ($/ton) — $275/yd3; $0.38/gal (pp. 4-13 - 4-20)

h. Off-site management cost ($) Line 6a x Line 6g — 382089

i. Off-site management subtotal ($) Line 6f + Line 6i — 397,839

7. On-Site Disposal

Include volume on one or more worksheets:
Landfill Inventory - Line 1m, Line 1n, Line 1p
Incinerator Inventory - Line 1l, Line 1n
Land Treatment Inventory - Line 1k, Line 1o

8. Demolition and Removal Subtotal ($) Line 1c + Line 2h + Line 3b + Line 4q + Line 5c + Line 6i — $516,408

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* Conversion factors are provided in the Volume III appendix.
** Based on a 250-mile one-way distance.

*** transportation costs shared with other liquids

WORKSHEET A-5

Removal of Contaminated Soil

1. Protective Clothing

   a. Number of personnel requiring protective clothing for excavation and decontaminating: 20 — 4 workers for one week

   b. Protective clothing unit cost ($/person): 77 ($77/person; p. 6-8)

   c. Protective clothing cost ($) Line 1a x Line 1b: 1540

2. Excavation of Contaminated Soil and Earthen Berms

   a. Volume of contaminated soil/berms to be removed (yd^3): 2000 assumed

   b. Excavation unit cost, including loading ($/$yd^3$): $5.47 (pp. 6-3 - 6-7)

   c. Mobilization/demobilization cost ($): 210 (pp. 4-5, 4-7, 4-10, and 6-3)

   d. Contaminated soil/berm removal cost before surcharge ($) (Line 2a x Line 2b) + Line 2c: 11150

   e. Surcharge factor: 0 (1.0; pp. 6-8 - 6-9)

   f. Contaminated soil/berm removal subtotal ($) Line 2d x (1 + Line 2e): 11150

3. Equipment Decontamination

   a. Total heavy equipment decontamination time (hrs): 3 (p. 5-2)

   b. Heavy equipment decontamination cost ($): 79 (p. 5-2)

   c. Residual generation rate for heavy equipment decontamination (gal/hr): 100 (100 gal/hr; p. 5-1)

   d. Contaminated fluid and/or residues generated (gal) Line 3a x Line 3c: 300

WORKSHEET A-5 (page 2)

4. On-Site Treatment of Decontamination Residues

a. Quantity of residue to be treated (gal)	0	
b. Chemicals required for treatment (lb/gal residue or gal/gal residue)	_____	(pp. 4-12 - 4-13)
c. Chemicals unit cost ($/lb or $/gal)	_____	
d. Chemicals cost ($) Line 4a x Line 4b x Line 4c	_____	
e. Electricity required for treatment (kwh/gal residue)	_____	(pp. 4-12 - 4-13)
f. Electricity unit cost ($/kwh)	_____	($0.05/kwh; p. 4-2)
g. Electricity cost ($) Line 4a x Line 4e x Line 4f	_____	
h. Water required for treatment (gal/gal residue)	_____	(pp. 4-12 - 4-13)
i. Water unit cost ($/1000 gal)	_____	($1.22/1000 gal; p. 4-2)
j. Water cost ($) [(Line 4a x Line 4h) ÷ 1000] x Line 4i	_____	
k. Fuel required for treatment (MMBtu/gal residue)	_____	(pp. 4-12 - 4-13)
l. Fuel unit cost ($/MMBtu)	_____	(p. 4-2)
m. Fuel cost ($) Line 4a x Line 4k x Line 4l	_____	
n. Labor required for treatment (hrs/gallon residue)	_____	(pp. 4-12 - 4-13)
o. Process operator unit labor cost ($/hr)	_____	($26.50/hr; p. 9-3)
p. Labor cost ($) Line 4a x Line 4n x Line 4o	_____	

WORKSHEET A-5 (page 3)

q. On-site treatment cost ($)
Line 4d + Line 4g + Line 4j + Line 4m + Line 4p — 0

r. Residue generated from treatment (gal) — 0

5. Treated Residue Discharge to Sewer

a. Volume of liquid discharged (gal) — 0

b. Sewer discharge unit cost ($/1000 gal) — ($1.50/1000 gal; p. 4-2)

c. Sewer discharge cost ($)
(Line 5a ÷ 1000) x Line 5b — 0

6. Off-Site Management of Contaminated Soil, Decontamination Residue, and/or Treatment Residue

a. Quantity to be managed off-site (tons) — 2000 yd3 soil; 300 gal liquid* * *

b. Truck capacity (tons) — 40 yd3

c. Number of loads
Line 6a ÷ Line 6b
(round up to nearest integer) — 50

d. One-way distance (mi/load) — 100

e. Transportation unit cost ($/mi) — 4.50 ($4.50/mi; p. 4-15)**

f. Transportation cost ($)
Line 6c x Line 6d x Line 6e — 22,500

g. Off-site management unit cost ($/ton) — $275/yd3; $0.39/gal (pp. 4-13 - 4-20)

h. Off-site management cost ($)
Line 6a x Line 6g — 550,114

i. Off-site management subtotal ($)
Line 6f + Line 6h — 572,614

* Conversion factors are provided in the Volume III appendix.
** Based on a 250-mile one-way distance.

* * * transportation costs shared with other liquids

WORKSHEET A-5 (page 4)

7. On-Site Disposal

Include volume on one or more worksheets:
Landfill Inventory - Line 1n, Line 1o, Line 1p
Incinerator Inventory - Line 1l, Line 1n, Line 1o
Land Treatment Inventory - Line 1k, Line 1l, Line 1o

0

8. Contaminated Soil Removal Subtotal ($)
Line 1c + Line 2f + Line 3b + Line 4q +
Line 5c + Line 6i

$585,383

WORKSHEET B-10

Final Cover

1. Native Soil for Slope and Fill

a. Length of area to be capped (yd)	NA	
b. Width of area to be capped (yd)		
c. Quantity needed (yd^3)		(*)
d. Excavation unit cost ($/$yd^3$)		
e. Placement and spreading unit cost ($/$yd^3$)		($2.48/$yd^3$; p. 7-6)
f. Compaction unit cost ($/$yd^3$)		($2.25/$yd^3$; p. 7-6)
g. Total native soil unit cost ($/$yd^3$) Line 1d + Line 1e + Line 1f		($1.04/$yd^3$; p. 7-6)
h. Percent compaction (decimal < 1)		(0.25; p. 7-10)
i. Native soil cost ($) Line 1c x Line 1g x (1 + Line 1h)		0

2. On-Site Clay

a. Area to be capped (yd^2) Line 1a x Line 1b	NA	
b. Depth of clay needed (yd)		
c. Quantity needed (yd^3) Line 2a x Line 2b		
d. Excavation unit cost ($/$yd^3$)		($4.05/$yd^3$; p. 7-10)
e. Placement/spreading unit cost ($/$yd^3$)		($2.25/$yd^3$; p. 7-10)
f. Compaction unit cost ($/$yd^3$)		($2.41/$yd^3$; p. 7-10)
g. Total on-site clay unit cost ($/$yd^3$) Line 2d + Line 2e + Line 2f		($8.71/$yd^3$; pp. 7-10 - 7-11)

* Formula provided in Final Cover and Revegetation chapter of Volume III.

WORKSHEET B-10 (page 2)

h. Percent compaction (decimal < 1) _____ (0.25; p. 7-10)

i. Clay lift thickness (yd) _____ (0.22 yd; p. 7-12)

j. Number of lifts
Line 2b ÷ Line 2i _____

k. Number of samples to be tested/lift (samples/lift) _____ (3 samples/lift; p. 7-12)

l. Number of samples to be tested
Line 2j x Line 2k _____

m. Clay testing unit cost ($/sample) _____ ($230/sample; p. 7-12)

n. Clay testing cost
Line 2l x Line 2m _____

o. On-site clay cost ($)
Line 2c x Line 2g x (1 + Line 2h) + Line 2n _____ 0 _____

3. Off-Site Clay

a. Area to be capped (yd^2)
Line 1a x Line 1b _____

b. Depth of clay needed (yd) _____ (0.67 yd; p. 7-4)

c. Quantity needed (yd^3)
Line 3a x Line 3b _____ 2000 _____

d. Purchase unit cost ($/$yd^3$) _____ ($4.75/yd^3; p. 7-13)

e. Delivery unit cost ($/$yd^3$) _____ ($10.16/yd^3; p. 7-13)

f. Spreading unit cost ($/$yd^3$) _____ ($1.03/yd^3; p. 7-13)

g. Compaction unit cost ($/$yd^3$) _____ ($2.41/yd^3; p. 7-13)

h. Total off-site clay unit cost ($/$yd^3$)
Line 3d + Line 3e + Line 3f + Line 3g _____ 18.35 _____ ($18.35/$yd^3$; pp. 7-13 - 7-14)

i. Percent compaction (decimal < 1) _____ (0.40; p. 7-10)

j. Clay lift thickness (yd) _____ (0.22 yd; p. 7-12)

WORKSHEET B-10 (page 3)

k. Number of lifts
Line 3b ÷ Line 3j _____

l. Number of samples to be tested/lift (samples/lift) _____ (3 samples/lift; p. 7-12)

m. Number of samples to be tested
Line 3k x Line 3l _____

n. Clay testing unit cost ($/sample) _____ ($230/sample; p. 7-12)

o. Clay testing cost
Line 3m x Line 3n _____

p. Off-site clay cost ($)
Line 3c x Line 3h x (1 + Line 3i) + Line 3o $36,700

4. Synthetic Membrane

a. Type of membrane NA

b. Quantity needed (yd^2) _____

c. Purchase unit cost ($/$yd^2$) _____ ($2.60/yd^2; p. 7-16)

d. Delivery unit cost ($/$yd^2$) _____ ($0.25/yd^2; p. 7-16)

e. Installation unit cost ($/$yd^2$) _____ ($0.50/yd^2; p. 7-16)

f. Total synthetic membrane unit cost ($/$yd^2$)
Line 4c + Line 4d + Line 4e _____ ($3.35/$yd^2$; p. 7-16)

g. Synthetic liner testing (percent of total synthetic membrane unit cost) _____ (0.25; p. 7-15)

h. Synthetic membrane cost ($)
Line 4b x Line 4f x (1 + Line 4g) 0

5. Sand

a. Area to be capped (yd^2)
Line 1a x Line 1b NA

b. Depth of sand needed (yd) _____ (0.33 yd; p. 7-4)

WORKSHEET 6-10 (page 4)

c. Quantity needed (yd^3)
Line 5a x Line 5b _____

d. Purchase unit cost ($/$yd^3$) _____ ($5.50/yd^3; p. 7-20)

e. Delivery unit cost ($/$yd^3$) _____ ($2.61/yd^3; p. 7-20)

f. Spreading unit cost ($/$yd^3$) _____ ($1.03/yd^3; p. 7-20)

g. Compaction unit cost ($/$yd^3$) _____ ($1.49/yd^3; p. 7-20)

h. Total sand unit cost ($/$yd^3$)
Line 5d + Line 5e + Line 5f
+ Line 5g _____ ($10.63/$yd^3$; pp. 7-20 - 7-21)

i. Percent compaction (decimal < 1) _____ (0.10; p. 7-10)

j. Sand cost ($)
Line 5c x Line 5h x (1 + Line 5i) 0

6. Gravel

a. Area to be capped (yd^2)
Line 1a x Line 1b NA

b. Depth of gravel needed (yd) _____ (0.33 yd; p. 7-4)

c. Quantity needed (yd^3)
Line 6a x Line 6b _____

d. Purchase unit cost ($/$yd^3$) _____ ($3.85/yd^3; p. 7-17)

e. Delivery unit cost ($/$yd^3$) _____ ($2.61/yd^3; p. 7-17)

f. Spreading unit cost ($/$yd^3$) _____ ($1.03/yd^3; p. 7-17)

g. Compaction unit cost ($/$yd^3$) _____ ($1.22/yd^3; p. 7-17)

h. Total gravel unit cost ($/$yd^3$)
Line 6d + Line 6e + Line 6f
+ Line 6g _____ ($8.71/$yd^3$; pp. 7-17 - 7-18)

i. Percent compaction (decimal < 1) _____ (0.05; p. 7-10)

j. Gravel cost ($)
Line 6c x Line 6h x (1 + Line 6i) 0

WORKSHEET B-10 (page 5)

7. Drainage Tile

a. Type of tile NA

b. Length needed (L.F.) _____

c. Tile unit cost ($/L.F.) _____ ($0.50/L.F.; p. 7-22)

d. Trenching and backfilling unit cost ($/L.F.) _____ ($0.56/L.F.; p. 7-22)

e. Total drainage tile unit cost ($/L.F.)
Line 7c + Line 7d _____ ($1.06/L.F.; pp. 7-22 - 7-23)

f. Drainage tile cost ($)
Line 7b x Line 7e 0

8. Geotextile Filter Fabric

a. Type of geotextile NA

b. Quantity needed (yd^2) _____

c. Purchase unit cost ($/$yd^2$) _____ ($0.69/yd^2; p. 7-24)

d. Delivery unit cost ($/$yd^2$) _____ ($0.05/yd^2; p. 7-24)

e. Installation unit cost ($/$yd^2$) _____ ($0.09/yd^2; p. 7-24)

f. Total geotextile filter fabric unit cost ($/$yd^2$)
Line 8c + Line 8d + Line 8e _____ ($0.83/$yd^2$; p. 7-24)

g. Geotextile filter fabric cost ($)
Line 8b x Line 8f 0

9. Topsoil

a. Area to be capped (yd^2)
Line 1a x Line 1b 8333

b. Depth of topsoil needed (yd) 0.67 (0.67 yd; p. 7-4)

c. Quantity needed (yd^3)
Line 9a x Line 9b 5583

d. Purchase unit cost ($/$yd^3$) _____ ($6.56/yd^3; p. 7-26)

e. Delivery unit cost ($/$yd^3$) _____ ($2.61/yd^3; p. 7-26)

WORKSHEET B-10 (page 6)

f. Spreading unit cost ($/yd^3) _____ ($1.03/yd^3; p. 7-26)

g. Compaction unit cost ($/yd^3) _____ ($1.22/yd^3; p. 7-26)

h. Total topsoil unit cost ($/yd^3)
Line 9d + Line 9e + Line 9f + Line 9g 11.42 ($11.42/yd^3; pp. 7-26 - 7-27)

i. Percent compaction (decimal < 1) _____ (0.25; p. 7-10)

j. Topsoil cost ($)
Line 9c x Line 9h x (1 + Line 9i) 63762

10. Crushed Stone

a. Area to be capped (yd^2)
Line 1a x Line 1b NA

b. Depth of crushed stone needed (yd) _____ (0.33 yd; p. 7-4)

c. Quantity needed (yd^3)
Line 10a x Line 10b _____

d. Purchase unit cost ($/yd^3) _____ ($11.55/yd^3; p. 7-28)

e. Delivery unit cost ($/yd^3) _____ ($2.61/yd^3; p. 7-28)

f. Spreading unit cost ($/yd^3) _____ ($1.03/yd^3; p. 7-28)

g. Compaction unit cost ($/yd^3) _____ ($1.22/yd^3; p. 7-28)

h. Total crushed stone unit cost ($/yd^3)
Line 10d + Line 10e + Line 10f + Line 10g _____ ($16.41/yd^3; pp. 7-28 - 7-29)

i. Percent compaction (decimal < 1) _____ (0.05; p. 7-10)

j. Crushed stone cost ($)
Line 10c x Line 10h x (1 + Line 10i) 0

11. Mobilization/Demobilization

a. Heavy equipment mobilization/demobilization cost ($) 700 ($700; p. 7-32)

12. Final Cover Subtotal ($)
Line 1i + Line 2c + Line 3p + Line 4h + Line 5j + Line 6j + Line 7f + Line 8g + Line 9j + Line 10j + Line 11a

$101,162

WORKSHEET B-11

Revegetation

1. Soil Preparation and Grading

   a. Area to be revegetated, including closed area that needs replanting (acres) — 1.67

   b. Soil preparation and grading unit cost ($/acre) — 1002 ($1002/acre; p. 7-31)

   c. Soil preparation and grading cost ($)
   Line 1a x Line 1b — 1670

2. Seeding

   a. Type of vegetation — Fescue

   b. Seed unit cost ($/acre) — 795 ($795/acre; p. 7-31)

   c. Seed cost ($)
   Line 1a x Line 2b — 1328

3. Fertilizing

   a. Type of fertilizer — 20-3-3

   b. Fertilizer unit cost ($/acre) — 176 ($176/acre; p. 7-31)

   c. Fertilizing cost ($)
   Line 1a x Line 3b — 293.92

4. Mulching

   a. Mulch unit cost ($/acre) — 1048 ($1048/acre; p. 7-31)

   b. Mulching cost ($)
   Line 1a x Line 4a — 1750.16

5. Mobilization/Demobilization

   a. Heavy equipment mobilization/demobilization cost ($) — 105 ($105; p. 7-32)

6. Revegetation Subtotal ($)
   Line 1c + Line 2c + Line 3c + Line 4b + Line 5a — 5147

*Total Cost = $940,636 + $99,526 + $516,408 + $585,383 + $101,162 + $5147 = $2,248,262

WBS-1100
Roll-Off Box Area

OSWER Policy Directive
#9476.00-6

WORKSHEET A-1

Inventory Management

1. Recontainerization of Waste

   a. Number of damaged/leaking containers needing recontainerization ___0___

   b. Recontainerization unit cost ($/container) _____ ($144/container; p. 4-8)

   c. Recontainerization cost ($) Line 1a x Line 1b ___0___

2. Inventory Quantity (Maximum)

   a. Total number of full containers ___17___

   b. Container capacity (gal/container) ___40 yd3___

   c. Containerized waste quantity (gal) Line 2a x Line 2b _____

   d. Total number of empty containers _____

   e. Container weight (lb/container) _____ (55 lb/container; p. 4-8)

   f. Total container weight (tons) Line 2c + (Line 2d x Line 2e) ___680 yd3*___

3. Container Loading

   a. Number of pallets (Line 2a + Line 2d) ÷ 4 (round up to nearest integer) _____

   b. Loading unit cost ($/pallet) _____ ($4.66/pallet; p. 4-8)

   c. Container loading cost ($) Line 3a x Line 3b ___680 yd3 x $0.98/yd3 = $666.40___

* Conversion factors are provided in the Volume III appendix.

WORKSHEET A-1 (page 2)

4. Off-Site Management of Inventory
(include containers and waste)

a. Quantity to be managed off-site (tons) 0 *

b. Truck capacity (tons) _____

c. Number of loads
Line 4a ÷ Line 4b _____

d. One-way distance (mi/load) _____

e. Transportation unit cost ($/mi) _____ ($4.50/mi; p. 4-15)*

f. Transportation cost ($)
Line 4c x Line 4d x Line 4e _____

g. Off-site management unit cost ($/ton) _____ (pp. 4-13 - 4-20)

h. Off-site management cost ($)
Line 4a x Line 4g _____

i. Off-site management subtotal ($)
Line 4f + Line 4h 0

5. Solidification Prior to On-Site Landfill Disposal

a. Number of containers to be solidified (containers) 0

b. Solidification unit cost ($/container) _____ ($10.50/container; p. 4-9)

c. Solidification cost ($)
Line 5a x Line 5b 0

6. On-Site Disposal

Include volume on one or more worksheets:
Landfill Inventory - Line 1h
Incinerator Inventory - Line 1d
Land Treatment Inventory - Line 1e

7. Container and Drum Inventory
Management Subtotal ($)
Line 1c + Line 3c + Line 4i + Line 5c 666.40

* Conversion factors are provided in the Volume III appendix.
* Based on a 250-mile one-way distance.

WORKSHEET A-2

Testing for Soil Contamination

1. Background Samples and Samples with Potential Contamination

   a. Number of soil samples to be taken ___0___

   b. Number of samples requiring coring through concrete/asphalt foundations/pads ___

   c. Thickness of foundation/pad (inches) ___

   d. Unit cost for coring through/removing concrete/asphalt foundations/pads ($/sample) ___ ($15/inch; p. 6-1)

   e. Sample collection time required (hrs/sample) ___ (1 hr/sample; p. 2-12)

   f. Transportation time to and from site (hrs) ___

   g. Contract lab technician unit labor cost ($/hr) ___ ($20.50/hr; p. 9-3)

   h. Sample collection time (hrs) (Line 1a x Line 1e) + Line 1f ___

   i. Sampling cost ($) (Line 1b x Line 1c x Line 1d (Line 1g x Line 1h) ___

   j. Contract lab fee ($/sample) ___ (p. 2-13)

   k. Contract lab cost ($) Line 1a x Line 1j ___

   l. Sample cost ($) Line 1i + Line 1k ___0___

2. Preparation of Isogram Plan

   a. Engineer time required (hrs) ___0___

   b. Engineer unit labor cost ($/hr) ___ ($45.50/hr; p. 9-3)

   c. Engineer cost ($) Line 2a x Line 2b ___

   d. Draftsperson time required (hrs) ___

   e. Draftsperson unit labor cost ($/hr) ___ ($24/hr; p. 9-3)

WORKSHEET A-2 (page 2)

f. Draftsperson cost ($)
Line 2d x Line 2e _____

g. Clerical time required (hrs) _____

h. Clerical unit labor cost ($/hr) _____ ($18/hr; p. 9-3)

i. Clerical cost ($)
Line 2g x Line 2h _____

j. Isogram plan cost ($)
Line 2c + Line 2f + Line 2i 0

3. Soil Testing Subtotal ($)
Line 1l + Line 2j 0

WORKSHEET A-3

Decontamination

1. Protective Clothing and Safety Equipment for Facility Personnel

   a. Number of personnel requiring protective clothing and safety equipment for decontamination ___40___ 4 workers 2 weeks each

   b. Safety equipment and protective clothing unit cost ($/person) ___80___ ($80/person; p. 5-6)

   c. Safety equipment and protective clothing cost ($) Line 1a x Line 1b ___3200___

2. Equipment Decontamination

   a. Equipment needing decontamination:

      - pumps and feed lines
      - heavy equipment (e.g., fork lifts, dozers, etc.)
      - other equipment (list) 1½ yd³ loader

   b. Number of pumps and lines ___0___

   c. Pumps and lines decontamination cost ($) ___0___ (p. 5-4)

   d. Residual generation rate for pump and line decontamination ___0___ (50 gal/pump and line; p. 5-1)

   e. Residual generated from pump and line decontamination (gal) Line 2b x Line 2d ___0___

   f. Heavy equipment decontamination cost ($) ___79___ (p. 5-2)

   g. Total heavy equipment decontamination time (hrs) ___3___ (p. 5-2)

   h. Residual generation rate for heavy equipment decontamination (gal/hr) ___100___ (100 gal/hr; p. 5-1)

WORKSHEET A-3 (page 2)

i. Residual generated from heavy equipment decontamination (gal)
Line 2g x Line 2h — 300

j. Equipment decontamination cost ($)
Line 2c + Line 2f — 79

k. Contaminated fluid and/or residues generated (gal)
Line 2e + Line 2i — 300

3. Pad or Foundation Decontamination

a. Method of pad decontamination — NA

b. Pad area to be decontaminated (ft^2) — 0

c. Pad decontamination unit cost ($/$ft^2$) — 0.88 (p. 5-3)

d. Pad decontamination subtotal ($)
Line 3b x Line 3c — 0

e. Residual generation rate for pad/foundation decontamination (gal/ft^2) — 4 (p. 5-3)

f. Contaminated fluid and/or residues generated (gal)
Line 3b x Line 3e — 0

4. Sump Decontamination

a. Method of sump decontamination — High Pressure Wash

b. Volume to be pumped from sump(s) (gal) — 300

c. Time required for pumping (hrs)
Line 4b ÷ 8000
(round up to nearest integer) — 1

d. Pumping unit cost ($/hr) — 23 ($23/hr; p. 4-11)

e. Pump rental cost, optional ($/hr) — 2.70 ($2.70/hr; p. 4-11)

f. Pumping cost ($)
(Line 4c x Line 4d) + Line 4e — 25.70

WORKSHEET A-3 (page 3)

g. Sump area to be decontaminated (ft^2) 750

h. Sump decontamination unit cost ($/$ft^2$) 0.38 (p. 5-3)

i. Sump decontamination cost ($)
Line 4g x Line 4h 660

j. Sump decontamination subtotal ($)
Line 4f + Line 4i 687.50

k. Residual generation rate for sump decontamination (gal/ft^2) 4 (p. 5-3)

l. Contaminated fluid and/or residues generated (gal)
Line 4b + (Line 4g x Line 4k) 3,000

5. Container Rinsing

a. Number of containers 17 roll-off boxes

b. Container rinsing time required (hrs) assume 8 hrs / box
0.083 x Line 5a 136

c. Container rinsing unit cost ($/hr) 32.75 ($32.75/hr; p. 5-10)

d. Container rinsing subtotal ($)
Line 5b x Line 5c 4454

e. Residual generation rate for container rinsing (gal/drum) assume 800 gal/box
800 (10 gal/drum; p. 5-10)

f. Contaminated fluid/residual generated (gal)
Line 5a x Line 5e 13,600

6. Other Items Needing Decontamination

a. List items None

b. Method of decontamination for other items

WORKSHEET A-3 (page 4)

c. Surface area of other items to be decontaminated (ft^2) _____

d. Decontamination unit cost ($/$ft^2$) _____ (p. 5-3)

e. Decontamination of other items subtotal ($)
Line 6c x Line 6d _____ 0

f. Residual generation rate for decontamination of other items (gal/ft^2) _____ (p. 5-3)

g. Contaminated fluid and/or residues generated (gal)
Line 6c x Line 6f _____ 0

7. On-Site Treatment of Decontamination Residues

a. Quantity of residue to be treated (gal) _____ 0

b. Chemicals required for treatment (lb/gal residue or gal/gal residue) _____ (pp. 4-12 - 4-13)

c. Chemicals unit cost ($/lb or $/gal) _____

d. Chemicals cost ($)
Line 7a x Line 7b x Line 7c _____

e. Electricity required for treatment (kwh/gal residue) _____ (pp. 4-12 - 4-13)

f. Electricity unit cost ($/kwh) _____ ($0.05/kwh; p. 4-2)

g. Electricity cost ($)
Line 7a x Line 7e x Line 7f _____

h. Water required for treatment (gal/gal residue) _____ (pp. 4-12 - 4-13)

i. Water unit cost ($/1000 gal) _____ ($1.22/1000 gal; p. 4-2)

j. Water cost ($)
[(Line 7a x Line 7h) ÷ 1000] x Line 7i _____

k. Fuel required for treatment (MMBtu/gal residue) _____ (pp. 4-12 - 4-13)

WORKSHEET A-3 (page 5)

l. Fuel unit cost ($/MMBtu) _____ (p. 4-2)

m. Fuel cost ($)
Line 7a x Line 7k x Line 7l _____

n. Labor required for treatment
(hrs/gallon residue) _____ (pp. 4-12 - 4-13)

o. Process operator unit labor cost
($/hr) _____ ($26.50/hr; p. 9-3)

p. Labor cost ($)
Line 7a x Line 7n x Line 7o _____

q. On-site treatment cost ($)
Line 7d + Line 7g + Line 7j +
Line 7m + Line 7p 0

r. Residue generated from treatment
(gal) 0

8. Testing for Success of Decontamination

a. Number of Samples 178 1 per 100 ft^2 and 10 per roll-off

b. Sample collection time required
(hrs/sample) 0.5

c. Technician unit labor cost ($/hr) 20.50 ($20.50/hr; p. 9-3)

d. Sample collection time (hrs)
Line 8a x Line 8b 89

e. Sampling cost ($)
Line 8c x Line 8d 1825

f. Cost to test each sample ($/sample) 152 (pp. 5-10 - 5-11) (10 metals)

g. Testing cost ($)
Line 8a x Line 8f 27056

h. Testing for success of
decontamination cost ($)
Line 8e + Line 8g 28,881

9. Treated Residue Discharge to Sewer

a. Volume of liquid discharged (gal) 0

b. Sewer discharge unit cost
($/1000 gal) _____ ($1.50/1000 gal; p. 4-2)

WORKSHEET A-3 (page 6)

c. Sewer discharge cost ($)
(Line 9a ÷ 1000) x Line 9b — 0

10. Off-Site Management of Decontamination Fluid/Residues and/or Treatment Residue

a. Off-site management method Precipitation

b. Quantity to be managed off-site (tons) — 16,900 gal*

c. Truck capacity (tons) — 5,000 gal

d. Number of loads
Line 10b ÷ Line 10c
(round up to nearest integer) — 4

e. One-way distance (mi/load) — 50

f. Transportation unit cost ($/mi) — 5.61 ($4.50/mi; p. 4-15)**

g. Transportation cost ($)
Line 10d x Line 10e x Line 10f — 1122

h. Off-site management unit cost ($/ton) — $0.38/gal (pp. 4-13 - 4-20)

i. Off-site management cost ($)
Line 10b x Line 10h — 6422

j. Contaminated fluid and residue disposal subtotal ($)
Line 10g + Line 10i — $7544

11. Off-Site Management of Rinsed Containers in a Sanitary Landfill

a. Quantity to be managed off-site (tons) — NA (55 lbs/container; p. 4-5)

b. Truck capacity (tons) — _____

c. Number of loads
11a ÷ 11b
(round up to nearest integer) — _____

---

* Conversion factors are provided in the Volume III appendix.
** Based on a 250-mile one-way distance.

WORKSHEET A-3 (page 7)

d. One-way distance (mi/load) _____

e. Transportation unit cost ($/mi) _____ ($5.19/mi; p. 4-15)***

f. Transportation cost ($)
Line 11c x Line 11d x Line 11e _____

g. Sanitary landfill disposal cost
($/ton) _____ ($12/ton; p. 5-10)

h. Off-site management cost ($)
Line 11a x Line 11g _____

i. Empty container disposal
Subtotal ($)
Line 11h + Line 11e 0

12. On-Site Disposal

Include volume on one or more worksheets:
Landfill Inventory - Line 1n, Line 1p
Incinerator Inventory - Line 1l, Line 1n
Land Treatment Inventory - Line 1k, Line 1o

13. Facility Decontamination Subtotal ($)
Line 1c + Line 2j + Line 3d + Line 4j +
Line 5d + Line 6e + Line 7g + Line 8h +
Line 9c + Line 10j + Line 11i $44,846

*** Based on a 25-mile one-way distance.

WORKSHEET A-4

Foundation/Pad Removal

1. Protective Clothing

   a. Number of personnel requiring protective clothing for demolition — 20 — 4 workers 1 week each

   b. Protective clothing unit cost ($/person) — 77 — ($77/person; p. 6-8)

   c. Protective clothing cost ($) Line 1a x Line 1b — 1540

2. Pad or Foundation Demolition

   a. Volume of pad/foundation to be demolished (yd^3) — 370 — 20,000 ft^2 6 in thick

   b. Demoliton unit cost ($/$yd^3$) — 82 — ($82/yd^3; p. 6-1)

   c. Pad/foundation loading unit cost ($/$yd^3$) — 0.98 — (p. 4-7)

   d. Demolition and loading cost ($) Line 2a x (Line 2b + Line 2c) — 30,702.60

   e. Mobilization/demolition cost ($) — 210 — (p. 4-7)

   f. Pad/foundation demolition and loading cost before surcharge ($) Line 2d + Line 2e — 30912.60

   g. Surcharge factor — 0 — (1.0; pp. 6-8 - 6-9)

   h. Foundation demolition cost ($) Line 2f x (1 + Line 2g) — 30912.60

3. Equipment Decontamination

   a. Total heavy equipment decontamination time (hrs) — 3 — (p. 5-2)

   b. Heavy equipment decontamination cost ($) — 79 — (p. 5-2)

   c. Residual generation rate for heavy equipment decontamination (gal/hr) — 100 — (100 gal/hr; p. 5-1)

   d. Contaminated fluid and/or residue generated (gal) Line 3a x Line 3c — 300

WORKSHEET A-4 (page 2)

4. On-Site Treatment of Decontamination Residues

a. Quantity of residue to be treated (gal) ___0___

b. Chemicals required for treatment (lb/gal residue or gal/gal residue) _____ (pp. 4-12 - 4-13)

c. Chemicals unit cost ($/lb or $/gal) _____

d. Chemicals cost ($)
Line 4a x Line 4b x Line 4c _____

e. Electricity required for treatment (kwh/gal residue) _____ (pp. 4-12 - 4-13)

f. Electricity unit cost ($/kwh) _____ ($0.05/kwh; p. 4-2)

g. Electricity cost ($)
Line 4a x Line 4e x Line 4f _____

h. Water required for treatment (gal/gal residue) _____ (pp. 4-12 - 4-13)

i. Water unit cost ($/1000 gal) _____ ($1.22/1000 gal; p. 4-2)

j. Water cost ($)
[(Line 4a x Line 4h) ÷ 1000]
x Line 4i _____

k. Fuel required for treatment (MMBtu/gal residue) _____ (pp. 4-12 - 4-13)

l. Fuel unit cost ($/MMBtu) _____ (p. 4-2)

m. Fuel cost ($)
Line 4a x Line 4k x Line 4l _____

n. Labor required for treatment (hrs/gallon residue) _____ (pp. 4-12 - 4-13)

o. Process operator unit labor cost ($/hr) _____ ($26.50/hr; p. 9-3)

p. Labor cost ($)
Line 4a x Line 4n x Line 4o _____

q. On-site treatment cost ($)
Line 4d + Line 4g + Line 4j +
Line 4m + Line 4p ___0___

r. Residue generated from treatment (gal) ___0___

WORKSHEET A-4 (page 3)

5. Treated Residue Discharge to Sewer

   a. Volume of liquid discharged (gal) — 0

   b. Sewer discharge unit cost ($/1000 gal) — _____ ($1.50/1000 gal; p. 4-2)

   c. Sewer discharge cost ($) (Line 5a ÷ 1000) x Line 5b — 0

6. Off-Site Management of Rubble, Decontamination Residue, and/or Treatment Residue

   a. Volume to be managed off-site (tons) — 370 yd3 concrete; 300 gal liquid*

   b. Truck capacity (tons) — 40 yd3

   c. Number of loads Line 6a ÷ Line 6b (round up to nearest integer) — 10

   d. Transportation unit cost ($/mi) — $4.50 ($4.50/mi; p. 4-15)**

   e. One-way distance (mi/load) — 100

   f. Transportation cost ($) Line 6c x Line 6d x Line 6e — 4500

   g. Off-site management unit cost ($/ton) — $2.75/yd3; $0.38/gal (pp. 4-13 - 4-20)

   h. Off-site management cost ($) Line 6a x Line 6g — 101864

   i. Off-site management subtotal ($) Line 6f + Line 6i — 106,364

7. On-Site Disposal

   Include volume on one or more worksheets:
   Landfill Inventory - Line 1m, Line 1n, Line 1p
   Incinerator Inventory - Line 1l, Line 1n
   Land Treatment Inventory - Line 1k, Line 1o

8. Demolition and Removal Subtotal ($) Line 1c + Line 2h + Line 3b + Line 4q + Line 5c + Line 6i — $ 138896

* Conversion factors are provided in the Volume III appendix.
** Based on a 250-mile one-way distance.

* transportation costs shared with other liquids

WORKSHEET A-5

Removal of Contaminated Soil

1. Protective Clothing

   a. Number of personnel requiring protective clothing for excavation and decontaminating: 20 — 4 workers 1 week each

   b. Protective clothing unit cost ($/person): 77 ($77/person; p. 6-8)

   c. Protective clothing cost ($) Line 1a x Line 1b: $1540

2. Excavation of Contaminated Soil and Earthen Berms

   a. Volume of contaminated soil/berms to be removed (yd^3): 500 — assumed

   b. Excavation unit cost, including loading ($/$yd^3$): 5.47 (pp. 6-3 - 6-7)

   c. Mobilization/demobilization cost ($): 210 (pp. 4-5, 4-7, 4-10, and 6-3)

   d. Contaminated soil/berm removal cost before surcharge ($) (Line 2a x Line 2b) + Line 2c: 2945

   e. Surcharge factor: 0 (1.0; pp. 6-8 - 6-9)

   f. Contaminated soil/berm removal subtotal ($) Line 2d x (1 + Line 2e): 2945

3. Equipment Decontamination

   a. Total heavy equipment decontamination time (hrs): 3 (p. 5-2)

   b. Heavy equipment decontamination cost ($): 79 (p. 5-2)

   c. Residual generation rate for heavy equipment decontamination (gal/hr): 100 (100 gal/hr; p. 5-1)

   d. Contaminated fluid and/or residues generated (gal) Line 3a x Line 3c: 300

WORKSHEET A-5 (page 2)

4. On-Site Treatment of Decontamination Residues

a. Quantity of residue to be treated (gal)	0	
b. Chemicals required for treatment (lb/gal residue or gal/gal residue)	_____	(pp. 4-12 - 4-13)
c. Chemicals unit cost ($/lb or $/gal)	_____	
d. Chemicals cost ($) Line 4a x Line 4b x Line 4c	_____	
e. Electricity required for treatment (kwh/gal residue)	_____	(pp. 4-12 - 4-13)
f. Electricity unit cost ($/kwh)	_____	($0.05/kwh; p. 4-2)
g. Electricity cost ($) Line 4a x Line 4e x Line 4f	_____	
h. Water required for treatment (gal/gal residue)	_____	(pp. 4-12 - 4-13)
i. Water unit cost ($/1000 gal)	_____	($1.22/1000 gal; p. 4-2)
j. Water cost ($) [(Line 4a x Line 4h) ÷ 1000] x Line 4i	_____	
k. Fuel required for treatment (MMBtu/gal residue)	_____	(pp. 4-12 - 4-13)
l. Fuel unit cost ($/MMBtu)	_____	(p. 4-2)
m. Fuel cost ($) Line 4a x Line 4k x Line 4l	_____	
n. Labor required for treatment (hrs/gallon residue)	_____	(pp. 4-12 - 4-13)
o. Process operator unit labor cost ($/hr)	_____	($26.50/hr; p. 9-3)
p. Labor cost ($) Line 4a x Line 4n x Line 4o	_____	

WORKSHEET A-5 (page 3)

q. On-site treatment cost ($)
Line 4d + Line 4g + Line 4j + Line 4m + Line 4p — 0

r. Residue generated from treatment (gal) — 0

5. Treated Residue Discharge to Sewer

a. Volume of liquid discharged (gal) — 0

b. Sewer discharge unit cost ($/1000 gal) — ____ ($1.50/1000 gal; p. 4-2)

c. Sewer discharge cost ($)
(Line 5a ÷ 1000) x Line 5b — 0

6. Off-Site Management of Contaminated Soil, Decontamination Residue, and/or Treatment Residue

a. Quantity to be managed off-site (tons) — 500 yd3 soil; 300 gal liq ***

b. Truck capacity (tons) — 40 yd3

c. Number of loads
Line 6a ÷ Line 6b
(round up to nearest integer) — 13

d. One-way distance (mi/load) — 100

e. Transportation unit cost ($/mi) — 4.50 ($4.50/mi; p. 4-15)**

f. Transportation cost ($)
Line 6c x Line 6d x Line 6e — 5850

g. Off-site management unit cost ($/ton) — $275/yd3; $0.38/gal (pp. 4-13 - 4-20)

h. Off-site management cost ($)
Line 6a x Line 6g — 137614

i. Off-site management subtotal ($)
Line 6f + Line 6h — 143464

* Conversion factors are provided in the Volume III appendix.
** Based on a 250-mile one-way distance.

*** transportation costs shared with other liquids

WORKSHEET A-5 (page 4)

7. On-Site Disposal

Include volume on one or more worksheets:
Landfill Inventory - Line 1n, Line 1o, Line 1p
Incinerator Inventory - Line 1l, Line 1n, Line 1o
Land Treatment Inventory - Line 1k, Line 1l, Line 1o

8. Contaminated Soil Removal Subtotal ($) $148028
Line 1c + Line 2f + Line 3b + Line 4q + Line 5c + Line 6i

WORKSHEET B-10

Final Cover

1. Native Soil for Slope and Fill

a. Length of area to be capped (yd)	NA	
b. Width of area to be capped (yd)		
c. Quantity needed (yd^3)		(*)
d. Excavation unit cost ($/$yd^3$)		
e. Placement and spreading unit cost ($/$yd^3$)		($2.48/$yd^3$; p. 7-6)
f. Compaction unit cost ($/$yd^3$)		($2.25/$yd^3$; p. 7-6)
g. Total native soil unit cost ($/$yd^3$) Line 1d + Line 1e + Line 1f		($1.04/$yd^3$; p. 7-6)
h. Percent compaction (decimal < 1)		(0.25; p. 7-10)
i. Native soil cost ($) Line 1c x Line 1g x (1 + Line 1h)		0

2. On-Site Clay

a. Area to be capped (yd^2) Line 1a x Line 1b	NA	
b. Depth of clay needed (yd)		
c. Quantity needed (yd^3) Line 2a x Line 2b		
d. Excavation unit cost ($/$yd^3$)		($4.05/$yd^3$; p. 7-10)
e. Placement/spreading unit cost ($/$yd^3$)		($2.25/$yd^3$; p. 7-10)
f. Compaction unit cost ($/$yd^3$)		($2.41/$yd^3$; p. 7-10)
g. Total on-site clay unit cost ($/$yd^3$) Line 2d + Line 2e + Line 2f		($8.71/$yd^3$; pp. 7-10 - 7-11)

* Formula provided in Final Cover and Revegetation chapter of Volume III.

WORKSHEET B-10 (page 2)

h. Percent compaction (decimal < 1) _____ (0.25; p. 7-10)

i. Clay lift thickness (yd) _____ (0.22 yd; p. 7-12)

j. Number of lifts
Line 2b ÷ Line 2i _____

k. Number of samples to be tested/lift (samples/lift) _____ (3 samples/lift; p. 7-12)

l. Number of samples to be tested
Line 2j x Line 2k _____

m. Clay testing unit cost ($/sample) _____ ($230/sample; p. 7-12)

n. Clay testing cost
Line 2l x Line 2m _____

o. On-site clay cost ($)
Line 2c x Line 2g x (1 + Line 2h) + Line 2n 0

3. Off-Site Clay

a. Area to be capped (yd^2)
Line 1a x Line 1b _____

b. Depth of clay needed (yd) _____ (0.67 yd; p. 7-4)

c. Quantity needed (yd^3)
Line 3a x Line 3b 500

d. Purchase unit cost ($/$yd^3$) _____ ($4.75/yd^3; p. 7-13)

e. Delivery unit cost ($/$yd^3$) _____ ($10.16/yd^3; p. 7-13)

f. Spreading unit cost ($/$yd^3$) _____ ($1.03/yd^3; p. 7-13)

g. Compaction unit cost ($/$yd^3$) _____ ($2.41/yd^3; p. 7-13)

h. Total off-site clay unit cost ($/$yd^3$)
Line 3d + Line 3e + Line 3f + Line 3g 18.35 ($18.35/$yd^3$; pp. 7-13 - 7-14)

i. Percent compaction (decimal < 1) _____ (0.40; p. 7-10)

j. Clay lift thickness (yd) _____ (0.22 yd; p. 7-12)

WORKSHEET B-10 (page 3)

k. Number of lifts
Line 3b ÷ Line 3j _____

l. Number of samples to be tested/lift (samples/lift) _____ (3 samples/lift; p. 7-12)

m. Number of samples to be tested
Line 3k x Line 3l _____

n. Clay testing unit cost ($/sample) _____ ($230/sample; p. 7-12)

o. Clay testing cost
Line 3m x Line 3n _____

p. Off-site clay cost ($)
Line 3c x Line 3h x (1 + Line 3i) + Line 3o 9175

4. Synthetic Membrane

a. Type of membrane NA

b. Quantity needed (yd^2) _____

c. Purchase unit cost ($/$yd^2$) _____ ($2.60/yd^2; p. 7-16)

d. Delivery unit cost ($/$yd^2$) _____ ($0.25/yd^2; p. 7-16)

e. Installation unit cost ($/$yd^2$) _____ ($0.50/yd^2; p. 7-16)

f. Total synthetic membrane unit cost ($/$yd^2$)
Line 4c + Line 4d + Line 4e _____ ($3.35/$yd^2$; p. 7-16)

g. Synthetic liner testing (percent of total synthetic membrane unit cost) _____ (0.25; p. 7-15)

h. Synthetic membrane cost ($)
Line 4b x Line 4f x (1 + Line 4g) 0

5. Sand

a. Area to be capped (yd^2)
Line 1a x Line 1b NA

b. Depth of sand needed (yd) _____ (0.33 yd; p. 7-4)

WORKSHEET B-10 (page 4)

c. Quantity needed (yd^3)
Line 5a x Line 5b _____

d. Purchase unit cost ($/$yd^3$) _____ ($5.50/yd^3; p. 7-20)

e. Delivery unit cost ($/$yd^3$) _____ ($2.61/yd^3; p. 7-20)

f. Spreading unit cost ($/$yd^3$) _____ ($1.03/yd^3; p. 7-20)

g. Compaction unit cost ($/$yd^3$) _____ ($1.49/yd^3; p. 7-20)

h. Total sand unit cost ($/$yd^3$)
Line 5d + Line 5e + Line 5f
+ Line 5g _____ ($10.63/$yd^3$; pp. 7-20 - 7-21)

i. Percent compaction (decimal < 1) _____ (0.10; p. 7-10)

j. Sand cost ($)
Line 5c x Line 5h x (1 + Line 5i) 0

6. Gravel

a. Area to be capped (yd^2)
Line 1a x Line 1b NA

b. Depth of gravel needed (yd) _____ (0.33 yd; p. 7-4)

c. Quantity needed (yd^3)
Line 6a x Line 6b _____

d. Purchase unit cost ($/$yd^3$) _____ ($3.85/yd^3; p. 7-17)

e. Delivery unit cost ($/$yd^3$) _____ ($2.61/yd^3; p. 7-17)

f. Spreading unit cost ($/$yd^3$) _____ ($1.03/yd^3; p. 7-17)

g. Compaction unit cost ($/$yd^3$) _____ ($1.22/yd^3; p. 7-17)

h. Total gravel unit cost ($/$yd^3$)
Line 6d + Line 6e + Line 6f
+ Line 6g _____ ($8.71/$yd^3$; pp. 7-17 - 7-18)

i. Percent compaction (decimal < 1) _____ (0.05; p. 7-10)

j. Gravel cost ($)
Line 6c x Line 6h x (1 + Line 6i) 0

WORKSHEET B-10 (page 5)

7. Drainage Tile

a. Type of tile NA

b. Length needed (L.F.) _____

c. Tile unit cost ($/L.F.) _____ ($0.50/L.F.; p. 7-22)

d. Trenching and backfilling unit cost ($/L.F.) _____ ($0.56/L.F.; p. 7-22)

e. Total drainage tile unit cost ($/L.F.)
Line 7c + Line 7d _____ ($1.06/L.F.; pp. 7-22 - 7-23)

f. Drainage tile cost ($)
Line 7b x Line 7e 0

8. Geotextile Filter Fabric

a. Type of geotextile NA

b. Quantity needed (yd^2) _____

c. Purchase unit cost ($/$yd^2$) _____ ($0.69/yd^2; p. 7-24)

d. Delivery unit cost ($/$yd^2$) _____ ($0.05/yd^2; p. 7-24)

e. Installation unit cost ($/$yd^2$) _____ ($0.09/yd^2; p. 7-24)

f. Total geotextile filter fabric unit cost ($/$yd^2$)
Line 8c + Line 8d + Line 8e _____ ($0.83/$yd^2$; p. 7-24)

g. Geotextile filter fabric cost ($)
Line 8b x Line 8f 0

9. Topsoil

a. Area to be capped (yd^2)
Line 1a x Line 1b 2222

b. Depth of topsoil needed (yd) 0.67 (0.67 yd; p. 7-4)

c. Quantity needed (yd^3)
Line 9a x Line 9b 1488

d. Purchase unit cost ($/$yd^3$) _____ ($6.56/yd^3; p. 7-26)

e. Delivery unit cost ($/$yd^3$) _____ ($2.61/yd^3; p. 7-26)

WORKSHEET B-10 (page 6)

f. Spreading unit cost ($/yd^3) _____ ($1.03/yd^3; p. 7-26)

g. Compaction unit cost ($/yd^3) _____ ($1.22/yd^3; p. 7-26)

h. Total topsoil unit cost ($/yd^3)
Line 9d + Line 9e + Line 9f + Line 9g 11.42 ($11.42/yd^3; pp. 7-26 - 7-27)

i. Percent compaction (decimal < 1) _____ (0.25; p. 7-10)

j. Topsoil cost ($)
Line 9c x Line 9h x (1 + Line 9i) 17,000

10. Crushed Stone

a. Area to be capped (yd^2)
Line 1a x Line 1b NA

b. Depth of crushed stone needed (yd) _____ (0.33 yd; p. 7-4)

c. Quantity needed (yd^3)
Line 10a x Line 10b _____

d. Purchase unit cost ($/yd^3) _____ ($11.55/yd^3; p. 7-28)

e. Delivery unit cost ($/yd^3) _____ ($2.61/yd^3; p. 7-28)

f. Spreading unit cost ($/yd^3) _____ ($1.03/yd^3; p. 7-28)

g. Compaction unit cost ($/yd^3) _____ ($1.22/yd^3; p. 7-28)

h. Total crushed stone unit cost ($/yd^3)
Line 10d + Line 10e + Line 10f + Line 10g _____ ($16.41/yd^3; pp. 7-28 - 7-29)

i. Percent compaction (decimal < 1) _____ (0.05; p. 7-10)

j. Crushed stone cost ($)
Line 10c x Line 10h x (1 + Line 10i) 0

11. Mobilization/Demobilization

a. Heavy equipment mobilization/demobilization cost ($) 700 ($700; p. 7-32)

12. Final Cover Subtotal ($)
Line 1i + Line 2c + Line 3p + Line 4h + Line 5j + Line 6j + Line 7f + Line 8g + Line 9j + Line 10j + Line 11a

$26875

WORKSHEET B-11

Revegetation

1. Soil Preparation and Grading

   a. Area to be revegetated, including closed area that needs replanting (acres) — 0.44

   b. Soil preparation and grading unit cost ($/acre) — 1002 ($1002/acre; p. 7-31)

   c. Soil preparation and grading cost ($)
   Line 1a x Line 1b — 445

2. Seeding

   a. Type of vegetation — Fescue

   b. Seed unit cost ($/acre) — 795 ($795/acre; p. 7-31)

   c. Seed cost ($)
   Line 1a x Line 2b — 350

3. Fertilizing

   a. Type of fertilizer — 20-3-3

   b. Fertilizer unit cost ($/acre) — 176 ($176/acre; p. 7-31)

   c. Fertilizing cost ($)
   Line 1a x Line 3b — 77

4. Mulching

   a. Mulch unit cost ($/acre) — 1048 ($1048/acre; p. 7-31)

   b. Mulching cost ($)
   Line 1a x Line 4a — 461

5. Mobilization/Demobilization

   a. Heavy equipment mobilization/demobilization cost ($) — 105 ($105; p. 7-32)

6. Revegetation Subtotal ($)
   Line 1c + Line 2c + Line 3c + Line 4b + Line 5a — 1438

Total Cost = $666 + $44,846 + $138,896 + $148028 + 26875 + $1438 = $360,749

WBS- 1,000
Underground Storage Tank

WORKSHEET B-1

Inventory Management

1. Inventory Quantity (Maximum)

   a. Number of tanks — 1

   b. Tank waste quantity (gal/tank) — 10,000

   c. Total waste quantity (gal)
      Line 1a x Line 1b — 10,000

2. Containerization of Bulk Waste

   a. Quantity of waste to be containerized (gal) — 10,000 — Assume use tanker

   b. Container capacity (gal/container) — 5,000 gal (55 gal/container; p. 4-6)

   c. Number of containers needed
      Line 2a ÷ Line 2b — 2

   d. Containerization unit cost ($/container) — 200 (p. 4-6)

   e. Containerization cost ($)
      Line 2c x Line 2d — 400

3. Container Loading

   a. Number of pallets
      Line 2c ÷ 4
      (round up to nearest integer) — NA

   b. Loading unit cost ($/pallet) — ($4.66/pallet; p.4-6)

   c. Container loading cost ($)
      Line 3a x Line 3b — 0

4. On-Site Treatment of Liquid Waste Inventory

   a. Quantity of waste to be treated (gal) — 0

WORKSHEET B-1 (page 2)

b.	Chemicals required for treatment (lb/gal waste or gal/gal waste)	_____	(pp. 4-12 - 4-13)
c.	Chemicals unit cost ($/lb or $/gal)	_____	
d.	Chemicals cost ($) Line 4a x Line 4b x Line 4c	_____	
e.	Electricity required for treatment (kwh/gal waste)	_____	(pp. 4-12 - 4-13)
f.	Electricity unit cost ($/kwh)	_____	($0.05/kwh; p. 4-2)
g.	Electricity cost ($) Line 4a x Line 4e x Line 4f	_____	
h.	Water required for treatment (gal/gal waste)	_____	(pp. 4-12 - 4-13)
i.	Water unit cost ($/1000 gal)	_____	($1.22/1000 gal; p. 4-2)
j.	Water cost ($) [(Line 4a x Line 4h) ÷ 1000] x Line 4i	_____	
k.	Fuel required for treatment (MMBtu/gal waste)	_____	(pp. 4-12 - 4-13)
l.	Fuel unit cost ($/MMBtu)	_____	(p. 4-2)
m.	Fuel cost ($) Line 4a x Line 4k x Line 4l	_____	
n.	Labor required for treatment (hrs/gallon waste)	_____	(pp. 4-12 - 4-13)
o.	Process operator unit labor cost ($/hr)	_____	($26.50/hr; p. 9-3)
p.	Labor cost ($) Line 4a x Line 4n x Line 4o	_____	
q.	On-site treatment cost ($) Line 4d + Line 4g + Line 4j + Line 4m + Line 4p		0
r.	Residue generated from treatment (gal)	0	

WORKSHEET B-1 (page 3)

5. Treated Waste Discharge to Sewer

   a. Volume of liquid discharged (gal) 0

   b. Sewer discharge unit cost ($/1000 gal) _____ ($1.50/1000 gal; p. 4-2)

   c. Sewer discharge cost ($) (Line 5a ÷ 1000) x Line 5b 0

6. Off-Site Management of Inventory and/or Treatment Residue

   a. Quantity to be managed off-site (tons) 10,000 gal *

   b. Truck capacity (tons) 5,000 gal

   c. Number of loads Line 6a ÷ Line 5b (round up to nearest integer) 2

   d. One-way distance (mi/load) 50

   e. Transportation unit cost ($/mi) 5.61 ($4.50/mi; p. 4-15)**

   f. Transportation cost ($) Line 6c x Line 6d x Line 6e 561

   g. Off-site management unit cost ($/ton) $0.38/gal (pp. 4-13 - 4-20)

   h. Off-site management cost ($) Line 6a x Line 6g 3800

   i. Off-site management subtotal ($) Line 6f + Line 6h 4361

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* Conversion factors are provided in the Volume III appendix.

** Based on a 250-mile one-way distance.

WORKSHEET B-1 (page 4)

7. Solidification Prior to On-Site Landfill Disposal

a. Quantity to be solidified (tons) 0 *

b. Type of solidification material _____

c. Solidification unit cost ($/ton) _____ (p. 4-11)

d. Solidification cost ($)
Line 7a x Line 7c 0

e. Change in waste quantity (factor ≥ 1) _____ (1.0; p. 4-11)

f. Final solidified waste quantity (tons)
Line 7a x (1 + Line 7e) 0

8. On-Site Disposal

Include volume on one or more worksheets:
Landfill Inventory - Line 1i, Line 1p
Incinerator Inventory - Line 1e, Line 1f, Line 1n
Land Treatment Inventory - Line 1b, Line 1d, Line 1o

9. Treatment/Storage Tank Inventory Management Subtotal ($)
Line 2e + Line 3c + Line 4c + Line 5c + Line 6i + Line 7d $ 4761

* Conversion factors are provided in the Volume III appendix.

WORKSHEET B-2

Testing for Soil Contamination

1. Background Samples and Samples with Potential Contamination

a. Number of soil samples to be taken 0

b. Number of samples requiring coring through concrete/asphalt foundations/pads _____

c. Thickness of foundation/pad (inches) _____

d. Unit cost for coring through/removing concrete/asphalt foundations/pads ($/sample) _____ ($15/inch; p. 6-1)

e. Sample collection time required (hrs/sample) _____ (1 hr/sample; p. 2-12)

f. Transportation time to and from site (hrs) _____

g. Contract lab technician unit labor cost ($/hr) _____ ($20.50/hr; p. 9-3)

h. Sample collection time (hrs) (Line 1a x Line 1e) + Line 1f _____

i. Sampling cost ($) (Line 1b x Line 1c x Line 1d (Line 1g x Line 1h) _____

j. Contract lab fee ($/sample) _____ (p. 2-13)

k. Contract lab cost ($) Line 1a x Line 1j _____

l. Sample cost ($) Line 1i + Line 1k 0

2. Preparation of Isogram Plan

a. Engineer time required (hrs) 0

b. Engineer unit labor cost ($/hr) _____ ($45.50/hr; p. 9-3)

c. Engineer cost ($) Line 2a x Line 2b _____

d. Draftsperson time required (hrs) _____

e. Draftsperson unit labor cost ($/hr) _____ ($24/hr; p. 9-3)

WORKSHEET B-2 (page 2)

f. Draftsperson cost ($)
Line 2d x Line 2e _____

g. Clerical time required (hrs) _____

h. Clerical unit labor cost ($/hr) _____ ($18/hr; p. 9-3)

i. Clerical cost ($)
Line 2g x Line 2h _____

j. Isogram plan cost ($)
Line 2c + Line 2f + Line 2i 0

3. Soil Testing Subtotal ($)
Line 1l + Line 2j 0

WORKSHEET B-3

Decontamination

1. Protective Clothing and Safety Equipment for Facility Personnel

   a. Number of personnel requiring protective clothing and safety equipment for decontamination: 4

   b. Safety equipment and protective clothing unit cost ($/person): 80 ($80/person; p. 5-6)

   c. Safety equipment and protective clothing cost ($)
   Line 1a x Line 1b: 320

2. Equipment Decontamination

   a. Equipment needing decontamination:

   - pumps and feed lines
   - heavy equipment (e.g., fork lifts, dozers, etc.)
   - other equipment (list) pump, feed line, backhoe

   b. Number of pumps and lines: 1

   c. Pumps and lines decontamination cost ($): 212 (p. 5-4)

   d. Residual generation rate for pump and line decontamination: 50 (50 gal/pump and line; p. 5-1)

   e. Residual generated from pump and line decontamination (gal)
   Line 2b x Line 2d: 50

   f. Heavy equipment decontamination cost ($): 79 (p. 5-2)

   g. Total heavy equipment decontamination time (hrs): 3 (p. 5-2)

   h. Residual generation rate for heavy equipment decontamination (gal/hr): 100 (100 gal/hr; p. 5-1)

WORKSHEET B-3 (page 2)

i. Residual generated from heavy equipment decontamination (gal) Line 2g x Line 2h — 300

j. Equipment decontamination cost ($) Line 2c + Line 2f — 291

k. Contaminated fluid and/or residues generated (gal) Line 2e + Line 2i — 350

3. Tank Decontamination

a. Number of personnel entering tanks — NA — Tank is concrete, will not be deconned.

b. Additional personnel safety equipment unit cost ($/person) — _____ ($172/person; p. 5-6)

c. Additional personnel safety equipment cost ($) Line 3a x Line 3b — _____

d. Method of tank decontamination — _____

e. Tank area to be decontaminated (ft^2) — _____

f. Tank decontamination unit cost ($/$ft^2$) — _____ (p. 5-3)

g. Tank decontamination cost ($) Line 3e x Line 3f — _____

h. Tank decontamination subtotal before surcharge ($) Line 3c + Line 3g — _____

i. Surcharge factor (factor ≥ 1) — _____ (2.0; p. 5-6)

j. Tank decontamination subtotal ($) Line 3h x (1 + Line 3i) — _____

k. Volume of tank(s) to be filled with sand (gal) — _____

WORKSHEET B-3 (page 3)

l. Sand purchase and placement unit cost ($/gal) _____ ($0.10/gal; p. 5-7)

m. Tank decontamination and sand filling cost ($)
Line 3j + (Line 3k x Line 3l) _____ 0

n. Residual generation rate for tank decontamination (gal/ft^2) _____ (p. 5-3)

o. Contaminated fluid and/or residues generated (gal)
Line 3e x Line 3n _____

4. Double Walled Steel Tank Interstitial Space Decontamination

a. Method of tank decontamination _____ (steamcleaning)

b. Tank area to be decontaminated (ft^2) _____

c. Tank decontamination unit cost ($/ft^2) _____ ($0.55/ft^2; p. 5-3)

d. Tank decontamination cost ($)
Line 4b x Line 4c _____ 0

e. Residual generation rate for tank decontamination (gal/ft^2) _____ (4 gal/ft^2; p. 5-3)

f. Contaminated fluid and/or residues generated (gal)
Line 4b x Line 4e _____

5. Vault Decontamination

a. Number of personnel entering vault _____

b. Additional personnel safety equipment unit cost ($/person) _____ ($172/person; p. 5-6)

c. Additional personnel safety equipment cost ($)
Line 5a x Line 5b _____

d. Method of vault decontamination _____

e. Vault area to be decontaminated (ft^2) _____

WORKSHEET B-3 (page 4)

f. Vault decontamination unit cost ($/ft^2) _____ (p. 5-3)

g. Vault decontamination cost ($)
Line 5e x Line 5f _____

h. Vault decontamination subtotal before surcharge ($)
Line 5c + Line 5g _____

i. Surcharge factor (factor $\geq$1) _____ (2.0; p. 5-6)

j. Vault decontamination subtotal ($)
Line 5h x (1 + Line 5i) _____

k. Volume of vault(s) to be filled with sand (gal) _____

l. Sand purchase and placement unit cost ($/gal) _____ ($0.10/gal; p. 5-7)

m. Vault decontamination and sand filling cost ($)
Line 5j + (Line 5k x Line 5l) 0

n. Residual generation rate for vault decontamination (gal/ft^2) _____ (p. 5-3)

o. Contaminated fluid and/or residues generated (gal)
Line 5e x Line 5n _____

6. Pad or Foundation Decontamination

a. Method of pad decontamination _____

b. Pad area to be decontaminated (ft^2) _____

c. Pad decontamination unit cost ($/ft^2) _____ (p. 5-3)

d. Pad decontamination subtotal ($)
Line 6b x Line 6c 0

e. Residual generation rate for pad/foundation decontamination (gal/ft^2) _____ (p. 5-3)

f. Contaminated fluid and/or residues generated (gal)
Line 6b x Line 6e _____

WORKSHEET B-3 (page 5)

7. Sump or Trough Decontamination

a. Method of sump or trough decontamination _____

b. Volume to be pumped from sump or trough(s) (gal) _____

c. Time required for pumping (hrs)
Line 7b ÷ 8000
(round up to nearest integer) _____

d. Pumping unit cost ($/hr) _____ ($23/hr; p. 4-11)

e. Pump rental cost, optional ($/hr) _____ ($2.70/hr; p. 4-11)

f. Pumping cost ($)
(Line 7c x Line 7d) + Line 7e _____

g. Sump or trough area to be decontaminated (ft^2) _____

h. Sump or trough decontamination unit cost ($/$ft^2$) _____ (p. 5-3)

i. Sump or trough decontamination cost ($)
Line 7g x Line 7h _____

j. Sump or trough decontamination subtotal ($)
Line 7f + Line 7i _____ 0

k. Residual generation rate for sump or trough decontamination (gal/ft^2) _____ (p. 5-3)

l. Contaminated fluid and/or residues generated (gal)
Line 7b + (Line 7g x Line 7k) _____

8. Other Items Needing Decontamination

a. List items _____

_____

b. Method of decontamination for other items _____

WORKSHEET 6-3 (page 6)

c. Surface area of other items to be decontaminated (ft^2) _____

d. Decontamination unit cost ($/$ft^2$) _____ (p. 5-3)

e. Decontamination of other items subtotal ($)
Line 8c x Line 8d 0

f. Residual generation rate for decontamination of other items (gal/ft^2) _____ (p. 5-3)

g. Contaminated fluid and/or residues generated (gal)
Line 8c x Line 8f _____

9. On-Site Treatment of Decontamination Residues

a. Quantity of residue to be treated (gal) _____

b. Chemicals required for treatment (lb/gal residue or gal/gal residue) _____ (pp. 4-12 - 4-13)

c. Chemicals unit cost ($/lb or $/gal) _____

d. Chemicals cost ($)
Line 9a x Line 9b x Line 9c _____

e. Electricity required for treatment (kwh/gal residue) _____ (pp. 4-12 - 4-13)

f. Electricity unit cost ($/kwh) _____ ($0.05/kwh; p. 4-2)

g. Electricity cost ($)
Line 9a x Line 9e x Line 9f _____

h. Water required for treatment (gal/gal residue) _____ (pp. 4-12 - 4-13)

i. Water unit cost ($/1000 gal) _____ ($1.22/1000 gal; p. 4-2)

j. Water cost ($)
[(Line 9a x Line 9h) ÷ 1000] x Line 9i _____

k. Fuel required for treatment (MMBtu/gal residue) _____ (pp. 4-12 - 4-13)

WORKSHEET B-3 (page 7)

l. Fuel unit cost ($/MMBtu) _____ (p. 4-2)

m. Fuel cost ($)
Line 9a x Line 9k x Line 9l _____

n. Labor required for treatment
(hrs/gallon residue) _____ (pp. 4-12 - 4-13)

o. Process operator unit labor cost
($/hr) _____ ($26.50/hr; p. 9-3)

p. Labor cost ($)
Line 9a x Line 9n x Line 9o _____

q. On-site treatment cost ($)
Line 9d + Line 9g + Line 9j +
Line 9m + Line 9p 0

r. Residue generated from treatment
(gal) _____

10. Testing for Success of Decontamination

a. Number of samples _____

b. Sample collection time required
(hrs/sample) _____

c. Technician unit labor cost ($/hr) _____ ($20.50/hr; p. 9-3)

d. Sample collection time (hrs)
Line 10a x Line 10b _____

e. Sampling cost ($)
Line 10c x Line 10d _____

f. Cost to test each sample
($/sample) _____ (pp. 5-10 - 5-11)

g. Testing cost ($)
Line 10a x Line 10f _____

h. Testing for success of
decontamination
Line 10e + Line 10g 0

11. Treated Residue Discharge to Sewer

a. Volume of liquid discharged (gal) _____

WORKSHEET B-3 (page 8)

b. Sewer discharge unit cost ($/1000 gal) _____ ($1.50/1000 gal; p. 4-2)

c. Sewer discharge cost ($)
(Line 11a ÷ 1000) x Line 11b 0

12. Off-Site Management of Decontamination Fluid/Residues and/or Treatment Residue

a. Off-site management method Neutralization

b. Quantity to be managed off-site (tons) 350 *

c. Truck capacity (tons) 5,000

d. Number of loads
Line 12b ÷ Line 12c
(round up to nearest integer) 1

e. One-way distance (mi/load) 50

f. Transportation unit cost ($/mi) 5.61 ($4.50/mi; p. 4-15)**

g. Transportation cost ($)
Line 12d x Line 12e x Line 12f 280.50

h. Off-site management unit cost ($/ton) $0.38/gal (pp. 4-13 - 4-20)

i. Off-site management cost ($)
Line 12b x Line 12h 133

j. Contaminated fluid and residue disposal subtotal ($)
Line 12g + Line 12i 414

13. On-Site Disposal

Include volume on one or more worksheets:
Landfill Inventory - Line 1n, Line 1p
Incinerator Inventory - Line 1l, Line 1n
Land Treatment Inventory - Line 1k, Line 1o

14. Facility Decontamination Subtotal ($)
Line 1c + Line 2j + Line 3m + Line 4d + Line 5m + Line 6d + Line 7j + Line 8e + Line 9q + Line 10h + Line 11c + Line 12j $ 1025

* Conversion factors are provided in the Volume III appendix.
** Based on a 250-mile one-way distance.

WORKSHEET B-4

Foundation/Pad Removal

1. Protective Clothing

a. Number of personnel requiring protective clothing for demolition — 2

b. Protective clothing unit cost ($/person) — 77 ($77/person; p. 6-8)

c. Protective clothing cost ($)
Line 1a x Line 1b — 154

2. Pad or Foundation Demolition

a. Volume of pad/foundation to be demolished (yd^3) — 10 (concrete tank)

b. Demoliton unit cost ($/$yd^3$) — 82 ($82/yd^3; p. 6-1)

c. Pad/foundation loading unit cost ($/$yd^3$) — 0.98 (p. 4-7)

d. Demolition and loading cost ($)
Line 2a x (Line 2b + Line 2c) — 829.80

e. Mobilization/demolition cost ($) — 210 (p. 4-7)

f. Pad/foundation demolition and loading cost before surcharge ($)
Line 2d + Line 2e — 1039.80

g. Surcharge factor — 0 (1.0; pp. 6-8 - 6-9)

h. Foundation demolition cost ($)
Line 2f x (1 + Line 2g) — 1039.80

3. Equipment Decontamination

a. Total heavy equipment decontamination time (hrs) — 3 (p. 5-2)

b. Heavy equipment decontamination cost ($) — 79 (p. 5-2)

c. Residual generation rate for heavy equipment decontamination (gal/hr) — 100 (100 gal/hr; p. 5-1)

d. Contaminated fluid and/or residue generated (gal)
Line 3a x Line 3c — 300

WORKSHEET B-4 (page 2)

4. On-Site Treatment of Decontamination Residues

a.	Quantity of residue to be treated (gal)	0	
b.	Chemicals required for treatment (lb/gal residue or gal/gal residue)		(pp. 4-12 - 4-13)
c.	Chemicals unit cost ($/lb or $/gal)		
d.	Chemicals cost ($) Line 4a x Line 4b x Line 4c		
e.	Electricity required for treatment (kwh/gal residue)		(pp. 4-12 - 4-13)
f.	Electricity unit cost ($/kwh)		($0.05/kwh; p. 4-2)
g.	Electricity cost ($) Line 4a x Line 4e x Line 4f		
h.	Water required for treatment (gal/gal residue)		(pp. 4-12 - 4-13)
i.	Water unit cost ($/1000 gal)		($1.22/1000 gal; 4-2)
j.	Water cost ($) [(Line 4a x Line 4h) ÷ 1000] x Line 4i		
k.	Fuel required for treatment (MMBtu/gal residue)		(pp. 4-12 - 4-13)
l.	Fuel unit cost ($/MMBtu)		(p. 4-2)
m.	Fuel cost ($) Line 4a x Line 4k x Line 4l		
n.	Labor required for treatment (hrs/gallon residue)		(pp. 4-12 - 4-13)
o.	Process operator unit labor cost ($/hr)		($26.50/hr; p. 9-3)
p.	Labor cost ($) Line 4a x Line 4n x Line 4o		
q.	On-site treatment cost ($) Line 4d + Line 4g + Line 4j + Line 4m + Line 4p		0
r.	Residue generated from treatment (gal)	0	

WORKSHEET B-4 (page 3)

5. Treated Residue Discharge to Sewer

a. Volume of liquid discharged (gal) — 0

b. Sewer discharge unit cost ($/1000 gal) — _____ ($1.50/1000 gal; p. 4-2)

c. Sewer discharge cost ($)
(Line 5a ÷ 1000) x Line 5b — 0

6. Off-Site Management of Rubble, Decontamination Residue, and/or Treatment Residue

a. Volume to be managed off-site (tons) — 300 gal ** ** 10 yd3 * (hazardous)

b. Truck capacity (tons) — 40 yd3

c. Number of loads
Line 6a ÷ Line 6b
(round up to nearest integer) — 1

d. Transportation unit cost ($/mi) — 4.50 ($4.50/mi; p. 4-15)**

e. One-way distance (mi/load) — 100

f. Transportation cost ($)
Line 6c x Line 6d x Line 6e — 450

g. Off-site management unit cost ($/ton) — $275/yd3 $0.38/gal (pp. 4-13 - 4-20)

h. Off-site management cost ($)
Line 6a x Line 6g — 2864

i. Off-site management subtotal ($)
Line 6f + Line 6i — 3314

7. On-Site Disposal

Include volume on one or more worksheets:
Landfill Inventory - Line 1m, Line 1n, Line 1p
Incinerator Inventory - Line 1l, Line 1n
Land Treatment Inventory - Line 1k, Line 1o

8. Demolition and Removal Subtotal ($)
Line 1c + Line 2h + Line 3b + Line 4q + Line 5c + Line 6i — $ 4587

* Conversion factors are provided in the Volume III appendix.
** Based on a 250-mile one-way distance.

** transportation costs shared with other liquids

WORKSHEET B-5

Tank Removal

See Worksheet B-4

1. Onground Tank

a. Tank surface area (ft^2) _____ (p. 5-3)

b. Tank removal unit cost ($/$ft^2$) _____ (p. 5-9)

c. Tank removal cost ($)
Line 1a x Line 1b 0

2. Inground Tank

a. Cover removal (hrs) _____ (p. 5-7)

b. Cover removal unit cost ($/hr) _____ ($200/hr; p. 5-7)

c. Cover removal cost ($)
Line 2a x Line 2b _____

d. Tank wall surface area (ft^2) _____ (p. 5-5)

e. Tank wall thickness (ft) _____

f. Volume of tank wall to be demolished (yd^3)
(Line 2d x Line 2e) ÷ 27 _____

g. Tank wall demolition unit cost ($/$yd^3$) _____ (p. 5-8)

h. Tank wall loading unit cost ($/$yd^3$) _____ (pp. 6-3 - 6-4)

i. Tank wall demolition and loading cost ($)
Line 2f x (Line 2g + Line 2h) _____

j. Mobilization/demobilization cost ($) _____ (pp. 5-7 and 6-3)

k. Tank wall demolition and loading cost before surcharge ($)
Line 2i + Line 2j _____

l. Surcharge _____ (1.0; pp. 6-8 - 6-9)

m. Inground tank demolition and loading cost ($)
Line 2k x (1 + Line 2l) 0

WORKSHEET B-5 (page 2)

3. Underground Tank

a. Cover removal (hrs) _____ (p. 5-7)

b. Cover removal unit cost ($/hr) _____ ($200/hr; p. 5-7)

c. Cover removal cost ($)
Line 3a x Line 3b _____

d. Volume of contaminated soil to be removed (yd^3) _____

e. Excavation and loading unit cost ($/$yd^3$) _____ (pp. 6-3 - 6-7)

f. Mobilization/demobilization cost ($) _____ (pp. 5-7 and 6-3)

g. Contaminated soil excavation and loading cost ($)
(Line 3d x Line 3e) + Line 3f _____

h. Tank surface area (ft^2) _____ (p. 5-3)

i. Tank removal unit cost ($/$ft^2$) _____ (p. 5-9)

j. Tank removal cost ($)
Line 3h x Line 3i _____

k. Surcharge _____ (1.0; pp. 6-8 - 6-9)

l. Underground tank removal cost ($)
(Line 3g + Line 3j) x (1 x Line 3k) 0

4. Concrete Slab or Deadman Removal
(double-walled underground tanks only)

a. Volume of concrete slab or deadman to be demolished (yd^3) _____

b. Demolition unit cost ($/$yd^3$) _____ ($82/yd^3; p. 6-1)

c. Concrete slab or deadman loading unit cost ($/$yd^3$) _____ (pp. 6-3 - 6-4)

d. Demolition and loading cost ($)
Line 4a x (Line 4b + Line 4c) _____

e. Mobilization/demobilization cost ($) _____ (p. 6-3)

f. Concrete slab or deadman demolition and loading cost before surcharge ($)
Line 4d + Line 4e _____

WORKSHEET B-5 (page 3)

g. Surcharge factor _____ (1.0; pp. 6-8 - 6-9)

h. Concrete slab or deadman demolition cost ($)
Line 4f x (1 + Line 4g) _____ 0

5. Off-Site Management of Rubble, Decontamination Residue, and/or Treatment Residue

a. Volume to be managed off-site (tons) _____*

b. Truck capacity (tons) _____

c. Number of loads
Line 5a ÷ Line 5b
(round up to nearest integer _____

d. Transportation unit cost ($/mi) _____ ($4.50/mi; p. 4-15)**

e. One-way distance (mi/load) _____

f. Transportation cost ($)
Line 5c x Line 5d x Line 5e _____

g. Off-site management unit cost ($/ton) _____ (pp. 4-13 - 4-20)

h. Off-site management cost ($)
Line 5a x Line 5g _____

i. Off-site management subtotal ($)
Line 5f + Line 5i _____ 0

6. On-Site Disposal

Include volume on one or more worksheets:
Landfill Inventory - Line 1m, Line 1n, Line 1p
Incinerator Inventory - Line 1l, Line 1n
Land Treatment Inventory - Line 1k, Line 1o

7. Tank Removal Subtotal ($)
Line 1c + Line 2m + Line 3l + Line 4h + Line 5i _____ 0

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* Conversion factors are provided in the Volume III appendix.

** Based on 250-mile one-way distance.

WORKSHEET B-6

Secondary Containment System Removal

1. Protective Clothing

   a. Number of personnel requiring protective clothing for excavation _____

   b. Protective clothing unit cost ($/person) _____ ($77/person; p. 6-8)

   c. Protective clothing cost ($)
      Line 1a x Line 1b _____ 0

2. External Liner System Removal

   a. Volume of external liner system to be removed (yd^3) _____

   b. Excavation unit cost, including loading ($/$yd^3$) _____ (pp. 6-3 - 6-7)

   c. External liner system removal cost ($)
      Line 2a x Line 2b _____

   d. Volume of foundation wall to be demolished (yd^3) - onground tanks only _____

   e. Demolition unit cost ($/$yd^3$) _____ (p. 6-2)

   f. Foundation wall loading unit cost ($/$yd^3$) _____ (p. 4-7)

   g. Foundation wall demolition and loading cost ($)
      Line 2d x (Line 2e + Line 2f) _____

   h. Mobilization/demobilization cost ($) _____ (pp. 4-5, 4-7, 4-10, and 6-3)

   i. External liner system and foundation wall removal cost before surcharge ($)
      Line 2c + Line 2g + Line 2h _____

   j. Surcharge factor _____ (1.0; pp. 6-8 - 6-9)

   k. External liner system and foundation wall removal cost ($)
      Line 2i x (1 + Line 2j) _____ 0

WORKSHEET B-6 (page 2)

3. Vault System Removal (underground tanks only)

   a. Volume of concrete vault to be demolished (yd^3) _____

   b. Demolition unit cost ($/$yd^3$) _____ (p. 6-2)

   c. Concrete vault loading unit cost ($/$yd^3$) _____ (p. 6-4)

   d. Concrete vault demolition and loading cost ($)
      Line 3a x (Line 3b + Line 3c) _____

   e. Mobilization/demobilization cost ($) _____ (p. 6-3)

   f. Concrete vault demolition and loading cost before surcharge ($)
      Line 3d + Line 3e _____

   g. Surcharge factor _____ (1.0; pp. 6-8 - 6-9)

   h. Concrete vault demolition cost ($)
      Line 3f x (1 + Line 3g) 0

4. Equipment Decontamination

   a. Total heavy equipment decontamination time (hrs) _____ (p. 5-2)

   b. Heavy equipment decontamination cost ($) 0 (p. 5-2)

   c. Residual generation rate for heavy equipment decontamination (gal/hr) _____ (100 gal/hr; p. 5-1)

   d. Contaminated fluid and/or residue generated (gal)
      Line 4a x Line 4c _____

5. On-Site Treatment of Decontamination Residues

   a. Quantity of residue to be treated (gal) _____

   b. Chemicals required for treatment (lb/gal residue or gal/gal residue) _____ (pp. 4-12 - 4-13)

WORKSHEET B-6 (page 3)

c. Chemicals unit cost
($/lb or $/gal) _____

d. Chemicals cost ($)
Line 5a x Line 5b x Line 5c _____

e. Electricity required for treatment
(kwh/gal residue) _____ (pp. 4-12 - 4-13)

f. Electricity unit cost ($/kwh) _____ ($0.05/kwh; p. 4-2)

g. Electricity cost ($)
Line 5a x Line 5e x Line 5f _____

h. Water required for treatment
(gal/gal residue) _____ (pp. 4-12 - 4-13)

i. Water unit cost ($/1000 gal) _____ ($1.22/1000 gal; p. 4-2)

j. Water cost ($)
[(Line 5a x Line 5h) ÷ 1000] x
Line 5i _____

k. Fuel required for treatment
(MMBtu/gal residue) _____ (pp. 4-12 - 4-13)

l. Fuel unit cost ($/MMBtu) _____ (p. 4-2)

m. Fuel cost ($)
Line 5a x Line 5k x Line 5l _____

n. Labor required for treatment
(hrs/gallon residue) _____ (pp. 4-12 - 4-13)

o. Process operator unit labor cost
($/hr) _____ ($26.50/hr; p. 9-3)

p. Labor cost ($)
Line 5a x Line 5n x Line 5o _____

q. On-site treatment cost ($)
Line 5d + Line 5g + Line 5j +
Line 5m + Line 5p 0

r. Residue generated from treatment
(gal) _____

WORKSHEET B-6 (page 4)

6. Treated Residue Discharge to Sewer

   a. Volume of liquid discharged (gal) _____

   b. Sewer discharge unit cost ($/1000 gal) _____ ($1.50/1000 gal; p. 4-2)

   c. Sewer discharge cost ($) (Line 6a ÷ 1000) x Line 6b 0

7. Off-Site Management of Rubble, Decontamination Residue, and/or Treatment Residue

   a. Volume to be managed off-site (tons) _____ *

   b. Truck capacity (tons) _____

   c. Number of loads Line 7a ÷ Line 7b (round up to nearest integer) _____

   d. Transportation unit cost ($/mi) _____ ($4.50/mi; p. 4-15)**

   e. One-way distance (mi/load) _____

   f. Transportation cost ($) Line 7c x Line 7d x Line 7e _____

   g. Off-site management unit cost ($/ton) _____ (pp. 4-13 - 4-20)

   h. Off-site management cost ($) Line 7a x Line 7g _____

   i. Off-site management subtotal ($) Line 7f + Line 7h 0

8. On-Site Disposal

   Include volume on one or more worksheets:
   Landfill Inventory - Line 1m, Line 1n, Line 1p
   Incinerator Inventory - Line 1l, Line 1n
   Land Treatment Inventory - Line 1k, Line 1o

9. Containment/Liner System Removal Subtotal ($) Line 1c + Line 2k + Line 3h + Line 4b + Line 5q + Line 6c + Line 7i 0

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* Conversion factors are provided in the Volume III appendix.
** Based on a 250-mile one-way distance.

WORKSHEET B-7

Removal of Contaminated Soil

1. Protective Clothing

   a. Number of personnel requiring protective clothing for excavation and decontaminating — 20 — 4 workers 1 week each

   b. Protective clothing unit cost ($/person) — 77 — ($77/person; p. 6-8)

   c. Protective clothing cost ($) Line 1a x Line 1b — 1540

2. Excavation of Contaminated Soil and Earthen Berms

   a. Volume of contaminated soil/berms to be removed (yd^3) — 500 — assumed

   b. Excavation unit cost, including loading ($/$yd^3$) — 5.47 — (pp. 6-3 - 6-7)

   c. Mobilization/demobilization cost ($) — 210 — (pp. 4-5, 4-7, 4-10, and 6-3)

   d. Contaminated soil/berm removal cost before surcharge ($) (Line 2a x Line 2b) + Line 2c — 2945

   e. Surcharge factor — 0 — (1.0; pp. 6-8 - 6-9)

   f. Contaminated soil/berm removal subtotal ($) Line 2d x (1 + Line 2e) — 2945

3. Equipment Decontamination

   a. Total heavy equipment decontamination time (hrs) — 3 — (p. 5-2)

   b. Heavy equipment decontamination cost ($) — 79 — (p. 5-2)

   c. Residual generation rate for heavy equipment decontamination (gal/hr) — 100 — (100 gal/hr; p. 5-1)

   d. Contaminated fluid and/or residues generated (gal) Line 3a x Line 3c — 300

WORKSHEET 5-7 (page 2)

4.- On-Site Treatment of Decontamination Residues

a. Quantity of residue to be treated (gal)	0	
b. Chemicals required for treatment (lb/gal residue or gal/gal residue)	_____	(pp. 4-12 - 4-13)
c. Chemicals unit cost ($/lb or $/gal)	_____	
d. Chemicals cost ($) Line 4a x Line 4b x Line 4c	_____	
e. Electricity required for treatment (kwh/gal residue)	_____	(pp. 4-12 - 4-13)
f. Electricity unit cost ($/kwh)	_____	($0.05/kwh; p. 4-2)
g. Electricity cost ($) Line 4a x Line 4e x Line 4f	_____	
h. Water required for treatment (gal/gal residue)	_____	(pp. 4-12 - 4-13)
i. Water unit cost ($/1000 gal)	_____	($1.22/1000 gal; p. 4-2)
j. Water cost ($) [(Line 4a x Line 4h) ÷ 1000] x Line 4i	_____	
k. Fuel required for treatment (MMBtu/gal residue)	_____	(pp. 4-12 - 4-13)
l. Fuel unit cost ($/MMBtu)	_____	(p. 4-2)
m. Fuel cost ($) Line 4a x Line 4k x Line 4l	_____	
n. Labor required for treatment (hrs/gallon residue)	_____	(pp. 4-12 - 4-13)
o. Process operator unit labor cost ($/hr)	_____	($26.50/hr; p. 9-3)
p. Labor cost ($) Line 4a x Line 4n x Line 4o	_____	

WORKSHEET B-7 (page 3)

q. On-site treatment cost ($)
Line 4d + Line 4g + Line 4j + Line 4m + Line 4p — 0

r. Residue generated from treatment (gal) — 0

5. Treated Residue Discharge to Sewer

a. Volume of liquid discharged (gal) — 0

b. Sewer discharge unit cost ($/1000 gal) — ____ ($1.50/1000 gal; p. 4-2)

c. Sewer discharge cost ($)
(Line 5a ÷ 1000) x Line 5b — 0

6. Off-Site Management of Contaminated Soil, Decontamination Residue, and/or Treatment Residue

a. Quantity to be managed off-site (tons) — 500 yd3 soil; 300 gal liq * ***

b. Truck capacity (tons) — 40 yd3

c. Number of loads
Line 6a ÷ Line 6b
(round up to nearest integer) — 13

d. One-way distance (mi/load) — 100

e. Transportation unit cost ($/mi) — 4.50 ($4.50/mi; p. 4-15)**

f. Transportation cost ($)
Line 6c x Line 6d x Line 6e — 5850

g. Off-site management unit cost ($/ton) — $ 275/yd3; $ 0.38/gal (pp. 4-13 - 4-20)

h. Off-site management cost ($)
Line 6a x Line 6g — $ 137614

i. Off-site management subtotal ($)
Line 6f + Line 6h — $143464

* Conversion factors are provided in the Volume III appendix.
** Based on a 250-mile one-way distance.

*** transportation costs shared with other liquids

WORKSHEET B-7 (page 4)

7. On-Site Disposal

Include volume on one or more worksheets:
Landfill Inventory - Line 1n, Line 1o, Line 1p
Incinerator Inventory - Line 1l, Line 1n, Line 1o
Land Treatment Inventory - Line 1k, Line 1l, Line 1o

8. Contaminated Soil Removal Subtotal ($)
Line 1c + Line 2f + Line 3b + Line 4q + Line 5c + Line 6i

$ 148028

WORKSHEET B-10

Final Cover

1. Native Soil for Slope and Fill

   a. Length of area to be capped (yd) ___NA___

   b. Width of area to be capped (yd) _____

   c. Quantity needed (yd^3) _____ (*)

   d. Excavation unit cost ($/$yd^3$) _____

   e. Placement and spreading unit cost ($/$yd^3$) _____ ($2.48/yd^3; p. 7-6)

   f. Compaction unit cost ($/$yd^3$) _____ ($2.25/yd^3; p. 7-6)

   g. Total native soil unit cost ($/$yd^3$)
      Line 1d + Line 1e + Line 1f _____ ($1.04/$yd^3$; p. 7-6)

   h. Percent compaction (decimal < 1) _____ (0.25; p. 7-10)

   i. Native soil cost ($)
      Line 1c x Line 1g x (1 + Line 1h) ___0___

2. On-Site Clay

   a. Area to be capped (yd^2)
      Line 1a x Line 1b ___NA___

   b. Depth of clay needed (yd) _____

   c. Quantity needed (yd^3)
      Line 2a x Line 2b _____

   d. Excavation unit cost ($/$yd^3$) _____ ($4.05/yd^3; p. 7-10)

   e. Placement/spreading unit cost ($/$yd^3$) _____ ($2.25/yd^3; p. 7-10)

   f. Compaction unit cost ($/$yd^3$) _____ ($2.41/yd^3; p. 7-10)

   g. Total on-site clay unit cost ($/$yd^3$)
      Line 2d + Line 2e + Line 2f _____ ($8.71/$yd^3$; pp. 7-10 - 7-11)

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* Formula provided in Final Cover and Revegetation chapter of Volume III.

WORKSHEET B-10 (page 2)

h. Percent compaction (decimal < 1) _____ (0.25; p. 7-10)

i. Clay lift thickness (yd) _____ (0.22 yd; p. 7-12)

j. Number of lifts
Line 2b ÷ Line 2i _____

k. Number of samples to be tested/lift (samples/lift) _____ (3 samples/lift; p. 7-12)

l. Number of samples to be tested
Line 2j x Line 2k _____

m. Clay testing unit cost ($/sample) _____ ($230/sample; p. 7-12)

n. Clay testing cost
Line 2l x Line 2m _____

o. On-site clay cost ($)
Line 2c x Line 2g x (1 + Line 2h) + Line 2n 0

3. Off-Site Clay

a. Area to be capped (yd^2)
Line 1a x Line 1b _____

b. Depth of clay needed (yd) _____ (0.67 yd; p. 7-4)

c. Quantity needed (yd^3)
Line 3a x Line 3b 500

d. Purchase unit cost ($/$yd^3$) _____ ($4.75/yd^3; p. 7-13)

e. Delivery unit cost ($/$yd^3$) _____ ($10.16/yd^3; p. 7-13)

f. Spreading unit cost ($/$yd^3$) _____ ($1.03/yd^3; p. 7-13)

g. Compaction unit cost ($/$yd^3$) _____ ($2.41/yd^3; p. 7-13)

h. Total off-site clay unit cost ($/$yd^3$)
Line 3d + Line 3e + Line 3f + Line 3g 18.35 ($18.35/$yd^3$; pp. 7-13 - 7-14)

i. Percent compaction (decimal < 1) _____ (0.40; p. 7-10)

j. Clay lift thickness (yd) _____ (0.22 yd; p. 7-12)

WORKSHEET B-10 (page 3)

k. Number of lifts
Line 3b ÷ Line 3j _____

l. Number of samples to be tested/lift (samples/lift) _____ (3 samples/lift; p. 7-12)

m. Number of samples to be tested
Line 3k x Line 3l _____

n. Clay testing unit cost ($/sample) _____ ($230/sample; p. 7-12)

o. Clay testing cost
Line 3m x Line 3n _____

p. Off-site clay cost ($)
Line 3c x Line 3h x (1 + Line 3i) + Line 3o 9175

4. Synthetic Membrane

a. Type of membrane NA

b. Quantity needed (yd^2) _____

c. Purchase unit cost ($/$yd^2$) _____ ($2.60/yd^2; p. 7-16)

d. Delivery unit cost ($/$yd^2$) _____ ($0.25/yd^2; p. 7-16)

e. Installation unit cost ($/$yd^2$) _____ ($0.50/yd^2; p. 7-16)

f. Total synthetic membrane unit cost ($/$yd^2$)
Line 4c + Line 4d + Line 4e _____ ($3.35/$yd^2$; p. 7-16)

g. Synthetic liner testing (percent of total synthetic membrane unit cost) _____ (0.25; p. 7-15)

h. Synthetic membrane cost ($)
Line 4b x Line 4f x (1 + Line 4g) 0

5. Sand

a. Area to be capped (yd^2)
Line 1a x Line 1b NA

b. Depth of sand needed (yd) _____ (0.33 yd; p. 7-4)

WORKSHEET B-10 (page 4)

c. Quantity needed (yd^3)
Line 5a x Line 5b _____

d. Purchase unit cost ($/$yd^3$) _____ ($5.50/yd^3; p. 7-20)

e. Delivery unit cost ($/$yd^3$) _____ ($2.61/yd^3; p. 7-20)

f. Spreading unit cost ($/$yd^3$) _____ ($1.03/yd^3; p. 7-20)

g. Compaction unit cost ($/$yd^3$) _____ ($1.49/yd^3; p. 7-20)

h. Total sand unit cost ($/$yd^3$)
Line 5d + Line 5e + Line 5f
+ Line 5g _____ ($10.63/$yd^3$; pp. 7-20 - 7-21)

i. Percent compaction (decimal < 1) _____ (0.10; p. 7-10)

j. Sand cost ($)
Line 5c x Line 5h x (1 + Line 5i) 0

6. Gravel

a. Area to be capped (yd^2)
Line 1a x Line 1b NA

b. Depth of gravel needed (yd) _____ (0.33 yd; p. 7-4)

c. Quantity needed (yd^3)
Line 6a x Line 6b _____

d. Purchase unit cost ($/$yd^3$) _____ ($3.85/yd^3; p. 7-17)

e. Delivery unit cost ($/$yd^3$) _____ ($2.61/yd^3; p. 7-17)

f. Spreading unit cost ($/$yd^3$) _____ ($1.03/yd^3; p. 7-17)

g. Compaction unit cost ($/$yd^3$) _____ ($1.22/yd^3; p. 7-17)

h. Total gravel unit cost ($/$yd^3$)
Line 6d + Line 6e + Line 6f
+ Line 6g _____ ($8.71/$yd^3$; pp. 7-17 - 7-18)

i. Percent compaction (decimal < 1) _____ (0.05; p. 7-10)

j. Gravel cost ($)
Line 6c x Line 6h x (1 + Line 6i) 0

WORKSHEET B-10 (page 5)

7. Drainage Tile

a. Type of tile NA

b. Length needed (L.F.) _____

c. Tile unit cost ($/L.F.) _____ ($0.50/L.F.; p. 7-22)

d. Trenching and backfilling unit cost ($/L.F.) _____ ($0.56/L.F.; p. 7-22)

e. Total drainage tile unit cost ($/L.F.)
Line 7c + Line 7d _____ ($1.06/L.F.; pp. 7-22 - 7-23)

f. Drainage tile cost ($)
Line 7b x Line 7e 0

8. Geotextile Filter Fabric

a. Type of geotextile NA

b. Quantity needed (yd^2) _____

c. Purchase unit cost ($/$yd^2$) _____ ($0.69/yd^2; p. 7-24)

d. Delivery unit cost ($/$yd^2$) _____ ($0.05/yd^2; p. 7-24)

e. Installation unit cost ($/$yd^2$) _____ ($0.09/yd^2; p. 7-24)

f. Total geotextile filter fabric unit cost ($/$yd^2$)
Line 8c + Line 8d + Line 8e _____ ($0.83/$yd^2$; p. 7-24)

g. Geotextile filter fabric cost ($)
Line 8b x Line 8f 0

9. Topsoil

a. Area to be capped (yd^2)
Line 1a x Line 1b 222

b. Depth of topsoil needed (yd) 0.67 (0.67 yd; p. 7-4)

c. Quantity needed (yd^3)
Line 9a x Line 9b 149

d. Purchase unit cost ($/$yd^3$) _____ ($6.56/yd^3; p. 7-26)

e. Delivery unit cost ($/$yd^3$) _____ ($2.61/yd^3; p. 7-26)

WORKSHEET B-10 (page 6)

f. Spreading unit cost ($/yd^3) _____ ($1.03/yd^3; p. 7-26)

g. Compaction unit cost ($/yd^3) _____ ($1.22/yd^3; p. 7-26)

h. Total topsoil unit cost ($/yd^3)
Line 9d + Line 9e + Line 9f + Line 9g 11.42 ($11.42/yd^3; pp. 7-26 - 7-27)

i. Percent compaction (decimal < 1) _____ (0.25; p. 7-10)

j. Topsoil cost ($)
Line 9c x Line 9h x (1 + Line 9i) 1701.58

10. Crushed Stone

a. Area to be capped (yd^2)
Line 1a x Line 1b NA

b. Depth of crushed stone needed (yd) _____ (0.33 yd; p. 7-4)

c. Quantity needed (yd^3)
Line 10a x Line 10b _____

d. Purchase unit cost ($/yd^3) _____ ($11.55/yd^3; p. 7-28)

e. Delivery unit cost ($/yd^3) _____ ($2.61/yd^3; p. 7-28)

f. Spreading unit cost ($/yd^3) _____ ($1.03/yd^3; p. 7-28)

g. Compaction unit cost ($/yd^3) _____ ($1.22/yd^3; p. 7-28)

h. Total crushed stone unit cost ($/yd^3)
Line 10d + Line 10e + Line 10f + Line 10g _____ ($16.41/yd^3; pp. 7-28 - 7-29)

i. Percent compaction (decimal < 1) _____ (0.05; p. 7-10)

j. Crushed stone cost ($)
Line 10c x Line 10h x (1 + Line 10i) 0

11. Mobilization/Demobilization

a. Heavy equipment mobilization/demobilization cost ($) 700 ($700; p. 7-32)

12. Final Cover Subtotal ($)
Line 1i + Line 2c + Line 3p + Line 4h + Line 5j + Line 6j + Line 7f + Line 8g + Line 9j + Line 10j + Line 11a

$11,576.58

WORKSHEET B-11

Revegetation

1. Soil Preparation and Grading

   a. Area to be revegetated, including closed area that needs replanting (acres) — 0.04

   b. Soil preparation and grading unit cost ($/acre) — 1002 ($1002/acre; p. 7-31)

   c. Soil preparation and grading cost ($)
   Line 1a x Line 1b — 44

2. Seeding

   a. Type of vegetation — Fescue

   b. Seed unit cost ($/acre) — 795 ($795/acre; p. 7-31)

   c. Seed cost ($)
   Line 1a x Line 2b — 32

3. Fertilizing

   a. Type of fertilizer — 20-3-3

   b. Fertilizer unit cost ($/acre) — 176 ($176/acre; p. 7-31)

   c. Fertilizing cost ($)
   Line 1a x Line 3b — 7

4. Mulching

   a. Mulch unit cost ($/acre) — 1048 ($1048/acre; p. 7-31)

   b. Mulching cost ($)
   Line 1a x Line 4a — 42

5. Mobilization/Demobilization

   a. Heavy equipment mobilization/demobilization cost ($) — 105 ($105; p. 7-32)

6. Revegetation Subtotal ($)
   Line 1c + Line 2c + Line 3c + Line 4b + Line 5a — 230

Total Cost = $ 4761 + $ 1025 + $ 4587 + $ 148,028 + $ 11,576 + 230 = $ 170,207

WBS-110
Install Groundwater Monitoring Wells

WORKSHEET B-12

Groundwater Monitoring Well Construction

1. Number of Groundwater Monitoring Wells

   a. Total number of wells to be constructed: 5

2. Depth

a. Well number	1	2	3	4	5	6	7	8
b. Well depth (ft)	15	15	15	15	15			
c. Length of screen (ft)	5	5	5	5	5			
d. Length of casing (ft) Line 2b - Line 2c	10	10	10	10	10			

a. Well number	9	10	11	12	13	14	15	SUM
b. Well depth(ft)								
c. Length of screen (ft)								
d. Length of casing (ft) Line 2b - Line 2c								

3. Materials

   a. Total length of casing (ft) ~~Line 2d~~ SUM: 50

   b. ~~Casing unit~~ cost ($/ft): 9 ($9 ft; p. 3-5)

   c. Casing cost ($) Line 3a x Line 3b: 450

   d. Well screen unit cost ($/ea): 290 ($290/ea; p. 3-5)

   e. Well screen cost ($) Line 1a x Line 3d: 1450

   f. Pump unit cost ($/ea): NA ($495/ea; p. 3-5)

WORKSHEET B-12 (page 2)

g. Pump cost ($)
Line 1a x Line 3f — NA

h. Tubing unit cost ($/ft) — NA ($2.75/ft; p. 3-5)

i. Tubing cost ($)
Line 3a x Line 3h — NA

j. Well cap unit cost ($/ea) — 70 ($70/ea; p. 3-5)

k. Well cap cost ($)
Line 1a x Line 3j — 350

l. Materials cost
Line 3c + Line 3e + Line 3g + Line 3i + Line 3k — 2250

4. Installation

a. Total depth of wells (ft)
Line 2b SUM — 75

b. Drilling unit cost ($/ft) — 22 ($22/ft; p. 3-5)

c. Drilling cost ($)
Line 4a x Line 4b — 1650

d. Mobilization/demobilization ($) — 150 ($150; p. 3-5)

e. Installation cost
Line 4c + Line 4d — 1800

5. Groundwater Monitoring Well Construction Subtotal ($)

Line 3l + Line 4e — 4050

United Coastal Insurance Company

233 Main Street • P.O. Box 11000
New Britain, Connecticut 06050-4011
(203) 223-9000

CERTIFICATE OF INSURANCE

THIS IS A CLAIMS MADE POLICY

This certificate is issued as a matter of information only and confers no rights upon the certificate holder. This certificate does not amend, extend or alter the coverage afforded by the policies listed below.

NAME AND ADDRESS OF AGENCY

Fitzgibbons, Arnold & Co. Agency, Inc.
P. O. Box 45520
Cleveland, Ohio 44145-0250

NAME AND ADDRESS OF INSURED

Master Metals, Inc.
2850 West Third Street
Cleveland, Ohio 44113

This is to certify that policies of insurance listed below have been issued to the insured named above and are in force at this time. Notwithstanding any requirement, term or condition of any contract or other document with respect to which this certificate may be issued or may pertain, the insurance afforded by the policies described herein is subject to all the terms, exclusions and conditions of such policies. **THIS IS A CLAIMS MADE POLICY.**

COVERAGES	POLICY NO.	POLICY EXPIRATION DATE	Limits of Liability in Thousands (000)		
				EACH OCCURRENCE	AGGREGATE
COMMERCIAL GENERAL LIABILITY ☐ PREMISES OPERATIONS ☐ PRODUCTS COMPLETED OPERATIONS HAZARD ☐ CONTRACTUAL INSURANCE ☐ BROAD FORM PROPERTY DAMAGE INDEPENDENT CONTRACTORS ☐ PERSONAL INJURY ☐ OTHER			ALL COVERAGES. BODILY INJURY AND PROPERTY DAMAGE COMBINED (INCLUDING DEFENSE COSTS)	$	$
EXCESS LIABILITY ☐ UMBRELLA FORM ☐ OTHER THAN UMBRELLA FORM			BODILY INJURY AND PROPERTY DAMAGE COMBINED	$	$
OTHER Hazardous Waste	HW0003	7/2/92		$1,000,	$2,000,

DESCRIPTION OF OPERATIONS/LOCATIONS

Cancellation: Should any of the above described policies be cancelled before the expiration date thereof, the issuing company will endeavor to mail 30 days written notice to the below named certificate holder, but failure to mail such notice shall impose no obligation or liability of any kind upon the company.

NAME AND ADDRESS OF CERTIFICATE HOLDER.

Ohio Environmental Protection Agency &
Division of Solid & Hazardous Waste Mgt.
1800 Watermark Drive
Columbus, Ohio 43215

DATE ISSUED July 2, 1991 jt

Joseph D. Scillo, Jr.
AUTHORIZED REPRESENTATIVE

0122 (12-89)

United Coastal
Insurance Company
233 Main Street
New Britain, CT 06050-2350
(203) 223-5000

"Hazardous Waste Facility Certificate of Liability Insurance"

1. United Coastal Insurance Company, (the "Insurer") of 233 Main Street, New Britain, CT. 06050-2350 hereby certifies that it has issued liability insurance covering bodily injury and property damage to Master Metals, Inc., (the "Insured"), of 2850 West Third Street, Cleveland, Ohio 44113 in connection with the insured's obligation to demonstrate financial responsibility under rules 3745-55-47 and 3745-66-47 of the Administrative Code. The coverage applies at EPA #OHD097613871, 2850 West Third Street, Cleveland, Ohio 44113 for "sudden accidental occurrences." The limits of liability are $1,000,000 each occurrence and $2,000,000 annual aggregate exclusive of legal defense costs. The coverage is provided under Policy number HW0003 issued on July 2, 1991. The effective date of said policy is July 2, 1991.

2. The Insurer further certifies the following with respect to the insurance described in paragraph 1.
   (a) Bankruptcy or insolvency of the insured shall not relieve the Insurer of its obligations under the policy.
   (b) The insurer is liable for the payment of amounts within any deductible applicable to the policy, with a right of reimbursement by the Insured for any such payment made by the Insurer. This provision does not apply with respect to that amount of any deductible for which coverage is demonstrated as specified in paragraph (F) of rule 3745-55-47 or paragraph (F) of rule 3745-66-47 of the Administrative Code.
   (c) Whenever requested by the Director of the Ohio Environmental Protection Agency, the Insurer agrees to furnish to the Director a signed duplicate original of the policy and all endorsements.
   (d) Cancellation of the insurance, whether by the Insurer, the Insured, a parent corporation providing insurance coverage for its subsidiary, or by a firm having an insurable interest in and obtaining liability insurance on behalf of the owner or operator of the hazardous waste management facility, will be effective only upon written notice and only after the expiration of sixty days after a copy of such written notice is received by the Director.
   (e) Any other termination of the insurance will be effective only upon written notice and only after the expiration of thirty days after a copy of such written notice is received by the Director.

I hereby certify that the wording of this instrument is identical to the wording specified in paragraph (J) of 3745-55-51 of the Administrative Code as such regulation was constituted on the date first above written, and that the Insurer is licensed to transact the business of insurance, or eligible to provide insurance as an excess or surplus lines insurer, in one or more States.

Signature of Authorized Representative of Insurer

Joseph D. Scollo, Jr.
Senior Vice-President - Operations, Authorized Representative
of United Coastal Insurance Company
233 Main Street
New Britain, CT. 06050
July 2, 1991

MASTER METALS, INC., 2850 W. THIRD ST., CLEVELAND, OHIO 44113 • (216) 621-2361 FAX 621-7475

Lead Smelter and Refiner

August 2, 1991

Mr. Robert Stark/Trust Department
The Central Trust Company of Canton
P.O. Box 9280
Canton, Ohio 44711

Dear Mr. Stark:

Enclosed is check no. 58333 in the amount of $5014.70 to be deposited in our Escrow account/trust fund for U.S. EPA Closure.

Thank you.

Sincerely,

Kathy Zenkert
Accounts Mgr.

encl:

VENDOR THE CENTRAL TRUST COMPANY

058333

INVOICE NO.	INVOICE DATE	INVOICE AMOUNT	AMOUNT PAID	DISCOUNT TAKEN	NET CHECK AMOUNT
TRUST FUND/ EPA CLOSURE					
		5,014.70	0.00		5,014.70

058333

MASTER METALS INC.
2850 W. THIRD ST.
CLEVELAND, OHIO 44113

THE CENTRAL TRUST COMPANY
OF NORTHEASTERN OHIO, N.A. 23
CANTON, OHIO 44702

CHECK NO.	CHECK DATE
058333	07-01-91

56-89
<1>

********** Five Thousand Fourteen and 70/100 ********

CHECK AMOUNT
$5,014.70

PAY
TO THE
ORDER OF

THE CENTRAL TRUST COMPANY
P.O. BOX 9280
CANTON, OHIO
44711

⑈058333⑈ ⑆041200694⑆ 2990200734⑈

FORM NO. 40-9123

(1-660-4361

CORPORATE DEPOSITORY CERTIFICATE

CERTIFICATE

SOCIETY NATIONAL (herein called the "Bank")

I hereby certify that I am the Secretary of MASTER METALS INC herein called the "Corporation"), a corporation organized under the laws of the State of OHIO and further certify that the following is a full and copy of Resolutions in full force and effect which were duly adopted:

(a) at a regular convened meeting of the Board of Directors of the Corporation, notice having been given or waived in conformity with applicable law and the Code of Regulations or Bylaws of the Corporation, held at _____ on the _____ day of _____, 19_____, a quorum being present;

(or)

(b) by unanimous written consent of all of the Directors of the Corporation in conformity with applicable law on the _____ day of _____, 19_____;

and said proceedings and the Resolutions adopted thereby are in conformity with and do not in any respect contravene the provisions of applicable statutes, the Articles of Corporation, Corporate Charter, Code of Regulations, or Bylaws of the Corporation.

RESOLUTION

RESOLVED: That the Bank be a depository of this Corporation, that funds deposited with Bank be withdrawn by checks, drafts, notes, bills of exchange, trade acceptances, orders or receipts issued in the name of the Corporation, signed by any ONE of the following named persons, or persons from time to time holding the following offices of this Corporation (delete where applicable); President, any Vice President, Secretary, Assistant Secretary, Treasurer, Assistant Treasurer, Other: PRES, V-PRES

that Bank, except as hereinafter provided, accept the instructions of any of the above named for the transaction of all other business in connection with said funds; and that the Bank may conclusively assume that persons so certified to be signatories of this Corporation shall continue as such until receipt by the Bank of written notice to the contrary.

RESOLVED: That the facsimile signature of any one or more of above named may be affixed to any item by any mechanical device and Bank is hereby authorized to rely upon and to accept as genuine all such facsimile signatures, and/or such signatures that resemble the facsimile signatures, without any duty to determine the genuineness thereof or whether or not the affixing thereof has been authorized by this Corporation or by the person whose name is so affixed.

RESOLVED: That Bank is hereby authorized to honor and pay all such instruments and also to receive the same for the credit of or in payment from the payee or any other holder when so signed, without inquiry as to the circumstances of their issue or the disposition of their proceeds, whether drawn to the individual order of or tendered in payment of individual obligations of any of said above named or of any other officer, employee or agent of Corporation, or otherwise.

RESOLVED: That all checks, drafts, notes, bills of exchange, trade acceptances or orders for the payment of money belonging to Corporation, may be endorsed in blank, or otherwise, on behalf of Corporation, by a manual endorsement, rubber stamp, or otherwise, with or without designation of the one making same, whether such endorsement be for the purpose of effecting a transfer or a deposit for collection or credit, and Bank is authorized to honor and pay or purchase and pay for such instruments and also to receive the same for the individual credit of or in payment of the individual obligation of any of said above named, or any other officer, employee or agent of Corporation, or any other holder, without inquiry as to the circumstances of endorsement or the disposition of the proceeds, and Corporation hereby guarantees to Bank the payment of all such instruments so received by Bank as well as those instruments deposited in behalf of Corporation for collection or credit without its endorsement appearing the and that Bank may pay to any of said above named or any other officer, employee or agent of Corporation the proceeds, in cash or otherwise, of any instrument herein referred to in the foregoing Resolutions, signed or endorsed in the manner above indicated, whether the same be drawn on Bank, on another bank, or otherwise, and whether payable or endorsed to Corporation, bearer, Bank or otherwise.

RESOLVED: That all present and future rules and regulations of Bank governing accounts are hereby assented to and shall be binding upon Corporation; that any statements, unpaid items, cancelled vouchers or checks may be delivered to Corporation by mailing the same to the last known address of the Corporation as shown by the records of the Bookkeeping Department of Bank or by delivering the same to any officer, employee or agent of Corporation, and any and all such deliveries by Bank shall constitute good and valid deliveries to Corporation.

RESOLVED: That the above named are authorized and empowered to apply to Bank for the use of its Night Depository Facilities, including automated teller machines, and in connection with such use to execute and deliver to Bank such agreements containing such terms and provisions as Bank may require, and in the event any such agreement contemplates that bags of Corporation found by Bank in any of its night depository receptacles are to be received and receipted for by Corporation, then any one of the above named in this Resolution is authorized and empowered to receive and receipt for any such bags and each of said above named is hereby further authorized and empowered to (i) designate any person or persons who shall each be authorized to receive and receipt for any such bags; (ii) from time to time in writing revoke the authority of any persons so designated and/or to designate other or additional person or persons to receive or receipt for any such bags; and (iii) certify the name of each such designated person to Bank together with a specimen signature of such person.

RESOLVED: That any one or more of the above named is hereby authorized to open safekeeping accounts, or give any instructions to the Bank for the transfer of funds and for the purchase, receipt, sale, delivery, exchange, or other disposition of any stocks, bonds, acceptances, certificates of deposit, or other securities and foreign exchange or the proceeds thereof, or purchase services to be performed or made available by Bank, and may execute and deliver to the Bank in connection therewith any appropriate agreement, contract, instrument, indemnity agreement, assignment, or endorsement in the name of the Corporation.

RESOLVED: That the Bank shall be promptly notified in writing by the Corporation of any change in this Resolution, such notice to be given to each office of the Bank in which any account of this Corporation may be maintained; that until the Bank has actually received such notice in writing this Resolution and the authority conferred hereby shall remain in full force and effect; that until the Bank has so received such notice, it shall be indemnified and saved harmless from any loss suffered or liability incurred by it in continuing to act in pursuance of this Resolution.

RESOLVED: That all controversies and questions concerning the intendment and legal effect of any provisions of this Resolution shall be governed by and construed under and in accordance with the laws of the State of Ohio.

RESOLVED: That the Secretary or Assistant Secretary of the Corporation is hereby authorized to furnish to the Bank a certified copy of this Resolution and signature cards with all authorized signatures, and whenever any change in authorized signatures is made, certify the Resolution effecting such change to the Bank, and furnish any new signature cards necessary.

IN WITNESS WHEREOF, I (we) have hereunto set my hand, at CLEVELAND (City), OH (State) this _____ day of 8-7, 19 91.

_____ (Corporation)

By Gayle K. Merkey (Title)

By Jerry L. Moody V.P. & Sec'y (Title)

NOTE: If the Secretary or other recording member of the Corporation is authorized to sign checks or take any other action under this Certificate, this Certificate must be signed by a second member of the Corporation.

THIS IS YOUR RECEIPT - SUBJECT TO ACTUAL FINAL PAYMENT OF DEPOSITED ITEMS
DEPOSITS ARE ACCEPTED SUBJECT TO VERIFICATION FOR ACCURACY

ALWAYS OBTAIN A REGISTERED RECEIPT WHEN MAKING A DEPOSIT

NON-NEGOTIABLE

BANK SYMBOL, TRANSACTION NUMBER AND AMOUNT OF DEPOSIT ARE SHOWN BELOW.

DATE	ACCOUNT NUMBER	DEPOSIT AMOUNT
[illegible]	010004567	16,053.64

MASTER METALS, INC., 2850 W. THIRD ST., CLEVELAND, OHIO 44113 • (216) 621-2361 FAX 621-7475

Lead Smelter and Refiner

June 14, 1991

Kevin M. Pierard, Acting Chief
United States Environmental Protection Agency
Region V
RCRA Enforcement Branch, 5HR-12
230 South Dearborn St.
Chicago, Illinois 60604

RE: Financial Assurance for Closing and Operating
Hazardous Waste Units
Master Metals Inc. OHD 097613871

Dear Mr. Pierard:

Master Metals has received your letter dated May 17, 1991, alleging that the financial assurance mechanisms proposed and utilized by Master Metals are inadequate.

Although it disagrees with the United States' position and interpretations, Master Metals is willing to accommodate your requests in order to avoid Dispute Resolution procedures under Section XV of the Consent Decree. Master Metals, therefore, proposes to fund the partial and facility closure plans in the following manner:

Facility Closure (Operating Hazardous Waste Units)

A Trust Fund had been established for funding the facility closure costs. To date $4,640.50 has been placed into the Fund, based on a pay-in period of 20 years. We understand that it is the United States' position that financial assurance was to be established by the effective date of the regulations in 1983.

As you have been advised previously, a revised cost estimate for facility closure was submitted January 16, 1991 which detailed an estimated cost increase to $121,750.00.

Based on the above, we understand that the United States requires Master Metals make an immediate payment to the Fund of a substantial amount of money. Currently, Master Metals does not have the liquid funds to fully fund the facility closure Trust to the level required. Therefore, Master Metals proposes the following:

Revised facility closure costs	$ 121,750.00
Initial Payment Required (based on a 20 year pay-in period)	$ 6,087.50
Total funds required in Trust Fund (based on payments from 1983 to 1991)	$ 54,787.50
Total current funds in Trust Fund	$ 4,640.50
Additional funds required	$ 50,147.00

Master Metals will make payments to the Trust Fund of $ 5,014.70 per month until an additional $ 50,147.70 is contained in the Fund (April 1992). Beginning in 1992, Master Metals will provide annual payments to the Fund to conform with Part 265.143 (a)(3)(ii).

Partial Closure (Closing Hazardous Waste Units)

Currently, partial closure is being financially assured through a certificate of deposit in an amount of $ 15,000. Since you have requested that a certificate of deposit not be used as a financial assurance mechanism, Master Metals will establish an additional Trust Fund to fund partial closure activities.

Master Metals believes that $ 15,000 (current value $ 16,207.84) is sufficient to complete the partial closure plan. To date Master Metals has removed all waste piles consisting of lead-containing feedstocks. In addition, Master Metals has conducted soil and groundwater sampling and analyses at a cost of $ 27,198.00.

Further, since the operations at this facility are dependent on material movement by means of heavy industrial vehicles in the same areas subject to closure (i.e. former waste pile units), cleaning the surfaces of these areas, as detailed in the partial closure plan, is

an activity more appropriately conducted during full facility closure. Master Metals will submit a revised partial closure plan under separate cover.

If the United States disagrees with Master Metals' proposals, please advise immediately. If you have any questions please contact me at (216)-621-2361.

Sincerely,

Douglas K. Mickey
President

cc: Michael Cyphert, Esquire
Thompson, Hine, and Flory

THOMPSON, HINE AND FLORY

ATTORNEYS AT LAW

AKRON, OHIO
BRUSSELS, BELGIUM
CINCINNATI, OHIO
COLUMBUS, OHIO
DAYTON, OHIO
LANDOVER, MARYLAND
PALM BEACH, FLORIDA
TORONTO, ONTARIO
WASHINGTON, D.C.

1100 NATIONAL CITY BANK BUILDING
629 EUCLID AVENUE
CLEVELAND, OHIO 44114-3070

[illegible]
FAX (216) 566-[illegible]
TELEX 980[illegible]

WRITER'S DIRECT
DIAL NUMBER

June 12, 1991

(216) 566-5[illegible]

Barbara Rogers, Esquire
U.S. Department of Justice
Environmental Enforcement Section
P. O. Box 7611, Ben Franklin Station
Washington, D.C. 20530

Arthur I. Harris, Esquire
Assistant U.S. Attorney
1404 East 9th Street
Suite 500
Cleveland, Ohio 44114

Re: Master Metals, Inc.
Re: USA v. Master Metals, Inc.
Case No. C87-1471
Case No. 90CV1010

Dear Ms. Rogers and Mr. Harris:

I was quite shocked to hear in our phone conference yesterday that the Government refuses to indicate to Master Metals whether the proposed Lloyds of London environmental impairment liability policy is acceptable under the liability coverage provisions of 40 C.F.R. §265.147. As I indicated to you, the limits of the policy are identical to the provisions of the regulations; however, Lloyds' underwriters have indicated that they are only prepared to offer a duplicate of the policy to the Government rather than issue a certificate of insurance as set forth in 40 C.F.R. §264.151(j). This is a distinction without substantive meaning. I would presume that the Government could read the policy to assure itself that it provides the coverage specified in §265.147(a)(1).

As I understand the Government's position, Master Metals must assume the risk of spending $320,000 annually with no assurance that the Government will not reject the policy. As I indicated to you, once the premium is paid, the insurance carrier will not make a refund. More importantly, this money could have been used to further fund

Michael A. Cyphert

MAC/nab
cc: The Honorable Alice M. Batchelder
The Honorable John M. Manos

THOMPSON, HINE AND FLORY

ATTORNEYS AT LAW

1100 NATIONAL CITY BANK BUILDING
629 EUCLID AVENUE
CLEVELAND, OHIO 44114-3070

AKRON, OHIO
BRUSSELS, BELGIUM
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PALM BEACH, FLORIDA
TORONTO, ONTARIO
WASHINGTON, D.C.

[illegible]
FAX (216) 566-[illegible]
TELEX 980[illegible]

WRITER'S DIRECT
DIAL NUMBER

June 12, 1991

(216) 566-5[illegible]

Barbara Rogers, Esquire
U.S. Department of Justice
Environmental Enforcement Section
P. O. Box 7611, Ben Franklin Station
Washington, D.C. 20530

Arthur I. Harris, Esquire
Assistant U.S. Attorney
1404 East 9th Street
Suite 500
Cleveland, Ohio 44114

Re: Master Metals, Inc.
Re: USA v. Master Metals, Inc.
Case No. C87-1471
Case No. 90CV1010

Dear Ms. Rogers and Mr. Harris:

I was quite shocked to hear in our phone conference yesterday that the Government refuses to indicate to Master Metals whether the proposed Lloyds of London environmental impairment liability policy is acceptable under the liability coverage provisions of 40 C.F.R. §265.147. As I indicated to you, the limits of the policy are identical to the provisions of the regulations; however, Lloyds' underwriters have indicated that they are only prepared to offer a duplicate of the policy to the Government rather than issue a certificate of insurance as set forth in 40 C.F.R. §264.151(j). This is a distinction without substantive meaning. I would presume that the Government could read the policy to assure itself that it provides the coverage specified in §265.147(a)(1).

As I understand the Government's position, Master Metals must assume the risk of spending $320,000 annually with no assurance that the Government will not reject the policy. As I indicated to you, once the premium is paid, the insurance carrier will not make a refund. More importantly, this money could have been used to further fund

Michael A. Cyphert

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cc: The Honorable Alice M. Batchelder
The Honorable John M. Manos

THOMPSON, HINE AND FLORY

the Facility Closure Trusts and to fund the engineering controls and improvements required by Judge Manos in the OSHA matters. It appears unconscionable that the Government would be so cavalier to suggest that "it is not their problem."

The inability of the Government to reconcile the inconsistent provisions of Section V.G.2. of the Consent Decree is unacceptable. As stated in Barbara Rogers' letter of May 31, 1991, it is the apparent position of the Government that Master Metals must commence closure of the operating hazardous waste units in accordance with an approved closure plan. Yet, the Government has never approved the several closure plans submitted by Master Metals. Moreover, and by way of example, how can Master Metals close (cease operating?) the air pollution control baghouses where the use of those air pollution control devices is essential to the protection of human health and the environment?

Previously, Master Metals has submitted to EPA's technical representative the computerized data confirming that Master Metals' operations qualify for the "recycling" exemption in the RCRA regulations. Since the materials received and processed by Master Metals cannot be a "waste" under the exemption--and therefore cannot be a "hazardous waste"--Master Metals will continue to receive and process these unregulated materials in order to recover their lead content. Master Metals believes that these recycling operations are consistent with the spirit and letter of the Consent Decree and that it may properly continue its recycling operations. It is simply unconscionable if the Government takes a contrary position since it has been in possession of all the operative facts for over a year without comment.

Sincerely,

Michael A. Cyphert

Michael A. Cyphert

MAC/nab
cc: The Honorable Alice M. Batchelder
The Honorable John M. Manos

MAY 17 1991

5HR-12

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Douglas Mickey, President
Master Metals, Inc.
2850 West Third Street
Cleveland, Ohio 44113

Re: Financial Assurance for
Closing and Operating
Hazardous Waste Units
Master Metals, Inc.
OHD 097 613 871

Dear Mr. Mickey:

This letter is in regard to the financial assurance required of Master Metals, Inc., for closure of its Cleveland, Ohio facility pursuant to 40 CFR 265.142 - 265.146 and OAC 3745-66-42 through 3745-66-46. As more fully described below, the financial assurance mechanisms proposed by Master Metals are inadequate. Within 15 days of receipt of this letter, Master Metals must revise the financial assurance mechanisms, and fully fund the mechanisms, consistent with this letter and the requirements of the Consent Decree.

Pursuant to Section V.G.3 of the Consent Decree (Case No. 87-1471), Master Metals, Inc. was required to implement, and certify no later than March 16, 1990, that it had established, financial assurance for closure of the Closing Hazardous Waste Units at Master Metals' Cleveland, Ohio facility. The Closing Hazardous Waste Units are those units which must immediately close as described in the Consent Decree and are addressed in the Partial Closure Plan. In addition, Master Metals was required to implement and certify establishment of financial assurance for closure of the full facility including the Operating Hazardous Waste Units, no later than May 15, 1990. The Operating Hazardous Waste Units, pursuant to the Consent Decree, are the hazardous waste units, other than the closing units, which are identified and addressed in the Full Facility Closure Plan. The Full Facility Closure Plan deals with final closure of all the hazardous waste units. Certification of financial assurance was to include a detailed description of the proposed financial assurance mechanism. Financial assurance certifications for both sets of units were submitted on September 17, 1990.

On December 27, 1990, U.S. EPA disapproved the financial assurance mechanisms for the Partial Closure Plan and the Final Closure Plan. Section V.G.3 of the Consent Decree, 40 CFR 265.142 through 265.146 and OAC Rules 3745-66-42 through 3745-66-46 require Master Metals to establish and adequately fund financial assurance mechanisms needed to implement the closure plans. U.S. EPA informed Master Metals that the cost estimate for the Partial Closure Plan was inadequate, and Master Metals had failed to establish, certify, and adequately fund an acceptable financial assurance for the Closing Hazardous Waste Units. In addition, with respect to the Operating Hazardous Waste Units, Master Metals was informed that it had failed to implement the financial assurance mechanism for those units. Furthermore, the Ohio Environmental Protection Agency provided comments to Master Metals, in an October 19, 1990 letter, regarding Master Metals' financial assurance needed for closure.

Master Metals' January 16, 1991 response to these letters is unacceptable and inconsistent with the express terms of RCRA, OAC 3745-66-42 through 3745-66-46, and Section V.G.3. of the Consent Decree. Under RCRA, the State law and the Consent Decree, the requirement to fund the financial assurance mechanism for closure is not contingent upon closure plan approval. Therefore, Master Metals was required to fund the appropriate financial assurance mechanisms for closure concurrent with submittal of its closure plans. There is no basis for withholding funding of the financial assurance pending approval of the closure plans. RCRA, State law and the Decree contemplate that the financial assurance amount may change (whether through the process of approval of the closure plan, the effects of inflation or through amendments of the plan) and requires that the amount of financial assurance be adjusted accordingly pursuant to 40 CFR 265.142 (Consent Decree at V.G.3.).

With regard to the Operating Hazardous Waste Units, the regulations and the Consent Decree allow a schedule for fully funding the financial assurance mechanism. Where a trust fund will be utilized, financial assurance is to be established by the effective date of the regulations (i.e., 1983), and funded annually over a pay-in-period equal to the remaining useful life of the facility (as estimated in the closure plan), or 20 years, whichever is shorter. Hence for a 20 year pay-in period as is currently the case for the operating units, the funding of the financial assurance must be completed no later than the year 2002. The first payment must account for the first eight years of payments, from 1983 through 1990. Payments must then be made annually until full funding of the financial assurance mechanism is achieved.

With regard to the Closing Hazardous Waste Units, the period for funding is accelerated. As stated in the regulation, where the operating life of the unit ends prior to the year 2002, the pay-in-period must be accelerated to be completed prior to the initiation of closure. This is the case for the units at Master Metals which have lost interim status (i.e., the Closing Hazardous Waste Units) and have no remaining life. Since the closing units have no remaining useful life, there is no basis in the regulations or the Consent Decree permitting a scheduled pay-in-period.

In addition, the amount of funding Master Metals has provided is wholly inadequate. Master Metals' current estimate for implementation of the Full Closure Plan is $101,070. To date, only $4640.50 has been placed into the trust fund for closure of the operating Hazardous Waste Units. Even assuming a useful life of the maximum allowed by the pay-in period discussed above, the initial payment should have been equal to at least $40,428, covering the eight years from 1983 through 1990.

Additionally, for the Closing Hazardous Waste Units at Master Metals, where closure is accelerated because the units have lost interim status, the pay-in period must be accelerated such that full funding is immediately available. For the Closing Hazardous Waste Units, Master Metals estimated that closure cost to be $74,018. To date only $15,000 has been placed into a certificate of deposit. As an initial matter, a certificate of deposit is not a financial assurance mechanism which is acceptable under RCRA, State law or the Decree. The $15,000 must be promptly transferred to an acceptable financial assurance mechanism. In addition, Master Metals must immediately fund this financial assurance mechanism for the Closing Hazardous Waste Units to not less than the current estimate for implementation of the Partial Closure Plan, $74,018. If Master Metals chooses to use an escrow account, Master Metals must assure U.S. EPA that the funds may only be released for closure of the Closing Hazardous Waste Units. We note that an escrow account consists of money placed into the custody of a third party for delivery to a grantee only after the fulfillment of a specific purpose. The specific purpose in this case is closure of the Closing Hazardous Waste Units. The grantee in this case is the party who actually performs the closure activities. The third party selected as a trustee to distribute the funds, must only do so under the direction of the Director of the Ohio Environmental Protection Agency. Specifically, the third party will make such payments as the Director will direct, in writing, to provide for the payment of closure of the facility (OAC 3745-55-51).

Consequently, based on the regulations, the Consent Decree and Master Metals' most current estimates of the cost of closure, Master Metals must: 1) propose an acceptable financial assurance mechanism for the closing units; 2) provide financial assurance funding for the closing units of $74,018; 3) update the pay-in schedule for the operating units financial assurance mechanism; 4) properly fund the operating units financial assurance mechanism to not less than $40,428; and 5) certify that the mechanisms are adequately funded.

Finally, you should be aware that this letter does not address the technical adequacies or inadequacies of the closure plans, nor approve Master Metals' estimates for closure under the plan submitted by Master Metals or under any revised plan. Review of the Closure Plans will be conducted by Ohio Environmental Protection Agency (OEPA). OEPA will also evaluate the financial assurance mechanisms to determine compliance with the OAC. This includes a determination of the adequacy of the closure cost estimates.

In accordance with Section V.G.3. of the Consent Decree, Master Metals must correct the deficiencies outlined in this letter and respond to this letter in writing within 15 days. Response to this letter must be under separate cover

and not included as part of the monthly report. If you have any questions, you may contact Sheri L. Bianchin of my staff at (312) 886-4466.

Sincerely,

ORIGINAL SIGNED BY
KEVIN M. PIERARD

Kevin M. Pierard, Acting Chief
RCRA Enforcement Branch

cc: Mike Savage OEPA-CO
Ed Kitchen, OEPA-CO
Carolyn Reierson, OEPA-CO
Paul Vandermeer, OEPA-CO
Paul Anderson, OEPA-NEDO
Linda Lagunzad, OEPA-NEDO
Michael Cyphert, Esq.

bcc: Barbara Rogers, Esq. DOJ
Arthur Harris, Assistant U.S. Attorney
Stuart Hersh, ORC-TUB-03
Lisa Pierard, RPB-5HR-13

5HR:SBIANCHIN:05/09/91:6-4446 MM.hom

AP 5/16/91

CONCURRENCE REQUESTED FROM REB			
OTHER STAFF	REB STAFF	REB SECTION CHIEF	REB BRANCH CHIEF
	SA SB	SA KB	5-17-91

MASTER METALS, INC., 2850 W. THIRD ST., CLEVELAND, OHIO 44113 • (216) 621-2361

Lead Smelter and Refiner

January 16, 1991

Mr. Joseph M. Boyle, Acting Chief
RCRA Enforcement Branch
U. S. E. P. A.
Region V
230 S. Dearborn Street
Chicago, Il. 60604
ATTN: 5HR-12

RE: Financial Assurance for Closing
and Operating Hazardous Waste Units
Master Metals, Inc.
OHD 097 613 871

Dear Mr. Boyle,

Master Metals has received your letter dated January 3, 1991 indicating disapproval of the financial mechanisms for funding Master Metals' Partial and Facility Closure Plans. In addition, the cost estimates for closure activities has been deemed to be inadequate.

Based on the applicable sections of 40 CFR 265.142 and 261.7 final closure costs have been recalculated to include the following:

1. There is a difference of opinion regarding the utilization of inventory upon initiation of final closure. It has always been our intention to consume all lead bearing feed stocks in our furnaces prior to the final closure of the facility. Therefore, there would be, in essence, no cost associated with the removal and disposition of lead bearing feed stocks since they would not exist on the site at the time of final closure.

   It should be noted that lead-bearing feed stocks do have an inherent value. However, to comply with 40 CFR 265.142(a)(3) no "salvage" value has been attributed to this material. Therefore, this cost estimate assumes a zero monetary value for all lead containing waste material on-site at closure and includes third-party transportation costs from Master Metals facility to the nearest secondary facility which would utilize the material in its production process.

2. The estimated maximum amount of lead bearing feed stock that would be on site at closure has been recalculated at 4,000,000 pounds.

3. In accordance with 40 CFR 261.7 "Residues of Hazardous Waste in Empty Containers" the procedure for cleaning storage bins as detailed in the Facility Closure Plan, Section 3.2 has been revised. The containers will be scraped of residue until it is "empty" in accordance with 40 CFR 261.7(b)(1). No washing or rinsing of the containers, or associated analytical fees for wash or rinse waters is anticipated. Any quantity of residues removed from the containers has been previously calculated as specified in the above Paragraph 2.

The Partial Closure Plan submitted by Master Metals includes all hazardous waste units as described and detailed in the Consent Decree. However, subsequent inspections by US EPA indicated that additional areas of the facility may require closure. Therefore, the partial closure plan and costs for closure are being revised to include the following:

1. A former waste pile storage area which contained dross and battery casings located on the southwest corner of the facility.

2. Waste pile storage area (Area #6 in Figure 2 of the Partial Closure Plan) is to be increased.

All closure cost estimates are based on hiring a third party to close the hazardous waste units.

Revised partial and facility closure plans will be submitted under separate cover. Cost estimates for these revisions are contained in the attachment to this letter.

In regards to the establishment, certification and implementation of the financial assurance mechanisms we have the following comments:

1. The primary factor in our inability to establish an appropriate financial assurance mechanism for funding the Partial Closure Plan was the lack of a response from appropriate Agencies regarding the adequacy of our Partial Closure Plan. Without this approval, the amount required for the financial assurance mechanism was unknown. In an attempt to show good faith, a certificate of deposit of $15,000.00 was established and has been maintained awaiting the outcome of discussions regarding the Partial Closure Plan. The establishment of a Trust, the financial assurance mechanism that would be used, is both time consuming and expensive.

We would like to create this Trust and fund it to an appropriate level when agreement is reached on the correct amount of the fund. Please note that the Consent Decree, at article V.G.3., Page 22, specifically accepts an escrow account as a permissable financial assurance mechanism for the Closing Hazardous Waste Units (i.e. the Partial Closure Plan).

2. In regards to payment into the Trust fund for the Facility Closure Plan, our initial review of the regulation indicated that the funding of the Trust fund over a twenty year term was correct. Based, however, on the effective date of the regulations it appears that the first payment should have been higher. We intend to make the appropriate adjustment when the cost estimates for closure are approved.

Master Metals has been awaiting a definitve response from both the Ohio and US EPA on the Partial Closure Plan and the Facility Closure Plan. It is our intention to come to final resolution on these matters and initiate the actions that are appropriate and in compliance with the regulations.

I can be contacted at the letterhead address or telephone number if you have any questions.

Sincerely yours,
Master Metals, Inc.

Douglas K. Mickey, President

cc: Sheri Bianchin, U.S EPA Region V
Carolyn J.Reierson, OEPA-HWES, DSHWM
Mark Bergman, OEPA-NEDO
Michael Cyphert, Esq.

REVISED PARTIAL CLOSURE COST ESTIMATE
MASTER METALS, INC.
CLEVELAND, OHIO

A. Concrete Pad Cleaning		
Residue removal, cleaning, and surface rinsing (labor and materials @ 1.50/SF)	$40650.00	
Analytical fees	5388.00	
Liquid waste disposal		
Sanitary sewer $0.03-0.04/gallon	1500.00	
		$ 47538.00
B. *Soil Testing		
Soil Sampling		
Mobilization/demobilization	$ 1250.00	
Soil borings @ $14/LF	4480.00	
Split-spoon samples @ $10/ea.	1280.00	
Decontamination	360.00	
Materials	350.00	
		$ 7720.00
Soil Analysis		
Total Metals @ $140/sample	$17920.00	
EP Toxicity @ $120/sample	840.00	
		$ 16400.00
TOTAL		$ 74018.00

REVISED FACILITY CLOSURE COSTS
MASTER METALS, INC.
CLEVELAND, OHIO

A. Storage Bin Cleaning		
Residue removal (labor and materials)	$ 3840.00	
		$ 3840.00
B. Cleaning of Concrete Pad in Battery Cracking Area		
Residue removal, cleaning and surface rinsing (labor and materials)	$ 5250.00	
Analytical Fees	420.00	
Liquid Waste Disposal sanitary sewer $0.03/0.04/gal.	400.00	
		$ 6070.00
C. Drum Storage Area and Paved Surface Area Cleaning		
Sweep/vacuum concrete (labor and materials)	$ 3900.00	
Residue disposal (transportation costs to reclaiming facility)	3000.00	
		$ 6900.00
D. Cleaning of Air Pollution Control Equipment		
Residue removal and cleaning (labor and materials)	$ 5550.00	
Residue and filter bag disposal	2500.00	
		$ 8050.00
E. Underground Tank Removal		
Residue removal, cleaning, and and rinsing	$ 1500.00	
Residue disposal	6250.00	
Analytical fees (tank cleaning)	420.00	
Tank removal	2000.00	
		$ 10170.00

REVISED FACILITY CLOSURE COSTS
MASTER METALS
CLEVELAND, OHIO

F. Soil Testing		
*Soil Sampling		
Mobilization/demobilization	$ 1500.00	
Soil borings @ $14/LF	6160.00	
Split-spoon samples @ $10 ea.	1760.00	
Decontamination	500.00	
Materials	500.00	
		$ 10420.00
**Soil Analysis		
Total metals @ $140/sample	$ 19880.00	
EP Toxicity @ $120.00/sample	1320.00	
Corrosivity @ $15/sample	300.00	
		$ 21500.00
G. Inventory Removal		
Transportation costs	$ 50000.00	
Labor	4800.00	
		$ 54800.00
TOTAL		$ 121750.00

* Soil sampling costs are based on a maximum of four core samples taken at each of 10 paved or unpaved areas of the facility, plus four background core samples.

** Soil analysis costs include costs for analysis of soils at the underground tank.

Shein

OhioEPA

State of Ohio Environmental Protection Agency

P.O. Box 1049, 1800 WaterMark Dr.
Columbus, Ohio 43266-0149
(614) 644-3020 **Fax** (614) 644-2329

RECEIVED
OCT 24 1990
OFFICE OF RCRA
Waste Management Division
U.S. EPA

Richard F. Celeste
Governor

CERTIFIED MAIL

October 19, 1990

Re: Master Metals, Inc.
OHD097613871
Financial Assurance

Douglas K. Mickey, President
Master Metals, Inc.
2850 W. Third Street
Cleveland, OH 44113

Dear Mr. Mickey:

On September 24, 1990, Ohio EPA conducted an annual financial record review of the records on file for the Master Metals, Inc. facility referenced above. The facility was evaluated for compliance with the financial assurance requirements for closure care, post-closure care, and liability coverage, as specified in Ohio Administrative Code (OAC) rules 3745-66-42 through 3745-66-45 and 3745-66-47.

On January 15, 1990 Master Metals, Inc. entered into a judicial Consent Decree (Civil Action No. C87-1471) with the United States of America, which set forth, among other things, the timeframes for Master Metals, Inc. to establish financial assurance for closure and liability coverage for the "Closing Hazardous Waste Units" and the "Operating Hazardous Waste Units" pursuant to 40 CFR 265.142 through 265.147 and OAC rules 3745-66-42 through 3745-66-47. Per the provisions of the Consent Decree, Master Metals, Inc. has filed a motion with the court to obtain an extension in which to obtain liability coverage pursuant to 40 CFR 265.147 and OAC rule 3745-66-47.

Since Master Metals, Inc. has not established liability coverage to date, Ohio EPA finds Master Metals, Inc. to be in violation of OAC 3745-66-47; Master Metals, Inc. appears to therefore also be in violation of 40 CFR 265.147. Effective June 29, 1990 Ohio EPA adopted mechanisms, in addition to the existing insurance and Financial Test/Corporate Guarantee mechanisms, for an owner or operator to demonstrate compliance with the liability coverage requirements of OAC rule 3745-66-47. These additional mechanisms include a guarantee for liability coverage, letter of credit for liability coverage, surety bond for liability coverage, and trust fund for liability coverage. U.S. EPA adopted these additional mechanisms effective October 3, 1988. Master Metals, Inc. may pursue one or a combination of these additional mechanisms to demonstrate compliance with OAC rule 3745-66-47 and therefore 40 CFR 265.147.

On September 6, 1990 Ohio EPA received a copy of a $15,000 certificate of deposit in the name of Master Metals, Inc. This certificate of deposit is intended to demonstrate financial assurance for closure of the closing hazardous waste units pursuant to Section V(G)(3) of the Consent Decree, 40 CFR 265.142 through 265.146, and OAC rules 3745-66-42 through 3745-66-46. The viability of this mechanism as a means of demonstrating compliance with the referenced rules is currently being reviewed by Ohio EPA and U.S. EPA, Region V. Master Metals, Inc. will be notified of the results of this determination under separate cover by Ohio EPA and/or U.S. EPA, Region V.

Ohio EPA has reviewed the closure cost estimate of the March 16, 1990 Partial Closure Plan for the closing hazardous waste units and finds the following violation of the OAC:

> OAC rule 3745-66-42, because the $66,815.00 estimate does not fully meet the requirements of OAC rule 3745-66-42. Specifically, it does not appear to based on the most expensive closure scenario and third party closure costs; costs of off-site hazardous waste inventory removal must be included in the cost estimate. Master Metals, Inc. appears to therefore be in violation of 40 CFR 265.142.
>
> Master Metals, Inc. must revise this estimate so that it meets requirements of OAC rule 3745-66-42 and 40 CFR 265.142 and so that it includes any additional hazardous waste units to be closed under a revised partial closure plan. Master Metals, Inc. must use this revised estimate and any estimate subsequently revised in accordance with the referenced rules to establish and maintain financial assurance for the closing hazardous waste units. If the certificate of deposit is determined to be a viable financial assurance mechanism, then Master Metals, Inc. must cause its amount to be increased in accordance with the closure cost estimate.

On September 6, 1990 Ohio EPA received a signed duplicate original of a Trust Agreement entered into on May 15, 1990 by Master Metals, Inc. with the Central Trust Company of Northeastern Ohio. On May 21, 1990 Ohio EPA received the facility closure plan which included the cost estimate for closure of the operating hazardous waste units. The Trust Agreement was established by Master Metals, Inc. to demonstrate financial assurance for closure of the operating hazardous waste units pursuant to Section V(G)(3) of the Consent Decree, 40 CFR 265.142 through 265.146, and OAC rules 3745-66-42 through 3745-66-46. Since Master Metals, Inc. has elected to establish this Trust Agreement for the benefit of the Director of Ohio EPA <u>or</u> the Regional Administrator of U.S. EPA, Region V, the wording of the Trust Agreement deviates from the wording of 40 CFR 264.151(a) and OAC rule 3745-55-51(A) as required by 40 CFR 265.143(a) and OAC rule 3745-66-43(A). Ohio EPA is not requesting at this time, however, that Master Metals, Inc. submit to Ohio EPA a revised Trust Agreement which exclusively meets the wording requirements of OAC rules 3745-55-51(A).

Ohio EPA has reviewed the Trust Agreement and closure cost estimate and finds the following violations of the OAC:

1. OAC rule 3745-66-42, because the $92,810.00 estimate does not fully meet the requirements of OAC rule 3745-66-42. Specifically, it does not appear to based on the most expensive closure scenario in that it does not include disposal costs for a third party to dispose of the maximum inventory of hazardous waste, engineer certification costs, or other administrative costs, as applicable. Master Metals, Inc. appears to therefore be in violation of 40 CFR 265.142.

   Master Metals, Inc. must revise the closure cost estimate so that it meet the requirements of OAC rule 3745-66-42 and 40 CFR 265.142 and so that it includes any changes made to the closure plan since its submittal in May, 1990.

2. OAC rule 3745-66-43(A)(3) and (5), because the first payment was not at least the amount that the Trust Fund would have contained if the Fund were established as of the effective date of the OAC rule, August 26, 1983, and annual payments were made to the Fund since this date. This rule specifies that any Trust Agreement established after the effective date of the rule must have annual payments to the Fund "over the twenty years beginning with the effective date of the rule or over the remaining operating life of the facility as estimated in the closure plan, whichever period is shorter."

   Therefore, at the time of establishment of the May 15, 1990 Trust Agreement there were fourteen (14) years left in the pay-in period, and Master Metals, Inc. should have made a payment to the Fund based on this pay-in period. Master Metals, Inc. must revise the closure cost estimate and make a supplemental deposit to the Fund based on this estimate and pay-in period.

Master Metals, Inc. appears to have violated Section V(G)(3) of the Consent Decree in that financial assurance mechanisms for closure for the closing and operating units were not submitted simultaneous with the submittal of any closure or post-closure plan pursuant to Section V(C)(1) of the Consent Decree.

Please submit to this office for review documentation demonstrating that Master Metals, Inc. has established liability coverage for the closing and operating hazardous waste units, and has made an appropriate deposit to the Trust Fund based on a twenty year pay-in period staring August 23, 1983 (fourteen years left in the pay-in period) and revised closure cost estimate as specified above. This documentation must demonstrate that Master Metals, Inc. has abated the violations of OAC rules 3745-66-42, 3745-66-43, and 3745-66-47 as cited above and 40 CFR 265.142, 265.143, and 265.147, as appropriate.

The results of this September 24, 1990 financial assurance record review are being forwarded to U.S. EPA, Region V for appropriate follow-up. If you have any questions regarding these matters, I may be reached at (614) 644-2934.

Sincerely,

Carolyn J. Reierson

Carolyn J. Reierson
Hazardous Waste Enforcement Section
Division of Solid and Hazardous Waste Management

Sp.CR.lcn

cc: Laurie Stevenson, HWES, DSHWM
Jeff Mayhugh, HWES, DSHWM
Mark Bergman, DSHWM, NEDO
Sheri Bianchin, U.S. EPA, Region V
Catherine McCord, U.S. EPA, Region V

HRE-8J

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Douglas Mickey, President
Master Metals, Inc.
2850 West Third Street
Cleveland, Ohio 44113

Re: Financial Assurance for Closing and Operating Hazardous Waste Units
Master Metals, Inc.
OHD 097 613 871

Dear Mr. Mickey:

This letter is the third letter from the U.S. EPA in regards to the financial assurance required of Master Metals, Inc. for closure of its Cleveland, Ohio facility pursuant to 40 CFR 265.142 - 265.146 and OAC 3745-66-42 through 3745-66-46. As more fully described below, the financial assurance proposed by Master Metals is inadequate. Within 15 days of receipt of this letter, Master Metals must and submit revised closure plans and fully fund the mechanisms, consistent with this letter and the requirements of the Consent Decree.

Pursuant to Section V.G.3 of the Consent Decree (Case No. 87-1471), Master Metals, Inc. was required to implement, and certify no later than March 16, 1990, that it had established, financial assurance for closure of the Closing Hazardous Waste Units at master Metals' Cleveland, Ohio facility. In addition, Master Metals was required to implement and certify establishment of the financial assurance no later than May 15, 1990. Certification of financial assurance was to include a detailed description of the proposed financial assurance mechanisms.

The financial assurance for closure of the full facility including the Operating Hazardous Waste Units, was to be established no later than May 15, 1990. Certification of financial assurance was to include a detailed description of the proposed financial assurance mechanism. Financial assurance information for both sets of closing units was untimely submitted on September 17, 1990, with the August 1990 monthly report.

On January 3, 1991, U.S. EPA disapproved the financial assurance mechanisms for the Partial Closure Plan (i.e., Closing Hazardous Waste Units) and the Final Closure Plan (i.e., Final Facility). U.S. EPA informed Master Metals that the cost estimate for the Partial Closure Plan was inadequate, and Master Metals had failed to establish, certify and adequately fund financial assurance for the Closing Hazardous Waste Units subject to the Partial Closure Plan. In addition, with respect to the Operating Hazardous Waste Units, Master Metals had failed to implement the financial assurance mechanism for those units. Implementing the financial assurance mechanism requires Master Metals to provide, pursuant to V.G.3 of the Decree, financial resources pursuant to 40 C.F.R. 265.142 through 265.146 and OAC Rules 3745-66-42 through

3745-66-46. Master Metals failed to adequately fund the financial assurances mechanisms.

Master Metals responded to U.S. EPA on June 14, 1991. Once again, Master Metals' response is unacceptable and inconsistent with the express terms of RCRA, OAC 3745-66-42 through 3745-66-46, and Section V.G.3. of the Consent Decree. In essence, Master Metals established no approvable mechanisms for both the Operating and Closing Hazardous Waste Units.

With regard to the Operating Hazardous Waste Units, the regulations and the Consent Decree may allow a schedule for achieving the full funding of the financial assurance mechanism, pursuant to the regulations. Where a trust fund will be utilized, financial assurance is to be established by the effective date of the regulations (i.e., August 23, 1983), and funded annually over a pay-in-period equal to the remaining useful life of the facility (as estimated in the closure plan), or 20 years, whichever is shorter. Hence for a 20 year pay-in period, the funding of the financial assurance must be completed no later than the year 2002. As Master Metals was previously informed, the first payment must equal the amount eight years from 1983 to 1991. Subsequent payments must then be made annually until full funding of the financial assurance mechanism is achieved by year 2002.

Master Metals proposed to deposit the initial payment into the facility trust fund over 10 equal payments, starting in March 1991. This payment schedule is not acceptable.

In particular, Master Metals' current estimate for implementation of the Final Closure Plan is $121,750. As of March 5, 1992, only $44,526.46 has been placed into the trust fund. Even assuming a useful life of the maximum allowed by the pay-in schedule discussed above (i.e., year 2002), the initial payment was suppose to equal at least $54,787.50 covering the eight years from 1983 until 1991. The 1992 annual payment of $6,087.50 will be due no later than August of 1992.

Master Metals claims that it does not have the liquid funds to fully fund the facility closure to the level required.

U.S. EPA reminds Master Metals that the requirement to fund the financial assurance mechanism for closure is not contingent upon availability of liquid funds. In fact, the reason that a closure plan must be funded is to close a facility in case a facility does not have liquid funds available once the operation ceases. cite

In summary, in accordance with the Consent Decree and the regulations, Master Metals was required to fund the appropriate financial assurance mechanisms for closure of the Operating Hazardous Waste Units concurrent with submittal of its closure plans (March 1990). To date, Master Metals still has not made the first required payment.

With regard to the Closing Hazardous Waste Units, the period for funding is accelerated. As stated in the regulation, where the operating life of the unit ends prior to the year 2002, the pay-in-period must be accelerated to be completed prior to the initiation of closure. This is the case for the units at Master Metals which have lost interim status (i.e., the Closing Hazardous

Waste Units) and have no remaining life. Since the closing units have no remaining useful life, there is no basis in the regulations or the Decree permitting a scheduled payment. The plan is supposed to be fully funded.

Master Metals claims that it believes that the amount presently set aside, approximately $16,000, is sufficient is complete closure. To date, Master Metals has removed all waste piles of lead-containing feed stocks, and has conducted soil and ground water sampling.

A facility can use funds which are set aside for closure as it wishes. The funds can be released only after approval by the agency which is authorized to implement the closure plans, which is OEPA cite. In addition, the approved funds are to be released only for expenditures which are consistent with the approved closure plans. Furthermore, U.S. EPA notes that the expenditures made by Master Metals were primarily required buy its insurance carrier and not specifically included in the closure plans.

Expenditures of funds for closure is authorized only for the funds which OEPA has approved. The only exception is the removal of the waste piles which lost interim status and were required to be removed from the site pursuant to the federal Consent Decree. Hence, funds for all the soil and groundwater sampling to date were not expended in accordance with an approved closure plan, and thus are not technically expenditures made in furtherance of for closure.

In addition, for the Closing Hazardous Waste Units at Master Metals, as previously stated, where closure is accelerated because the units have lost interim status, the pay-in period must be accelerated such that full funding is immediately available. For the Closing Hazardous Waste units, Master Metals estimated that closure cost $74,018. To date only approximately $16,000 has been placed into a certificate of deposit or Trust?.

Master Metals must immediately fund this financial assurance mechanism for the Closing Hazardous Waste Units to not less than the current estimate for implementation of the Partial Closure Plan, $74,018. Consequently, Master Metals must immediately add $59,017 to the $15,000 Partial Closure Plan financial assurance mechanism.

Regarding proceeding with partial closure, Master Metals claims that since the operations at this facility are dependent on material movement by means of heavy industrial vehicles in the same areas subject to closure, cleaning the surfaces of these areas is an activity more appropriately conducted during full facility closure.

First, U.S. EPA reminds Master Metals that the factor mentioned above is not a consideration in implementing closure. There is not applicable mechanism in the regulations to allow postponing completion of partial closure until final closure. Master Metals must proceed to try to "clean close" the area after the closure plan is approved.

40 CFR 265.113 presents the time allowed for closure. Within 90 days after receiving the final volume of hazardous waste at a hazardous waste management unit, . . or within 90 days after approval of the closure plan, whichever is later, . . . the owner or operator must treat, remove from the unit or

facility or dispose of on-site, all hazardous wastes in accordance with the approved closure plan.

Specifically, in accordance with 40 CFR 265.111, Closure Performance Standards, the owner or operator must close the facility in a manner that (a) minimizes the need for further maintenance, and (b) controls, minimizes or eliminates, to the extent necessary to protect human health and the environment, post-closure escape of hazardous waste, hazardous constituents, leachate, contaminated run-off, or hazardous waste decomposition products to the ground or surface waters or to the atmosphere; and (b) complies with the closure requirements of this subpart including. . . 40 CFR 265.258.

40 CFR 265.258(a) states at closure, the owner or operator must remove or decontaminate all waste residues, contaminated containment system components, contaminated subsoils, and structures and equipment contaminated with waste and leachate and manage them as hazardous waste. . ., and (b) If after removing or decontaminating all residues and making all reasonable efforts to effect removal or decontamination of contaminated components, subsoils, structures, and equipment, as required in paragraph (a) of this section, the owner or operator finds that not all contaminated subsoils can be practically removed or decontaminated, he must close the facility and perform post-closure care in accordance with the closure and post-closure requirements that apply to landfills (40 CFR 265.310). Furthermore, now that soil and ground water contamination have been detected on-site and beyond the facility boundary, based on sampling conducted by Master Metals, the releases must be addressed in a revised closure plan. First, these releases may be classified as unexpected events which affect the closure plan. The owner or operator must amend the closure plan . . . no later than 60 days after the an unexpected event has occurred which has affected the closure plan in accordance with 40 CFR 265.112 (c). The closure plan must include a detailed description of the steps needed to remove or decontaminate all hazardous waste residues . . . including procedures for removing contaminated soils. . . and a detailed description of activities necessary, including ground water monitoring in accordance with 40 CFR 265.112 (b).

Hence Master Metals must amend the partial and final closure plans to address the soil and ground water contamination. In fact, on August 12, 1991, Master Metals committed to submit a revised closure plan under separate cover for which U.S. EPA has not yet received.

Consequently, based on the regulations, the Consent Decree and Master Metals' most current estimates of the cost of closure, Master Metals must

1) submit amended closure plans to the Ohio Environmental Protection Agency with a copy to U.S. EPA,

2) provide financial assurance funding for the closing units of $74,018,

3) update the pay-in schedule for the operating units financial assurance mechanism, and

4) properly fund the operating units financial assurance mechanism to not less than $54,450.

Finally, you should be aware that this letter does not address the technical adequacies or inadequacies of the closure plans, or approve Master Metals' estimates for closure under the plan submitted by Master Metals or under any revised plan. Review of the Closure Plans will be conducted by Ohio Environmental Protection Agency (OEPA). OEPA will also review the financial assurance mechanisms for technical requirements with the regulations.

In accordance with Section V.G.3 of the Consent Decree, Master Metals must correct the deficiencies outlined in this letter and respond to this letter in writing within 15 days. Response to this letter must be under separate cover and not included as part of the monthly report. If you have any questions, you may contact Sheri L. Bianchin of my staff at (312) 886-4446.

Sincerely yours,

Joseph M.Boyle, Chief
RCRA Enforcement Branch

cc: Mike Savage, OEPA-CO
Paul Anderson, OEPA-NEDO
Mark Bergman, OEPA-NEDO

bcc: Barbara Rogers, U.S. DOJ
Arthur Harris, Assistant U.S. Attorney
Stuart Hersh, ORC
Lisa Pierard/Don Heller

5HR-12:SBIANCHIN:ab:6-4446:10/18/91 SHERI's DISK#1:MASTER3.fac

OFFICIAL FILE COPY

CONCURRENCE REQUESTED FROM REB			
OTHER STAFF	REB STAFF	REB SECTION CHIEF	REB BRANCH CHIEF

The Central Trust Company of Northeastern Ohio, N.A.
101 Central Plaza South
P.O. Box 9280
Canton, Ohio 44711-9280

Walter J. Paull
Senior Vice President
& Senior Trust Officer
216 438-8360

CENTRAL TRUST

October, 1990

Dear Trust Client:

We appreciate having you as our customer, and improving service to you is part of our ongoing commitment. Effective communications are an important part of the services you receive and your periodic account statement is an integral part of communicating with you. I am pleased to announce enhancements in our technology that will improve the quality of the information you receive in the future.

Conversion to a new, "state of the art" trust accounting system has been in planning for many months and will be operational on September 30th. The new system will provide you with a comprehensive transaction summary and more readable format. Also, our new technology will allow more immediate on-line access to information about your account, thus improving responsiveness to your needs.

Enclosed is a statement of your account produced by the present system as of the close of business on Friday, September 28th. We are sending you a statement, even if your account was not regularly scheduled for one at this time, so that all activity since your last statement can be reported to you prior to our conversion. Beginning with your next statement, you will receive information in the new format with an explanation provided.

Again, these technological improvements are part of our commitment to better serve you. Please contact your Account Manager or myself at (216) 438-8360 with any questions or comments.

Sincerely yours,

W J Paull

Walter J. Paull
Senior Vice President
and Senior Trust Officer

cjk
Enclosure

A PNC BANK

THE CENTRAL TRUST COMPANY
TRUST DEPARTMENT

MASTER METAL INC

ACCOUNT NUMBER: 030-65600 GB1

Bob Stark (216) 438-8356 X
" clean-up of storage area"
- doesn't into UIC well

MASTER METALS INC - 2850 N. 3rd St.
Cleveland, Ohio 44113

OHD.097.613.871

STATEMENT OF TRANSACTIONS
COVERING THE PERIOD
8/17/90 THROUGH 9/28/90

BR CHIEF-US EPA REGION 5 - RCRA
ENFORCEMENT BR, 5 HR-12
230 S DEARBORN ST
CHICAGO, IL 60604

THE CENTRAL TRUST COMPANY
TRUST DEPARTMENT

MASTER METAL INC

ACCOUNT NUMBER: 030-65600 GB1
PERIOD: 8/17/90 - 9/28/90

STATEMENT OF TRANSACTIONS

DATE	TRANSACTION DESCRIPTION	INCOME CASH	PRINCIPAL CASH
8/17/90	BALANCES CARRIED FORWARD	.00	.00
8/21/90	RECEIVED FROM MASTER METALS INC. DEPOSIT TO TRUST		4,640.00
9/04/90	INTEREST ON PNC GOVERNMENT MONEY MARKET PORTFOLIO INCLUDING REBATE OF .76	11.15	
9/14/90	PAID STARK & KNOLL PROFESSIONAL SERVICES RENDERED FOR THE PERIOD ENDING 8/31/90		346.80-
	CASH MANAGEMENT FEES	.43-	
	BALANCES BEFORE CASH MANAGEMENT:	10.72	4,293.20
	CASH MANAGEMENT FOR THE PERIOD :		
	2 PURCHASES		4,650.00-
	1 SALE		347.00
9/28/90	BALANCES TO BE CARRIED FORWARD :	10.72	9.80-

THE CENTRAL TRUST COMPANY
TRUST DEPARTMENT

MASTER METAL INC

ACCOUNT NUMBER: 030-65600 GB1
PERIOD: 8/17/90 - 9/28/90

STATEMENT OF TRANSACTIONS

TRANSACTION SUMMARY

	INCOME CASH	PRINCIPAL CASH
BEGINNING BALANCES	.00	.00
RECEIPTS	11.15	4,987.00
PAYMENTS	.43-	4,996.80-
ENDING BALANCES	10.72	9.80-

PNC GOVERNMENT MONEY MARKET PORTFOLIO
IS OUR CASH MANAGEMENT SERVICE FOR INCOME AND
PRINCIPAL CASH IN YOUR ACCOUNT. AVAILABLE CASH
IN EXCESS OF $100 IS AUTOMATICALLY INVESTED DAILY.
DURING THE PREVIOUS 30 DAYS, THIS MONEY FUND HAD
A 7.42% AVERAGE RATE OF RETURN.

THE TIME OF EXECUTION ON ANY REPORTED SECURITY TRANSACTION
IS AVAILABLE UPON WRITTEN REQUEST.

THE CENTRAL TRUST COMPANY
TRUST DEPARTMENT

MASTER METAL INC

ACCOUNT NUMBER: 030-65600 GB1

STATEMENT OF ASSETS HELD ON 09/28/90

THIS REVIEW IS PREPARED TO PROVIDE YOU WITH A MARKET APPRAISAL OF THE PORTFOLIO AND ALSO TO REFLECT ESTIMATED ANNUAL INCOME. IT SHOWS THE CURRENT HOLDINGS WITH PRICES AS OF 09/28/90. UNIT PRICES NOT AS OF THAT DATE ARE INDICATED WITH A " < " AFTER THE MARKET VALUE.

SHARES OR PAR VALUE	ASSET DESCRIPTION	BOOK VALUE	MARKET VALUE UNIT PRICE	MARKET VALUE TOTAL	ESTIMATED INCOME	MKT YLD
	INCOME CASH	10.72		10.72		
	PRINCIPAL CASH	9.80-		9.80-		
	TOTAL CASH	.92 *		.92 *		
	CASH EQUIVALENTS					
4,303	PNC GOVERNMENT MONEY MARKET PORTFOLIO	4,303.00		4,303.00	316	7.3
	TOTAL CASH EQUIVALENTS	4,303.00 *		4,303.00 *	316	7.3
	ACCOUNT TOTAL	4,303.92 *		4,303.92 *	316 *	

THE CENTRAL TRUST COMPANY
TRUST DEPARTMENT

MASTER METAL INC

ACCOUNT NUMBER: 030-65600 GB1

STATEMENT OF ASSETS HELD ON 09/28/90

SUMMARY OF ASSETS

	MARKET	% TOTAL	ESTIMATED INCOME	% RETURN
CASH EQUIVALENTS	4,303.00	100.0	316	7.3
TOTAL ASSET VALUE	4,303.00		316	7.3
PRINCIPAL CASH	9.80-			
TOTAL ASSET VALUE AND PRINCIPAL CASH	4,293.20			
INCOME CASH BALANCE AS OF 09/28/90	10.72			
ACCOUNT TOTAL	4,303.92			

UNDER OUR CASH MANAGEMENT SERVICE, INCOME CASH BALANCES ARE AUTOMATICALLY INVESTED BY OVERDRAWING PRINCIPAL CASH.

OHD 097 61[illegible] 871

BANK ONE [illegible]ST COMPANY, NA
COLUMBUS TRUST
100 EAST BROAD STREET
COLUMBUS, OH 43271-0192

STATEMENT OF ACCOUNT
FOR THE PERIOD 04/01/98 TO 06/30/98

MASTER METAL INC EPA GRANTOR TRUST
DATED AUGUST 17, 1990

ACCOUNT NO. 6871061400

FOR ASSISTANCE, PLEASE CONTACT
JEFFREY REDMOND
(614) 248-2286

BR CHIEF-US 5PA REGION 5 - RCRA
ENFORCEMENT BR, HRE-8J
77 W. JACKSON BLVD.
CHICAGO, IL 60604

BANK ONE

STATEMENT MESSAGES

ACCOUNT NO. 6871061400 MASTER METALS INC EPA TRUST

IMPORTANT INFORMATION ABOUT YOUR ACCOUNT

BANC ONE INVESTMENT MANAGEMENT GROUP IS PLEASED TO BE ABLE TO OFFER TO OUR CLIENTS THE BENEFIT OF BANC ONE CORPORATION'S ("BANC ONE") VAST FINANCIAL RESOURCES. THESE SERVICES, WHETHER TRADITIONAL BANKING PRODUCTS, SPECIALIZED LENDING, INSURANCE SERVICES, BROKERAGE PRODUCTS, OR THE TRUST SERVICES YOU CURRENTLY RECEIVE, ARE PROVIDED THROUGH A VARIETY OF SPECIALIZED SUBSIDIARIES OF BANC ONE. WE ARE PROUD THAT MANY OF OUR TRUST CLIENTS HAVE BENEFITED FROM THE QUALITY SERVICE AND CONVENIENCE OF THESE CORPORATE RESOURCES.

TO KEEP YOU INFORMED ABOUT THE MANY PRODUCTS AND SERVICES OFFERED THROUGH BANC ONE, WE MAY SHARE CLIENT INFORMATION WITH OTHER AFFILIATES OF BANC ONE CORPORATION. THIS WILL ENABLE US TO SUGGEST COMPREHENSIVE FINANCIAL SOLUTIONS TO THE BENEFIT OF ALL BANC ONE CLIENTS. BANC ONE INVESTMENT MANAGEMENT GROUP INTENDS TO PARTICIPATE IN THIS INTERNAL INFORMATION EXCHANGE.

WE SUPPORT AND ENDORSE THIS EFFORT TO PROVIDE OUR CLIENTS WITH THE FULL ADVANTAGE OF THE NATIONAL CAPABILITIES OF BANC ONE, AND WE WANT TO MAKE YOU AWARE OF OUR PRACTICE. IF YOU PREFER TO BE EXCLUDED FROM THIS SHARING ARRANGEMENT,

PLEASE WRITE TO US AT: BANC ONE, FCRA OPT OUT, P.O. BOX 182793, COLUMBUS, OHIO 43218-2793 AND INCLUDE YOUR NAME AS IT APPEARS ON YOUR ACCOUNT, YOUR ADDRESS, SOCIAL SECURITY NUMBER, ACCOUNT NUMBER, TELEPHONE NUMBER, AND SIGN AND DATE YOUR CORRESPONDENCE. SHOULD YOU HAVE ANY QUESTIONS, PLEASE CALL YOUR LOCAL RELATIONSHIP MANAGER.
WE APPRECIATE YOUR RELATIONSHIP WITH US AND THANK YOU FOR THE OPPORTUNITY TO CONTINUE TO SERVE YOUR FINANCIAL NEEDS.

MUTUAL FUNDS, INCLUDING PROPRIETARY MUTUAL FUNDS AND VARIOUS OTHER MARKETABLE SECURITIES ARE NOT INSURED OR GUARANTEED BY THE FEDERAL DEPOSIT INSURANCE CORPORATION (FDIC) OR ANY OTHER GOVERNMENT SPONSORED AGENCY OF THE FEDERAL GOVERNMENT OR ANY STATE. ALL INVOLVE INVESTMENT RISKS, INCLUDING POSSIBLE LOSS OF PRINCIPAL AMOUNT INVESTED. "THE ONE GROUP" FUNDS ARE NOT DEPOSITS OR OBLIGATIONS OF, AND ARE NOT GUARANTEED BY, BANC ONE CORPORATION OR ITS BANK OR NON-BANK AFFILIATES.

ALTHOUGH MARKET VALUES AND PRICES HAVE BEEN OBTAINED FROM SOURCES WE BELIEVE TO BE RELIABLE, WE DO NOT GUARANTEE THEIR ACCURACY. CERTAIN FIXED INCOME SECURITIES & ASSETS THAT ARE NOT PUBLICLY OR FREQUENTLY TRADED CANNOT BE READILY PRICED.

THIS STATEMENT IS NOT AN OFFICIAL DOCUMENT FOR INCOME TAX REPORTING PURPOSES.
****

ACCOUNT SUMMARY 04/01/98 TO 06/30/98

ACCOUNT NO. 6871061400 MASTER METALS INC EPA TRUST

MARKET VALUE ON 04/01/98	76,890.76
INVESTMENT ACTIVITY	
INCOME EARNED	977.13
REALIZED GAIN/(LOSS)	0.00
UNREALIZED GAIN/(LOSS)	0.00
TOTAL INVESTMENT ACTIVITY	977.13
MARKET VALUE ON 06/30/98	77,867.89
ACCRUED INCOME ON 06/30/98	0.00
TOTAL VALUE (WITH ACCRUED INCOME) ON 06/30/98	77,867.89

INVESTMENT PORTFOLIO SUMMARY REPORT 06/30/98

	ACQUISITION COST	MARKET VALUE	PERCENT OF MARKET VALUE	ESTIMATED ANNUAL INCOME	ACCRUED INCOME
CASH & EQUIVALENTS					
CASH EQUIVALENTS	77,867.89	77,867.89	100.0%	3,900.07	0.00
TOTAL ASSETS AND CASH	77,867.89	77,867.89	100.0%	3,900.07	0.00
ACCRUED INCOME		0.00			
TOTAL VALUE (WITH ACCRUED INCOME)		77,867.89			

INVESTMENT PORTFOLIO DETAIL REPORT 06/30/98

DESCRIPTION	SHARES/ FACE VALUE	ACQUISITION COST	MARKET PRICE	MARKET VALUE	ESTIMATED ANNUAL INCOME	ACCRUED INCOME	YIELD ON MARKET
CASH EQUIVALENTS							
BANK ONE TRUST MONEY MARKET DEPOSIT ACCOUNT CUSIP: 998100028	77,867.89	77,867.89	1.000	77,867.89	3,900.07	0.00	5.01
CASH		0.00		0.00			
TOTAL ASSETS AND CASH		77,867.89		77,867.89	3,900.07	0.00	5.01
ACCRUED INCOME				0.00			
TOTAL VALUE (WITH ACCRUED INCOME)				77,867.89			

BANK ONE

STATEMENT OF ACCOUNT 04/01/98 TO 06/30/98

DATE	DESCRIPTION	AMOUNT	INVESTMENTS
03/31/98	ENDING BALANCE PRIOR PERIOD	0.00	76,890.76
04/01/98	INCOME EARNED ON BANK ONE TRUST MONEY MARKET DEPOSIT ACCOUNT INTEREST FROM 3/1/98 TO 3/31/98 CUSIP: 998100028	328.72	
05/01/98	INCOME EARNED ON BANK ONE TRUST MONEY MARKET DEPOSIT ACCOUNT INTEREST FROM 4/1/98 TO 4/30/98 CUSIP: 998100028	319.54	
06/01/98	INCOME EARNED ON BANK ONE TRUST MONEY MARKET DEPOSIT ACCOUNT INTEREST FROM 5/1/98 TO 5/31/98 CUSIP: 998100028	328.87	
	MONEY MARKET TRANSACTIONS (SUMMARY)		
	TOTAL PURCHASES OF MONEY MARKET FUND FOR PERIOD 04/01/98 THRU 06/30/98 BANK ONE TRUST MONEY MARKET DEPOSIT ACCOUNT	977.13-	977.13
06/30/98	ENDING BALANCE THIS PERIOD	0.00	$77,867.89

OHD 097 615 871

BANK ONE ST COMPANY, NA
COLUMBUS TRUST
100 EAST BROAD STREET
COLUMBUS, OH 43271-0192

STATEMENT OF ACCOUNT
FOR THE PERIOD 01/01/98 TO 03/31/98

MASTER METAL INC EPA GRANTOR TRUST
DATED AUGUST 17, 1990

ACCOUNT NO. 6871061400

FOR ASSISTANCE, PLEASE CONTACT
JEFFREY REDMOND
(614) 248-2286

BR CHIEF-US EPA REGION 5 - RCRA
ENFORCEMENT BR, HRE-8J
77 W. JACKSON BLVD.
CHICAGO, IL 60604

BANK ONE

STATEMENT MESSAGES

ACCOUNT NO. 6871061400 MASTER METALS INC EPA TRUST

MUTUAL FUNDS, INCLUDING PROPRIETARY MUTUAL FUNDS, AND VARIOUS OTHER MARKETABLE SECURITIES ARE NOT INSURED OR GUARANTEED BY THE FEDERAL DEPOSIT INSURANCE CORPORATION (FDIC) OR ANY OTHER GOVERNMENT SPONSORED AGENCY OF THE FEDERAL GOVERNMENT OR ANY STATE. ALL INVOLVE INVESTMENT RISKS, INCLUDING POSSIBLE LOSS OF PRINCIPAL AMOUNT INVESTED. "THE ONE GROUP" FUNDS ARE NOT DEPOSITS OR OBLIGATIONS OF, AND ARE NOT GUARANTEED BY, BANC ONE CORPORATION OR ITS BANK OR NON-BANK AFFILIATES.

****

ALTHOUGH MARKET VALUES AND PRICES HAVE BEEN OBTAINED FROM SOURCES WE BELIEVE TO BE RELIABLE, WE DO NOT GUARANTEE THEIR ACCURACY. CERTAIN FIXED INCOME SECURITIES AND ASSETS THAT ARE NOT PUBLICLY OR FREQUENTLY TRADED CANNOT BE READILY PRICED.

****

THIS STATEMENT IS NOT AN OFFICIAL DOCUMENT FOR INCOME TAX REPORTING PURPOSES.

****

ACCOUNT SUMMARY 01/01/98 TO 03/31/98

MARKET VALUE ON 01/01/98	75,933.86
INVESTMENT ACTIVITY	
INCOME EARNED	956.90
REALIZED GAIN/(LOSS)	0.00
UNREALIZED GAIN/(LOSS)	0.00
TOTAL INVESTMENT ACTIVITY	956.90
MARKET VALUE ON 03/31/98	76,890.76
ACCRUED INCOME ON 03/31/98	0.00
TOTAL VALUE (WITH ACCRUED INCOME) ON 03/31/98	76,890.76

BANK ONE

INVESTMENT PORTFOLIO SUMMARY REPORT 03/31/98

ACCOUNT NO. 6871061400 MASTER METALS INC EPA TRUST

	ACQUISITION COST	MARKET VALUE	PERCENT OF MARKET VALUE	ESTIMATED ANNUAL INCOME	ACCRUED INCOME
CASH & EQUIVALENTS					
CASH EQUIVALENTS	76,890.76	76,890.76	100.0%	3,855.52	0.00
TOTAL ASSETS AND CASH	76,890.76	76,890.76	100.0%	3,855.52	0.00
ACCRUED INCOME		0.00			
TOTAL VALUE (WITH ACCRUED INCOME)		76,890.76			

INVESTMENT PORTFOLIO DETAIL REPORT 03/31/98

DESCRIPTION	SHARES/ FACE VALUE	ACQUISITION COST	MARKET PRICE	MARKET VALUE	ESTIMATED ANNUAL INCOME	ACCRUED INCOME	YIELD ON MARKET
CASH EQUIVALENTS							
BANK ONE TRUST MONEY MARKET DEPOSIT ACCOUNT CUSIP: 998100028	76,890.76	76,890.76	1.000	76,890.76	3,855.52	0.00	5.01
CASH		0.00		0.00			
TOTAL ASSETS AND CASH		76,890.76		76,890.76	3,855.52	0.00	5.01
ACCRUED INCOME				0.00			
TOTAL VALUE (WITH ACCRUED INCOME)				76,890.76			

BANK ONE

STATEMENT OF ACCOUNT 01/01/98 TO 03/31/98

DATE	DESCRIPTION	AMOUNT	INVESTMENTS
12/31/97	ENDING BALANCE PRIOR PERIOD	0.00	75,933.86
01/02/98	INCOME EARNED ON BANK ONE TRUST MONEY MARKET DEPOSIT ACCOUNT INTEREST FROM 12/1/97 TO 12/31/97 CUSIP: 998100028	329.06	
02/02/98	INCOME EARNED ON BANK ONE TRUST MONEY MARKET DEPOSIT ACCOUNT INTEREST FROM 1/1/98 TO 1/31/98 CUSIP: 998100028	331.04	
03/02/98	INCOME EARNED ON BANK ONE TRUST MONEY MARKET DEPOSIT ACCOUNT INTEREST FROM 2/1/98 TO 2/28/98 CUSIP: 998100028	296.80	
	MONEY MARKET TRANSACTIONS (SUMMARY)		
	TOTAL PURCHASES OF MONEY MARKET FUND FOR PERIOD 01/01/98 THRU 03/31/98 BANK ONE TRUST MONEY MARKET DEPOSIT ACCOUNT	956.90-	956.90
03/31/98	ENDING BALANCE THIS PERIOD	0.00	$76,890.76

BANK ONE TRUST COMPANY, NA
COLUMBUS TRUST
100 EAST BROAD STREET
COLUMBUS, OH 43271-0192

STATEMENT OF ACCOUNT
FOR THE PERIOD 10/01/97 TO 12/31/97

MASTER METAL INC EPA GRANTOR TRUST
DATED AUGUST 17, 1990

ACCOUNT NO. 6871061400

FOR ASSISTANCE, PLEASE CONTACT
MICHAEL DOCKMAN
(614) 248-5829

BR CHIEF-US EPA REGION 5 - RCRA
ENFORCEMENT BR, HRE-8J
77 W. JACKSON BLVD.
CHICAGO, IL 60604

BANK ONE

STATEMENT MESSAGES

ACCOUNT NO. 6871061400 MASTER METALS INC EPA TRUST

MUTUAL FUNDS, INCLUDING PROPRIETARY MUTUAL FUNDS, AND VARIOUS OTHER MARKETABLE SECURITIES ARE NOT INSURED OR GUARANTEED BY THE FEDERAL DEPOSIT INSURANCE CORPORATION (FDIC) OR ANY OTHER GOVERNMENT SPONSORED AGENCY OF THE FEDERAL GOVERNMENT OR ANY STATE. ALL INVOLVE INVESTMENT RISKS, INCLUDING POSSIBLE LOSS OF PRINCIPAL AMOUNT INVESTED. "THE ONE GROUP" FUNDS ARE NOT DEPOSITS OR OBLIGATIONS OF, AND ARE NOT GUARANTEED BY, BANC ONE CORPORATION OR ITS BANK OR NON-BANK AFFILIATES.

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ALTHOUGH MARKET VALUES AND PRICES HAVE BEEN OBTAINED FROM SOURCES WE BELIEVE TO BE RELIABLE, WE DO NOT GUARANTEE THEIR ACCURACY. CERTAIN FIXED INCOME SECURITIES AND ASSETS THAT ARE NOT PUBLICLY OR FREQUENTLY TRADED CANNOT BE READILY PRICED.

****

THIS STATEMENT IS NOT AN OFFICIAL DOCUMENT FOR INCOME TAX REPORTING PURPOSES.

****

"THE ONE GROUP GULF SOUTH GROWTH FUND" WAS RENAMED "THE ONE GROUP SMALL CAPITALIZATION FUND" AS OF NOVEMBER 1, 1997. IN ADDITION TO THE NAME CHANGE, THE FUND OBJECTIVES HAVE ALSO CHANGED. TO OBTAIN A COPY OF THE PROSPECTUS, PLEASE CONTACT THE ONE GROUP HELP DESK AT 1-800-480-4111. IF YOU HAVE ANY QUESTIONS ABOUT THESE CHANGES, PLEASE CONTACT YOUR RELATIONSHIP MANAGER.

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ACCOUNT SUMMARY 10/01/97 TO 12/31/97

MARKET VALUE ON 10/01/97	74,991.47
INVESTMENT ACTIVITY	
INCOME EARNED	942.39
REALIZED GAIN/(LOSS)	0.00
UNREALIZED GAIN/(LOSS)	0.00
TOTAL INVESTMENT ACTIVITY	942.39
MARKET VALUE ON 12/31/97	75,933.86
ACCRUED INCOME ON 12/31/97	0.00
TOTAL VALUE (WITH ACCRUED INCOME) ON 12/31/97	75,933.86

INVESTMENT PORTFOLIO SUMMARY REPORT 12/31/97

	ACQUISITION COST	MARKET VALUE	PERCENT OF MARKET VALUE	ESTIMATED ANNUAL INCOME	ACCRUED INCOME
CASH & EQUIVALENTS					
CASH EQUIVALENTS	75,933.86	75,933.86	100.0%	3,900.83	0.00
TOTAL ASSETS AND CASH	75,933.86	75,933.86	100.0%	3,900.83	0.00
ACCRUED INCOME		0.00			
TOTAL VALUE (WITH ACCRUED INCOME)		75,933.86			

INVESTMENT PORTFOLIO DETAIL REPORT 12/31/97

DESCRIPTION	SHARES/ FACE VALUE	ACQUISITION COST	MARKET PRICE	MARKET VALUE	ESTIMATED ANNUAL INCOME	ACCRUED INCOME	YIELD ON MARKET
CASH EQUIVALENTS							
BANK ONE TRUST MONEY MARKET DEPOSIT ACCOUNT CUSIP: 998100028	75,933.86	75,933.86	1.000	75,933.86	3,900.83	0.00	5.14
CASH		0.00		0.00			
TOTAL ASSETS AND CASH		75,933.86		75,933.86	3,900.83	0.00	5.14
ACCRUED INCOME				0.00			
TOTAL VALUE (WITH ACCRUED INCOME)				75,933.86			

BANK ONE

STATEMENT OF ACCOUNT 10/01/97 TO 12/31/97

DATE	DESCRIPTION	AMOUNT	INVESTMENTS
09/30/97	ENDING BALANCE PRIOR PERIOD	0.00	74,991.47
10/01/97	INCOME EARNED ON BANK ONE TRUST MONEY MARKET DEPOSIT ACCOUNT INTEREST FROM 9/1/97 TO 9/30/97 CUSIP: 998100028	309.41	
11/03/97	INCOME EARNED ON BANK ONE TRUST MONEY MARKET DEPOSIT ACCOUNT INTEREST FROM 10/1/97 TO 10/31/97 CUSIP: 998100028	320.04	
12/01/97	INCOME EARNED ON BANK ONE TRUST MONEY MARKET DEPOSIT ACCOUNT INTEREST FROM 11/1/97 TO 11/30/97 CUSIP: 998100028	312.94	
	MONEY MARKET TRANSACTIONS (SUMMARY)		
	TOTAL PURCHASES OF MONEY MARKET FUND FOR PERIOD 10/01/97 THRU 12/31/97 BANK ONE TRUST MONEY MARKET DEPOSIT ACCOUNT	942.39-	942.39
12/31/97	ENDING BALANCE THIS PERIOD	0.00	$75,933.86

BANK ONE TRUST COMPANY, NA
COLUMBUS TRUST
100 EAST BROAD STREET
COLUMBUS, OH 43271-0192

STATEMENT OF ACCOUNT
FOR THE PERIOD 07/01/97 TO 09/30/97

RECEIVED
OCT 15 1997
Enforcement & Compliance Assurance Branch
Waste, Pesticides & Toxics Division
U.S. EPA – REGION 5

MASTER METAL INC EPA GRANTOR TRUST
DATED AUGUST 17, 1990

ACCOUNT NO. 6871061400

FOR ASSISTANCE, PLEASE CONTACT
MICHAEL DOCKMAN
(614) 248-5829

BR CHIEF-US 5PA REGION 5 - RCRA
ENFORCEMENT BR, HRE-8J
77 W. JACKSON BLVD.
CHICAGO, IL 60604

BANK ONE

STATEMENT MESSAGES

ACCOUNT NO. 6871061400 MASTER METALS INC EPA TRUST

MUTUAL FUNDS, INCLUDING PROPRIETARY MUTUAL FUNDS, AND VARIOUS OTHER MARKETABLE SECURITIES ARE NOT INSURED OR GUARANTEED BY THE FEDERAL DEPOSIT INSURANCE CORPORATION (FDIC) OR ANY OTHER GOVERNMENT SPONSORED AGENCY OF THE FEDERAL GOVERNMENT OR ANY STATE. ALL INVOLVE INVESTMENT RISKS, INCLUDING POSSIBLE LOSS OF PRINCIPAL AMOUNT INVESTED. "THE ONE GROUP" FUNDS ARE NOT DEPOSITS OR OBLIGATIONS OF, AND ARE NOT GUARANTEED BY, BANC ONE CORPORATION OR ITS BANK OR NON-BANK AFFILIATES.

****

ALTHOUGH MARKET VALUES AND PRICES HAVE BEEN OBTAINED FROM SOURCES WE BELIEVE TO BE RELIABLE, WE DO NOT GUARANTEE THEIR ACCURACY. CERTAIN FIXED INCOME SECURITIES AND ASSETS THAT ARE NOT PUBLICLY OR FREQUENTLY TRADED CANNOT BE READILY PRICED.

****

THIS STATEMENT IS NOT AN OFFICIAL DOCUMENT FOR INCOME TAX REPORTING PURPOSES.

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ACCOUNT SUMMARY 07/01/97 TO 09/30/97

ACCOUNT NO. 6871061400 MASTER METALS INC EPA TRUST

MARKET VALUE ON 07/01/97	74,050.64
INVESTMENT ACTIVITY	
INCOME EARNED	940.83
REALIZED GAIN/(LOSS)	0.00
UNREALIZED GAIN/(LOSS)	0.00
TOTAL INVESTMENT ACTIVITY	940.83
MARKET VALUE ON 09/30/97	74,991.47
ACCRUED INCOME ON 09/30/97	0.00
TOTAL VALUE (WITH ACCRUED INCOME) ON 09/30/97	74,991.47

RECEIVED
OCT 15 1997
Enforcement & Compliance Assurance Branch
Waste, Pesticides & Toxics Division
U.S. EPA – REGION 5

INVESTMENT PORTFOLIO SUMMARY REPORT 09/30/97

	ACQUISITION COST	MARKET VALUE	PERCENT OF MARKET VALUE	ESTIMATED ANNUAL INCOME	ACCRUED INCOME
CASH & EQUIVALENTS					
CASH EQUIVALENTS	74,991.47	74,991.47	100.0%	3,756.00	0.00
TOTAL ASSETS AND CASH	74,991.47	74,991.47	100.0%	3,756.00	0.00
ACCRUED INCOME		0.00			
TOTAL VALUE (WITH ACCRUED INCOME)		74,991.47			

INVESTMENT PORTFOLIO DETAIL REPORT 09/30/97

ACCOUNT NO. 6871061400 MASTER METALS INC EPA TRUST

DESCRIPTION	SHARES/ FACE VALUE	ACQUISITION COST	MARKET PRICE	MARKET VALUE	ESTIMATED ANNUAL INCOME	ACCRUED INCOME	YIELD ON MARKET
CASH EQUIVALENTS							
BANK ONE TRUST MONEY MARKET DEPOSIT ACCOUNT CUSIP: 998100028	74,991.47	74,991.47	1.000	74,991.47	3,756.00	0.00	5.01
CASH		0.00		0.00			
TOTAL ASSETS AND CASH		74,991.47		74,991.47	3,756.00	0.00	5.01
ACCRUED INCOME				0.00			
TOTAL VALUE (WITH ACCRUED INCOME)				74,991.47			

RECEIVED
OCT 15 1997
Enforcement & Compliance Assurance Branch
Waste, Pesticides & Toxics Division
U.S. EPA – REGION 5

STATEMENT OF ACCOUNT 07/01/97 TO 09/30/97

DATE	DESCRIPTION	AMOUNT	INVESTMENTS
06/30/97	ENDING BALANCE PRIOR PERIOD	0.00	74,050.64
07/01/97	INCOME EARNED ON BANK ONE TRUST MONEY MARKET DEPOSIT ACCOUNT INTEREST FROM 6/1/97 TO 6/30/97 CUSIP: 998100028	304.84	
08/01/97	INCOME EARNED ON BANK ONE TRUST MONEY MARKET DEPOSIT ACCOUNT INTEREST FROM 7/1/97 TO 7/31/97 CUSIP: 998100028	316.75	
09/02/97	INCOME EARNED ON BANK ONE TRUST MONEY MARKET DEPOSIT ACCOUNT INTEREST FROM 8/1/97 TO 8/31/97 CUSIP: 998100028	319.24	
	MONEY MARKET TRANSACTIONS (SUMMARY)		
	TOTAL PURCHASES OF MONEY MARKET FUND FOR PERIOD 07/01/97 THRU 09/30/97 BANK ONE TRUST MONEY MARKET DEPOSIT ACCOUNT	940.83-	940.83
09/30/97	ENDING BALANCE THIS PERIOD	0.00	$74,991.47

BANK ONE TRUST COMPANY, NA
COLUMBUS TRUST
100 EAST BROAD STREET
COLUMBUS, OH 43271-0192

STATEMENT OF ACCOUNT
FOR THE PERIOD 07/01/96 TO 09/30/96

RECEIVED
OCT 11 1996
DIVISION FRONT OFFICE
Waste, Pesticides & Toxics Division
U.S. EPA — REGION 5

MASTER METAL INC EPA GRANTOR TRUST
DATED AUGUST 17, 1990

ACCOUNT NO. 6871061400

CLIENT SERVICE OFFICER
MICHAEL DOCKMAN
614-248-5829

BR CHIEF-US 5PA REGION 5 - RCRA
ENFORCEMENT BR, HRE-8J
77 W. JACKSON BLVD.
CHICAGO, IL 60604

BANK ONE

STATEMENT MESSAGES

ACCOUNT NO. 6871061400 MASTER METALS INC EPA TRUST

MUTUAL FUNDS, INCLUDING PROPRIETARY MUTUAL FUNDS, AND VARIOUS OTHER MARKETABLE SECURITIES ARE NOT INSURED OR GUARANTEED BY THE FEDERAL DEPOSIT INSURANCE CORPORATION (FDIC) OR ANY OTHER GOVERNMENT SPONSORED AGENCY OF THE FEDERAL GOVERNMENT OR ANY STATE. ALL INVOLVE INVESTMENT RISKS, INCLUDING POSSIBLE LOSS OF PRINCIPAL AMOUNT INVESTED. "THE ONE GROUP" FUNDS ARE NOT DEPOSITS OR OBLIGATIONS OF, AND ARE NOT GUARANTEED BY, BANC ONE CORPORATION OR ITS BANK OR NON-BANK AFFILIATES.

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THE "ONE GROUP GOVERNMENT ARM FUND" WAS RENAMED "THE ONE GROUP ULTRA SHORT-TERM INCOME FUND"
AS OF AUGUST 28, 1996. IN ADDITION TO THE NAME CHANGE, THE FUND OBJECTIVES HAVE ALSO CHANGED.
TO OBTAIN A COPY OF THE PROSPECTUS, PLEASE CONTACT THE ONE GROUP HELP DESK AT 800-480-4111. OR,
IF YOU HAVE ANY QUESTIONS ABOUT THESE CHANGES, PLEASE CONTACT YOUR CLIENT SERVICE OFFICER.

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ACCOUNT SUMMARY 07/01/96 TO 09/30/96

MARKET VALUE ON 07/01/96	70,864.14
INVESTMENT ACTIVITY	
INCOME EARNED	883.76
REALIZED GAIN/(LOSS)	0.00
UNREALIZED GAIN/(LOSS)	0.00
TOTAL INVESTMENT ACTIVITY	883.76
MARKET VALUE ON 09/30/96	71,747.90
ACCRUED INCOME ON 09/30/96	0.00
TOTAL VALUE (WITH ACCRUED INCOME) ON 09/30/96	71,747.90

INVESTMENT PORTFOLIO SUMMARY REPORT 09/30/96

	ACQUISITION COST	MARKET VALUE	PERCENT OF MARKET VALUE	ESTIMATED ANNUAL INCOME	ACCRUED INCOME
CASH & EQUIVALENTS					
CASH EQUIVALENTS	71,747.90	71,747.90	100.0%	3,535.09	0.00
TOTAL ASSETS AND CASH	71,747.90	71,747.90	100.0%	3,535.09	0.00
ACCRUED INCOME		0.00			
TOTAL VALUE (WITH ACCRUED INCOME)		71,747.90			

INVESTMENT PORTFOLIO DETAIL REPORT 09/30/96

ACCOUNT NO. 6871061400 MASTER METALS INC EPA TRUST

DESCRIPTION	SHARES/ FACE VALUE	ACQUISITION COST	MARKET PRICE	MARKET VALUE	ESTIMATED ANNUAL INCOME	ACCRUED INCOME	YIELD ON MARKET
CASH EQUIVALENTS							
THE ONE GROUP US TREA SEC MNY MKT FD CUSIP: 681937108	71,747.9	71,747.90	1.000	71,747.90	3,535.09	0.00	4.93
CASH		0.00		0.00			
TOTAL ASSETS AND CASH		71,747.90		71,747.90	3,535.09	0.00	4.93
ACCRUED INCOME				0.00			
TOTAL VALUE (WITH ACCRUED INCOME)				71,747.90			

BANK ONE

STATEMENT OF ACCOUNT 07/01/96 TO 09/30/96

DATE	DESCRIPTION	AMOUNT	INVESTMENTS
06/30/96	ENDING BALANCE PRIOR PERIOD	0.00	70,864.14
07/01/96	INCOME EARNED ON THE ONE GROUP US TREA SEC MNY MKT FD INTEREST FROM 6/1/96 TO 6/30/96 CUSIP: 681937108	287.76	
08/01/96	INCOME EARNED ON THE ONE GROUP US TREA SEC MNY MKT FD INTEREST FROM 7/1/96 TO 7/31/96 CUSIP: 681937108	298.80	
09/03/96	INCOME EARNED ON THE ONE GROUP US TREA SEC MNY MKT FD INTEREST FROM 8/1/96 TO 8/31/96 CUSIP: 681937108	297.20	
	MONEY MARKET TRANSACTIONS (SUMMARY)		
	TOTAL PURCHASES OF MONEY MARKET FUND FOR PERIOD 07/01/96 THRU 09/30/96 THE ONE GROUP US TREA SEC MNY MKT FD	883.76-	883.76
09/30/96	ENDING BALANCE THIS PERIOD	0.00	$71,747.90

STATEMENT OF ACCOUNT 04/01/96 TO 06/30/96

DATE	DESCRIPTION	AMOUNT	INVESTMENTS
03/31/96	ENDING BALANCE PRIOR PERIOD	0.00	69,991.87
04/01/96	INCOME EARNED ON THE ONE GROUP US TREA SEC MNY MKT FD INTEREST FROM 3/1/96 TO 3/31/96 CUSIP: 681937108	293.85	
05/01/96	INCOME EARNED ON THE ONE GROUP US TREA SEC MNY MKT FD INTEREST FROM 4/1/96 TO 4/30/96 CUSIP: 681937108	284.38	
06/03/96	INCOME EARNED ON THE ONE GROUP US TREA SEC MNY MKT FD INTEREST FROM 5/1/96 TO 5/31/96 CUSIP: 681937108	294.04	
	MONEY MARKET TRANSACTIONS (SUMMARY)		
	TOTAL PURCHASES OF MONEY MARKET FUND FOR PERIOD 04/01/96 THRU 06/30/96 THE ONE GROUP US TREA SEC MNY MKT FD	872.27-	872.27
06/30/96	ENDING BALANCE THIS PERIOD	0.00	$70,864.14

INVESTMENT PORTFOLIO DETAIL REPORT 06/30/96

ACCOUNT NO. 6871061400 MASTER METALS INC EPA TRUST

DESCRIPTION	SHARES/ FACE VALUE	ACQUISITION COST	MARKET PRICE	MARKET VALUE	ESTIMATED ANNUAL INCOME	ACCRUED INCOME	YIELD ON MARKET
CASH EQUIVALENTS							
THE ONE GROUP US TREA SEC MNY MKT FD CUSIP: 681937108	70,864.14	70,864.14	1.000	70,864.14	3,458.73	0.00	4.88
CASH		0.00		0.00			
TOTAL ASSETS AND CASH		70,864.14		70,864.14	3,458.73	0.00	4.88
ACCRUED INCOME				0.00			
TOTAL VALUE (WITH ACCRUED INCOME)				70,864.14			

BANK ONE

INVESTMENT PORTFOLIO SUMMARY REPORT 06/30/96

ACCOUNT NO. 6871061400 MASTER METALS INC EPA TRUST

	ACQUISITION COST	MARKET VALUE	PERCENT OF MARKET VALUE	ESTIMATED ANNUAL INCOME	ACCRUED INCOME
CASH & EQUIVALENTS					
CASH EQUIVALENTS	70,864.14	70,864.14	100.0%	3,458.73	0.00
TOTAL ASSETS AND CASH	70,864.14	70,864.14	100.0%	3,458.73	0.00
ACCRUED INCOME		0.00			
TOTAL VALUE (WITH ACCRUED INCOME)		70,864.14			

ACCOUNT SUMMARY 04/01/96 TO 06/30/96

MARKET VALUE ON 04/01/96	69,991.87
INVESTMENT ACTIVITY	
INCOME EARNED	872.27
REALIZED GAIN/(LOSS)	0.00
UNREALIZED GAIN/(LOSS)	0.00
TOTAL INVESTMENT ACTIVITY	872.27
MARKET VALUE ON 06/30/96	70,864.14
ACCRUED INCOME ON 06/30/96	0.00
TOTAL VALUE (WITH ACCRUED INCOME) ON 06/30/96	70,864.14

BANK ONE.

STATEMENT MESSAGES

ACCOUNT NO. 6871061400 MASTER METALS INC EPA TRUST

COMMON AND COLLECTIVE TRUST FUND ANNUAL AUDIT REPORTS FOR THE YEAR ENDED DECEMBER 31, 1995 ARE NOW AVAILABLE.
PLEASE CONTACT YOUR CLIENT SERVICE OFFICER FOR INFORMATION.

****

MUTUAL FUNDS, INCLUDING PROPRIETARY MUTUAL FUNDS, AND VARIOUS OTHER MARKETABLE SECURITIES ARE NOT INSURED OR GUARANTEED BY THE FEDERAL DEPOSIT INSURANCE CORPORATION (FDIC) OR ANY OTHER GOVERNMENT SPONSORED AGENCY OF THE FEDERAL GOVERNMENT OR ANY STATE. ALL INVOLVE INVESTMENT RISKS, INCLUDING POSSIBLE LOSS OF PRINCIPAL AMOUNT INVESTED. "THE ONE GROUP" FUNDS ARE NOT DEPOSITS OR OBLIGATIONS OF, AND ARE NOT GUARANTEED BY, BANC ONE CORPORATION OR ITS BANK OR NON-BANK AFFILIATES.

****

ALTHOUGH MARKET VALUES AND PRICES HAVE BEEN OBTAINED FROM SOURCES WE BELIEVE TO BE RELIABLE, WE DO NOT GUARANTEE THEIR ACCURACY. CERTAIN FIXED INCOME SECURITIES, AS WELL AS CERTAIN INFREQUENTLY TRADED ASSETS, CANNOT BE READILY PRICED.

****

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THE ONE GROUP FAMILY OF MUTUAL FUNDS CHANGED THE NAMES OF THE ONE GROUP SMALL COMPANY GROWTH FUND TO
THE ONE GROUP GROWTH OPPORTUNITIES FUND, AND THE ONE GROUP TAX FREE BOND FUND TO THE ONE GROUP MUNICIPAL INCOME FUND.
QUESTIONS REGARDING THESE NAME CHANGES SHOULD BE DIRECTED TO YOUR CLIENT SERVICE OFFICER.

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BANK ONE TRUST COMPANY, NA
COLUMBUS TRUST
100 EAST BROAD STREET
COLUMBUS, OH 43271-0192

STATEMENT OF ACCOUNT
FOR THE PERIOD 04/01/96 TO 06/30/96

MASTER METAL INC EPA GRANTOR TRUST
DATED AUGUST 17, 1990

ACCOUNT NO. 6871061400

ACCOUNT ADMINISTRATOR
MICHAEL DOCKMAN
614-248-5829

BR CHIEF-US 5PA REGION 5 - RCRA
ENFORCEMENT BR, HRE-8J
77 W. JACKSON BLVD.
CHICAGO, IL 60604

BANK ONE

BANK ONE TRUST COMPANY, NA
COLUMBUS TRUST
100 EAST BROAD STREET
COLUMBUS, OH 43271-0192

STATEMENT OF ACCOUNT
FOR THE PERIOD 10/01/95 TO 12/31/95

MASTER METAL INC EPA GRANTOR TRUST
DATED AUGUST 17, 1990

ACCOUNT NO. 6871061400

ACCOUNT ADMINISTRATOR
MICHAEL DOCKMAN
614-248-5829

BR CHIEF-US 5PA REGION 5 - RCRA
ENFORCEMENT BR, HRE-8J
77 W. JACKSON BLVD.
CHICAGO, IL 60604

BANK ONE

STATEMENT MESSAGES

ACCOUNT NO. 6871061400 MASTER METALS INC EPA TRUST

MUTUAL FUNDS, INCLUDING PROPRIETARY MUTUAL FUNDS, AND OTHER MARKETABLE SECURITIES ARE NOT INSURED OR GUARANTEED BY THE FEDERAL DEPOSIT INSURANCE CORPORATION (FDIC) OR ANY OTHER GOVERNMENT SPONSORED AGENCY OF THE FEDERAL GOVERNMENT OR ANY STATE. ALL INVOLVE INVESTMENT RISKS, INCLUDING POSSIBLE LOSS OF PRINCIPAL AMOUNT INVESTED. "THE ONE GROUP" FUNDS ARE NOT DEPOSITS OR OBLIGATIONS OF, AND ARE NOT GUARANTEED BY, BANC ONE CORPORATION OR ITS BANK OR NON-BANK AFFILIATES.

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ALTHOUGH MARKET VALUES AND PRICES HAVE BEEN OBTAINED FROM SOURCES WE BELIEVE TO BE RELIABLE, WE DO NOT GUARANTEE THEIR ACCURACY. CERTAIN FIXED INCOME SECURITIES, AS WELL AS CERTAIN INFREQUENTLY TRADED ASSETS, CANNOT BE READILY PRICED.

****

NEW PROSPECTUSES AND THE 1995 ANNUAL REPORTS FOR THE ONE GROUP ARE NOW AVAILABLE. PLEASE CONTACT YOUR ACCOUNT ADMINISTRATOR TO REQUEST COPIES.

****

ACCOUNT SUMMARY 10/01/95 TO 12/31/95

ACCOUNT NO. 6871061400 MASTER METALS INC EPA TRUST

MARKET VALUE ON 10/01/95	68,169.16
INVESTMENT ACTIVITY	
INCOME EARNED	927.08
REALIZED GAIN/(LOSS)	0.00
UNREALIZED GAIN/(LOSS)	0.00
TOTAL INVESTMENT ACTIVITY	927.08
MARKET VALUE ON 12/31/95	69,096.24
ACCRUED INCOME ON 12/31/95	0.00
TOTAL VALUE (WITH ACCRUED INCOME) ON 12/31/95	69,096.24

BANK ONE.

INVESTMENT PORTFOLIO SUMMARY REPORT 12/31/95

	ACQUISITION COST	MARKET VALUE	PERCENT OF MARKET VALUE	ESTIMATED ANNUAL INCOME	ACCRUED INCOME
CASH & EQUIVALENTS					
CASH EQUIVALENTS	69,096.24	69,096.24	100.0%	3,653.14	0.00
TOTAL ASSETS AND CASH	69,096.24	69,096.24	100.0%	3,653.14	0.00
ACCRUED INCOME		0.00			
TOTAL VALUE (WITH ACCRUED INCOME)		69,096.24			

INVESTMENT PORTFOLIO DETAIL REPORT 12/31/95

ACCOUNT NO. 6871061400 MASTER METALS INC EPA TRUST

DESCRIPTION	SHARES/ FACE VALUE	ACQUISITION COST	MARKET PRICE	MARKET VALUE	ESTIMATED ANNUAL INCOME	ACCRUED INCOME	YIELD ON MARKET
CASH EQUIVALENTS							
THE ONE GROUP US TREA SEC MNY MKT FD CUSIP: 681937108	69,096.24	69,096.24	1.000	69,096.24	3,653.14	0.00	5.29
CASH		0.00		0.00			
TOTAL ASSETS AND CASH		69,096.24		69,096.24	3,653.14	0.00	5.29
ACCRUED INCOME				0.00			
TOTAL VALUE (WITH ACCRUED INCOME)				69,096.24			

BANK ONE

STATEMENT OF ACCOUNT 10/01/95 TO 12/31/95

DATE	DESCRIPTION	AMOUNT	INVESTMENTS
09/30/95	ENDING BALANCE PRIOR PERIOD	0.00	68,169.16
10/02/95	INCOME EARNED ON THE ONE GROUP US TREA SEC MNY MKT FD INTEREST FROM 9/1/95 TO 9/30/95 CUSIP: 681937108	304.54	
11/01/95	INCOME EARNED ON THE ONE GROUP US TREA SEC MNY MKT FD INTEREST FROM 10/1/95 TO 10/31/95 CUSIP: 681937108	314.47	
12/01/95	INCOME EARNED ON THE ONE GROUP US TREA SEC MNY MKT FD INTEREST FROM 11/1/95 TO 11/30/95 CUSIP: 681937108	308.07	
	MONEY MARKET TRANSACTIONS (SUMMARY)		
	TOTAL PURCHASES OF MONEY MARKET FUND FOR PERIOD 10/01/95 THRU 12/31/95 THE ONE GROUP US TREA SEC MNY MKT FD	927.08-	927.08
12/31/95	ENDING BALANCE THIS PERIOD	0.00	$69,096.24

BANK ONE TRUST COMPANY, NA
COLUMBUS TRUST
100 EAST BROAD STREET
COLUMBUS, OH 43271-0192

STATEMENT OF ACCOUNT
FOR THE PERIOD 01/01/96 TO 03/31/96

MASTER METAL INC EPA GRANTOR TRUST
DATED AUGUST 17, 1990

ACCOUNT NO. 6871061400

ACCOUNT ADMINISTRATOR
MICHAEL DOCKMAN
614-248-5829

BR CHIEF-US 5PA REGION 5 - RCRA
ENFORCEMENT BR, HRE-8J
77 W. JACKSON BLVD.
CHICAGO, IL 60604

BANK ONE

STATEMENT MESSAGES

ACCOUNT NO. 6871061400 MASTER METALS INC EPA TRUST

COMMON AND COLLECTIVE TRUST FUND ANNUAL AUDIT REPORTS FOR THE YEAR ENDED DECEMBER 31, 1995 ARE NOW AVAILABLE.
PLEASE CONTACT YOUR CLIENT SERVICE OFFICER FOR INFORMATION.

****

MUTUAL FUNDS, INCLUDING PROPRIETARY MUTUAL FUNDS, AND OTHER MARKETABLE SECURITIES ARE NOT INSURED OR GUARANTEED BY THE FEDERAL DEPOSIT INSURANCE CORPORATION (FDIC) OR ANY OTHER GOVERNMENT SPONSORED AGENCY OF THE FEDERAL GOVERNMENT OR ANY STATE. ALL INVOLVE INVESTMENT RISKS, INCLUDING POSSIBLE LOSS OF PRINCIPAL AMOUNT INVESTED. "THE ONE GROUP" FUNDS ARE NOT DEPOSITS OR OBLIGATIONS OF, AND ARE NOT GUARANTEED BY, BANC ONE CORPORATION OR ITS BANK OR NON-BANK AFFILIATES.

****

ALTHOUGH MARKET VALUES AND PRICES HAVE BEEN OBTAINED FROM SOURCES WE BELIEVE TO BE RELIABLE, WE DO NOT GUARANTEE THEIR ACCURACY. CERTAIN FIXED INCOME SECURITIES, AS WELL AS CERTAIN INFREQUENTLY TRADED ASSETS, CANNOT BE READILY PRICED.

****

THIS STATEMENT IS NOT AN OFFICIAL DOCUMENT FOR INCOME TAX REPORTING PURPOSES.

****

THE ONE GROUP FAMILY OF MUTUAL FUNDS CHANGED THE NAMES OF THE ONE GROUP SMALL COMPANY GROWTH FUND TO
THE ONE GROUP GROWTH OPPORTUNITIES FUND, AND THE ONE GROUP TAX FREE BOND FUND TO THE ONE GROUP MUNICIPAL INCOME FUND.
QUESTIONS REGARDING THESE NAME CHANGES SHOULD BE DIRECTED TO YOUR CLIENT SERVICE OFFICER.

****

ACCOUNT SUMMARY 01/01/96 TO 03/31/96

ACCOUNT NO. 6871061400 MASTER METALS INC EPA TRUST

MARKET VALUE ON 01/01/96	69,096.24
INVESTMENT ACTIVITY	
INCOME EARNED	895.63
REALIZED GAIN/(LOSS)	0.00
UNREALIZED GAIN/(LOSS)	0.00
TOTAL INVESTMENT ACTIVITY	895.63
MARKET VALUE ON 03/31/96	69,991.87
ACCRUED INCOME ON 03/31/96	0.00
TOTAL VALUE (WITH ACCRUED INCOME) ON 03/31/96	69,991.87

BANK ONE

INVESTMENT PORTFOLIO SUMMARY REPORT 03/31/96

	ACQUISITION COST	MARKET VALUE	PERCENT OF MARKET VALUE	ESTIMATED ANNUAL INCOME	ACCRUED INCOME
CASH & EQUIVALENTS					
CASH EQUIVALENTS	69,991.87	69,991.87	100.0%	3,450.75	0.00
TOTAL ASSETS AND CASH	69,991.87	69,991.87	100.0%	3,450.75	0.00
ACCRUED INCOME		0.00			
TOTAL VALUE (WITH ACCRUED INCOME)		69,991.87			

INVESTMENT PORTFOLIO DETAIL REPORT 03/31/96

ACCOUNT NO. 6871061400 MASTER METALS INC EPA TRUST

DESCRIPTION	SHARES/ FACE VALUE	ACQUISITION COST	MARKET PRICE	MARKET VALUE	ESTIMATED ANNUAL INCOME	ACCRUED INCOME	YIELD ON MARKET
CASH EQUIVALENTS							
THE ONE GROUP US TREA SEC MNY MKT FD CUSIP: 681937108	69,991.87	69,991.87	1.000	69,991.87	3,450.75	0.00	4.93
CASH		0.00		0.00			
TOTAL ASSETS AND CASH		69,991.87		69,991.87	3,450.75	0.00	4.93
ACCRUED INCOME				0.00			
TOTAL VALUE (WITH ACCRUED INCOME)				69,991.87			

BANK ONE

DATE	DESCRIPTION	AMOUNT	INVESTMENTS
12/31/95	ENDING BALANCE PRIOR PERIOD	0.00	69,096.24
01/02/96	INCOME EARNED ON THE ONE GROUP US TREA SEC MNY MKT FD INTEREST FROM 12/1/95 TO 12/31/95 CUSIP: 681937108	316.01	
02/01/96	INCOME EARNED ON THE ONE GROUP US TREA SEC MNY MKT FD INTEREST FROM 1/1/96 TO 1/31/96 CUSIP: 681937108	307.89	
03/01/96	INCOME EARNED ON THE ONE GROUP US TREA SEC MNY MKT FD INTEREST FROM 2/1/96 TO 2/29/96 CUSIP: 681937108	271.73	
	MONEY MARKET TRANSACTIONS (SUMMARY)		
	TOTAL PURCHASES OF MONEY MARKET FUND FOR PERIOD 01/01/96 THRU 03/31/96 THE ONE GROUP US TREA SEC MNY MKT FD	895.63-	895.63
03/31/96	ENDING BALANCE THIS PERIOD	0.00	$69,991.87

BANK ONE OHIO TRUST COMPANY, NA
CANTON TRUST OFFICE
101 CENTRAL PLAZA SOUTH, P.O. BOX 20820
CANTON, OH 44711-0820

STATEMENT OF ACCOUNT
FOR THE PERIOD 10/01/91 TO 12/31/91

RECEIVED
JAN 16 1992
OFFICE OF RCRA
Waste Management Division
U.S. EPA, REGION V

MASTER METAL INC EPA GRANTOR TRUST
DATED AUGUST 17, 1990

ACCOUNT NO. 6871061400

ACCOUNT ADMINISTRATOR
GEORGE BRIERCHECK
216-438-8390

BR CHIEF-US 5PA REGION 5 - RCRA
ENFORCEMENT BR, 5 HR-12
230 S DEARBORN ST
CHICAGO, IL 60604

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BANK ONE

ACCOUNT SUMMARY 10/01/91 TO 12/31/91

ACCOUNT NO. 6871061400 MASTER METALS INC EPA TRUST

MARKET VALUE ON 10/01/91		14,229.30
RECEIPTS		
OTHER CASH RECEIPTS	15,044.10	
TOTAL RECEIPTS		15,044.10
DISBURSEMENTS		
EXPENSES	19.78-	
TOTAL DISBURSEMENTS		19.78-
INVESTMENT ACTIVITY		
INCOME EARNED	228.20	
REALIZED GAIN/(LOSS)	0.00	
UNREALIZED GAIN/(LOSS)	0.00	
TOTAL INVESTMENT ACTIVITY		228.20
MARKET VALUE ON 12/31/91		29,481.82
ACCRUED INCOME ON 12/31/91		0.00
TOTAL VALUE (WITH ACCRUED INCOME) ON 12/31/91		29,481.82

INVESTMENT PORTFOLIO SUMMARY REPORT 12/31/91

	ACQUISITION COST	MARKET VALUE	PERCENT OF MARKET VALUE	ESTIMATED ANNUAL INCOME	ACCRUED INCOME
CASH & EQUIVALENTS					
CASH EQUIVALENTS	29,481.82	29,481.82	100.0%	1,343.49	0.00
TOTAL ASSETS AND CASH	29,481.82	29,481.82	100.0%	1,343.49	0.00
ACCRUED INCOME		0.00			
TOTAL VALUE (WITH ACCRUED INCOME)		29,481.82			

INVESTMENT PORTFOLIO DETAIL REPORT 12/31/91

ACCOUNT NO. 6871061400 MASTER METALS INC EPA TRUST

DESCRIPTION	SHARES/ FACE VALUE	ACQUISITION COST	MARKET PRICE	MARKET VALUE	PERCENT OF MARKET VALUE	ACCRUED INCOME
CASH EQUIVALENTS						
HELMSMAN U.S. TREASURY OBLIGATIONS	29,214.1	29,214.10	1.000	29,214.10	99.09	0.00
HELMSMAN U.S. TREASURY OBLIGATIONS	267.72	267.72	1.000	267.72	0.91	0.00
TOTAL CASH EQUIVALENTS		29,481.82		29,481.82	100.00	0.00
CASH		0.00		0.00	0.00	
TOTAL ASSETS AND CASH		29,481.82		29,481.82	100.00	0.00
ACCRUED INCOME				0.00		
TOTAL VALUE (WITH ACCRUED INCOME)				29,481.82		

STATEMENT OF ACCOUNT 10/01/91 TO 12/31/91

DATE	DESCRIPTION	AMOUNT	INVESTMENTS
09/30/91	ENDING BALANCE PRIOR PERIOD	0.00	14,229.30
10/01/91	CASH RECEIPT OF INTEREST EARNED ON PNC GOVT MONEY MARKET FD INTEREST FROM 9/1/91 TO 9/30/91	53.46	
10/01/91	AUTOMATED CASH MANAGEMENT FEE COLLECTED CASH MGT CHG: PNC GOVT MONEY MARKET FD TOTAL CHARGES: $3.01 COLLECTED BY DIRECT CHARGE	3.01-	
10/10/91	CASH RECEIPT ADDITION TO ACCOUNT FOR TRUST FUND FOR EPA CLOSURE	5,014.70	
11/01/91	CASH RECEIPT OF INTEREST EARNED ON HELMSMAN U.S. TREASURY OBLIG (D) INCLUDES REBATE FOR 12(B)-1 AND ADVISORY FEES	79.65	
11/01/91	AUTOMATED CASH MANAGEMENT FEE COLLECTED CASH MGT CHG: HELMSMAN U.S. TREASURY OBLIG (D) TOTAL CHARGES: $7.51 COLLECTED BY DIRECT CHARGE	7.51-	
11/08/91	CASH RECEIPT ADDITION TO ACCOUNT FOR TRUST FUND U.S. EPA CLOSURE	5,014.70	
11/14/91	CASH RECEIPT OF INTEREST EARNED ON PNC GOVT MONEY MARKET FD REBATE OF SEPTEMBER FEES FROM PNC	1.84	
12/02/91	CASH RECEIPT OF INTEREST EARNED ON HELMSMAN U.S. TREASURY OBLIG (D) INCLUDES REBATE FOR 12(B)-1 AND ADVISORY FEES	93.25	

STATEMENT OF ACCOUNT 10/01/91 TO 12/31/91

DATE	DESCRIPTION	AMOUNT	INVESTMENTS
12/02/91	AUTOMATED CASH MANAGEMENT FEE COLLECTED CASH MGT CHG: HELMSMAN U.S. TREASURY OBLIG (D) TOTAL CHARGES: $9.26 COLLECTED BY DIRECT CHARGE	9.26-	
12/13/91	CASH RECEIPT ADDITION TO ACCOUNT FOR TRUST FUND EPA CLOSURE	5,014.70	
	MONEY MARKET TRANSACTIONS [SUMMARY]		
	TOTAL PURCHASES OF MONEY MARKET FUND FOR PERIOD 10/01/91 THRU 12/31/91 HELMSMAN U. S. TREASURY OBLIGATION (D)	29,481.82-	29,481.82
	TOTAL PURCHASES OF MONEY MARKET FUND FOR PERIOD 10/01/91 THRU 12/31/91 HELMSMAN U.S. TREASURY OBLIGATIONS	29,481.82-	29,481.82
	TOTAL SALES OF MONEY MARKET FUND FOR PERIOD 10/01/91 TO 12/31/91 PNC GOVERNMENT MONEY MARKET PORTFOLIO	14,229.30	14,229.30-
	TOTAL SALES OF MONEY MARKET FUND FOR PERIOD 10/01/91 TO 12/31/91 HELMSMAN U. S. TREASURY OBLIGATION (D)	29,481.82	29,481.82-
12/31/91	ENDING BALANCE THIS PERIOD	0.00	$29,481.82

OHD 097 613 871

BANK ONE TRUST COMPANY, NA
COLUMBUS TRUST
100 EAST BROAD STREET
COLUMBUS, OH 43271-0192

STATEMENT OF ACCOUNT
FOR THE PERIOD 07/01/95 TO 09/30/95

MASTER METAL INC EPA GRANTOR TRUST
DATED AUGUST 17, 1990

ACCOUNT NO. 6871061400

ACCOUNT ADMINISTRATOR
MICHAEL DOCKMAN
614-248-5829

BR CHIEF-US 5PA REGION 5 - RCRA
ENFORCEMENT BR, HRE-8J
77 W. JACKSON BLVD.
CHICAGO, IL 60604

RECEIVED
OCT 17 1995
RCRA PERMITTING BRANCH
OR/WMD
EPA, REGION V

BANK ONE

STATEMENT MESSAGES

ACCOUNT NO. 6871061400 MASTER METALS INC EPA TRUST

MUTUAL FUNDS, INCLUDING PROPRIETARY MUTUAL FUNDS, AND OTHER MARKETABLE SECURITIES ARE NOT INSURED OR GUARANTEED BY THE FEDERAL DEPOSIT INSURANCE CORPORATION (FDIC) OR ANY OTHER GOVERNMENT SPONSORED AGENCY OF THE FEDERAL GOVERNMENT OR ANY STATE. ALL INVOLVE INVESTMENT RISKS, INCLUDING POSSIBLE LOSS OF PRINCIPAL AMOUNT INVESTED. "THE ONE GROUP" FUNDS ARE NOT DEPOSITS OR OBLIGATIONS OF, AND ARE NOT GUARANTEED BY, BANC ONE CORPORATION OR ITS BANK OR NON-BANK AFFILIATES.

****

ALTHOUGH MARKET VALUES AND PRICES HAVE BEEN OBTAINED FROM SOURCES WE BELIEVE TO BE RELIABLE, WE DO NOT GUARANTEE THEIR ACCURACY. CERTAIN FIXED INCOME SECURITIES, AS WELL AS CERTAIN INFREQUENTLY TRADED ASSETS, CANNOT BE READILY PRICED.

****

EFFECTIVE AUGUST 1, 1995, THE LONG-TERM MUNICIPAL BOND INVESTMENT FUND MERGED INTO THE TAX-FREE BOND INVESTMENT FUND. THIS AFFECTED BOTH CLASS A AND CLASS B PARTICIPANTS.

****

EFFECTIVE SEPTEMBER 1, 1995, THE EQUITY INDEX INVESTMENT FUND MERGED INTO THE LARGE COMPANY GROWTH INVESTMENT FUND. THIS AFFECTED BOTH CLASS A AND CLASS B PARTICIPANTS.

****

EFFECTIVE SEPTEMBER 1, 1995, THE ONE GROUP BLUE CHIP EQUITY FUND MERGED INTO THE ONE GROUP LARGE COMPANY GROWTH FUND.

****

ACCOUNT SUMMARY 07/01/95 TO 09/30/95

ACCOUNT NO. 6871061400 MASTER METALS INC EPA TRUST

MARKET VALUE ON 07/01/95	67,407.96
DISBURSEMENTS	
OTHER EXPENSES	200.00-
TOTAL DISBURSEMENTS	200.00-
INVESTMENT ACTIVITY	
INCOME EARNED	961.20
REALIZED GAIN/(LOSS)	0.00
UNREALIZED GAIN/(LOSS)	0.00
TOTAL INVESTMENT ACTIVITY	961.20
MARKET VALUE ON 09/30/95	68,169.16
ACCRUED INCOME ON 09/30/95	0.00
TOTAL VALUE (WITH ACCRUED INCOME) ON 09/30/95	68,169.16

BANK ONE.

INVESTMENT PORTFOLIO SUMMARY REPORT 09/30/95

	ACQUISITION COST	MARKET VALUE	PERCENT OF MARKET VALUE	ESTIMATED ANNUAL INCOME	ACCRUED INCOME
CASH & EQUIVALENTS					
CASH EQUIVALENTS	68,169.16	68,169.16	100.0%	3,684.96	0.00
TOTAL ASSETS AND CASH	68,169.16	68,169.16	100.0%	3,684.96	0.00
ACCRUED INCOME		0.00			
TOTAL VALUE (WITH ACCRUED INCOME)		68,169.16			

INVESTMENT PORTFOLIO DETAIL REPORT 09/30/95

ACCOUNT NO. 6871061400 MASTER METALS INC EPA TRUST

DESCRIPTION	SHARES/ FACE VALUE	ACQUISITION COST	MARKET PRICE	MARKET VALUE	ESTIMATED ANNUAL INCOME	ACCRUED INCOME	YIELD ON MARKET
CASH EQUIVALENTS							
THE ONE GROUP US TREA SEC MNY MKT FD CUSIP: 681937108	68,169.16	68,169.16	1.000	68,169.16	3,684.96	0.00	5.41
CASH		0.00		0.00			
TOTAL ASSETS AND CASH		68,169.16		68,169.16	3,684.96	0.00	5.41
ACCRUED INCOME				0.00			
TOTAL VALUE (WITH ACCRUED INCOME)				68,169.16			

BANK ONE

STATEMENT OF ACCOUNT 07/01/95 TO 09/30/95

DATE	DESCRIPTION	AMOUNT	INVESTMENTS
06/30/95	ENDING BALANCE PRIOR PERIOD	0.00	67,407.96
07/03/95	INCOME EARNED ON THE ONE GROUP US TREA SEC MNY MKT FD INTEREST FROM 6/1/95 TO 6/30/95 CUSIP: 681937108	313.86	
07/12/95	CASH RECEIPT ADVISORY FEE REBATE THE ONE GROUP US TREA SEC MNY MKT FD FOR THE MONTH OF 06/95	11.07	
07/21/95	TAX PREPARATION FEE FOR 1994	200.00-	
08/01/95	INCOME EARNED ON THE ONE GROUP US TREA SEC MNY MKT FD INTEREST FROM 7/1/95 TO 7/31/95 CUSIP: 681937108	314.03	
08/09/95	CASH RECEIPT ADVISORY FEE REBATE THE ONE GROUP US TREA SEC MNY MKT FD FOR THE MONTH OF 07/95	11.49	
09/01/95	INCOME EARNED ON THE ONE GROUP US TREA SEC MNY MKT FD INTEREST FROM 8/1/95 TO 8/31/95 CUSIP: 681937108	310.75	
	MONEY MARKET TRANSACTIONS (SUMMARY)		
	TOTAL PURCHASES OF MONEY MARKET FUND FOR PERIOD 07/01/95 THRU 09/30/95 THE ONE GROUP US TREA SEC MNY MKT FD	961.20-	961.20

STATEMENT OF ACCOUNT 07/01/95 TO 09/30/95

DATE	DESCRIPTION	AMOUNT	INVESTMENTS
	TOTAL SALES OF MONEY MARKET FUND FOR PERIOD 07/01/95 TO 09/30/95 THE ONE GROUP US TREA SEC MNY MKT FD	200.00	200.00-
09/30/95	ENDING BALANCE THIS PERIOD	0.00	$68,169.16

BANK ONE TRUST COMPANY, NA
COLUMBUS TRUST
100 EAST BROAD STREET
COLUMBUS, OH 43271-0192

STATEMENT OF ACCOUNT
FOR THE PERIOD 04/01/95 TO 06/30/95

MASTER METAL INC EPA GRANTOR TRUST
DATED AUGUST 17, 1990

ACCOUNT NO. 6871061400

ACCOUNT ADMINISTRATOR
MICHAEL DOCKMAN
614-248-5829

RECEIVED
JUL 12 1995
OFFICE OF RCRA
WASTE MANAGEMENT DIVISION
EPA REGION V

BR CHIEF-US 5PA REGION 5 - RCRA
ENFORCEMENT BR, HRE-8J
77 W. JACKSON BLVD.
CHICAGO, IL 60604

BANK ONE

STATEMENT MESSAGES

ACCOUNT NO. 6871061400 MASTER METALS INC EPA TRUST

MUTUAL FUNDS, INCLUDING PROPRIETARY MUTUAL FUNDS, AND OTHER MARKETABLE SECURITIES ARE NOT INSURED OR GUARANTEED BY THE FEDERAL DEPOSIT INSURANCE CORPORATION (FDIC) OR ANY OTHER GOVERNMENT SPONSORED AGENCY OF THE FEDERAL GOVERNMENT OR ANY STATE. ALL INVOLVE INVESTMENT RISKS, INCLUDING POSSIBLE LOSS OF PRINCIPAL AMOUNT INVESTED. "THE ONE GROUP" FUNDS ARE NOT DEPOSITS OR OBLIGATIONS OF, AND ARE NOT GUARANTEED BY, BANC ONE CORPORATION OR ITS BANK OR NON-BANK AFFILIATES.

****

ALTHOUGH MARKET VALUES AND PRICES HAVE BEEN OBTAINED FROM SOURCES WE BELIEVE TO BE RELIABLE, WE DO NOT GUARANTEE THEIR ACCURACY. CERTAIN FIXED INCOME SECURITIES, AS WELL AS CERTAIN INFREQUENTLY TRADED ASSETS, CANNOT BE READILY PRICED.

****

COMMON AND COLLECTIVE TRUST FUND ANNUAL AUDIT REPORTS FOR THE YEAR ENDED DECEMBER 31, 1994 ARE NOW AVAILABLE.
PLEASE CONTACT YOUR ACCOUNT ADMINISTRATOR FOR INFORMATION.

****

EFFECTIVE MAY 1, 1995, THE INVESTMENT CONTRACT FUND CHANGED FROM MONTHLY TO DAILY VALUATION. ON THE SAME DATE, THE FUND'S UNIT VALUE CHANGED FROM $1 TO $100 PER UNIT. THIS PRICING CHANGE DID NOT AFFECT THE TOTAL VALUE OF YOUR INVESTMENT AS OF MAY 1, 1995. IN THE FUTURE, YOU MAY NOTICE CHANGES IN THE UNIT VALUE DUE TO INCOME REINVESTMENT AND/OR MARKET CONDITIONS. PLEASE CONTACT YOUR CLIENT ADVISOR IF YOU HAVE QUESTIONS.

****

ACCOUNT SUMMARY 04/01/95 TO 06/30/95

MARKET VALUE ON 04/01/95	66,439.76
INVESTMENT ACTIVITY	
INCOME EARNED	968.20
REALIZED GAIN/(LOSS)	0.00
UNREALIZED GAIN/(LOSS)	0.00
TOTAL INVESTMENT ACTIVITY	968.20
MARKET VALUE ON 06/30/95	67,407.96
ACCRUED INCOME ON 06/30/95	0.00
TOTAL VALUE (WITH ACCRUED INCOME) ON 06/30/95	67,407.96

INVESTMENT PORTFOLIO SUMMARY REPORT 06/30/95

	ACQUISITION COST	MARKET VALUE	PERCENT OF MARKET VALUE	ESTIMATED ANNUAL INCOME	ACCRUED INCOME
CASH & EQUIVALENTS					
CASH EQUIVALENTS	67,407.96	67,407.96	100.0%	3,773.37	0.00
TOTAL ASSETS AND CASH	67,407.96	67,407.96	100.0%	3,773.37	0.00
ACCRUED INCOME		0.00			
TOTAL VALUE (WITH ACCRUED INCOME)		67,407.96			

INVESTMENT PORTFOLIO DETAIL REPORT 06/30/95

ACCOUNT NO. 6871061400 MASTER METALS INC EPA TRUST

DESCRIPTION	SHARES/ FACE VALUE	ACQUISITION COST	MARKET PRICE	MARKET VALUE	ESTIMATED ANNUAL INCOME	ACCRUED INCOME	YIELD ON MARKET
CASH EQUIVALENTS							
THE ONE GROUP US TREA SEC MNY MKT FD CUSIP: 681937108	67,407.96	67,407.96	1.000	67,407.96	3,773.37	0.00	5.60
CASH		0.00		0.00			
TOTAL ASSETS AND CASH		67,407.96		67,407.96	3,773.37	0.00	5.60
ACCRUED INCOME				0.00			
TOTAL VALUE (WITH ACCRUED INCOME)				67,407.96			

STATEMENT OF ACCOUNT 04/01/95 TO 06/30/95

DATE	DESCRIPTION	AMOUNT	INVESTMENTS
03/31/95	ENDING BALANCE PRIOR PERIOD	0.00	66,439.76
04/03/95	INCOME EARNED ON THE ONE GROUP US TREA SEC MNY MKT FD INTEREST FROM 3/1/95 TO 3/31/95 CUSIP: 681937108	300.24	
04/10/95	CASH RECEIPT ADVISORY FEE REBATE THE ONE GROUP US TREA SEC MNY MKT FD FOR THE MONTH OF 03/95	10.96	
05/01/95	INCOME EARNED ON THE ONE GROUP US TREA SEC MNY MKT FD INTEREST FROM 4/1/95 TO 4/30/95 CUSIP: 681937108	310.96	
05/11/95	CASH RECEIPT ADVISORY FEE REBATE THE ONE GROUP US TREA SEC MNY MKT FD FOR THE MONTH OF 04/95	10.96	
06/01/95	INCOME EARNED ON THE ONE GROUP US TREA SEC MNY MKT FD INTEREST FROM 5/1/95 TO 5/31/95 CUSIP: 681937108	323.71	
06/08/95	CASH RECEIPT ADVISORY FEE REBATE THE ONE GROUP US TREA SEC MNY MKT FD FOR THE MONTH OF 05/95	11.37	

STATEMENT OF ACCOUNT 04/01/95 TO 06/30/95

DATE	DESCRIPTION	AMOUNT	INVESTMENTS
	MONEY MARKET TRANSACTIONS (SUMMARY)		
	TOTAL PURCHASES OF MONEY MARKET FUND FOR PERIOD 04/01/95 THRU 06/30/95 THE ONE GROUP US TREA SEC MNY MKT FD	968.20-	968.20
06/30/95	ENDING BALANCE THIS PERIOD	0.00	$67,407.96

BANK ONE OHIO TRUST COMPANY, NA
COLUMBUS TRUST
100 EAST BROAD STREET
COLUMBUS, OH 43271-0192

STATEMENT OF ACCOUNT
FOR THE PERIOD 01/01/95 TO 03/31/95

MASTER METAL INC EPA GRANTOR TRUST
DATED AUGUST 17, 1990

ACCOUNT NO. 6871061400

ACCOUNT ADMINISTRATOR
MICHAEL DOCKMAN
614-248-5829

BR CHIEF-US 5PA REGION 5 - RCRA
ENFORCEMENT BR, HRE-8J
77 W. JACKSON BLVD.
CHICAGO, IL 60604

OHD 097 613 871

BANK ONE

STATEMENT MESSAGES

ACCOUNT NO. 6871061400 MASTER METALS INC EPA TRUST

PROPRIETARY MUTUAL FUNDS AND MARKETABLE SECURITIES ARE NOT INSURED OR GUARANTEED BY THE FEDERAL DEPOSIT INSURANCE CORPORATION (FDIC) OR ANY OTHER GOVERNMENT SPONSORED AGENCY OF THE FEDERAL GOVERNMENT OR ANY STATE. THE "ONE GROUP" FUNDS ARE NOT DEPOSITS OR OBLIGATIONS OF, OR GUARANTEED BY, BANC ONE CORPORATION OR ITS BANK OR NONBANK SUBSIDIARIES AND INVOLVE INVESTMENT RISKS, INCLUDING POSSIBLE LOSS OF PRINCIPAL AMOUNT INVESTED.

****

ALTHOUGH MARKET VALUES AND PRICES HAVE BEEN OBTAINED FROM SOURCES WE BELIEVE TO BE RELIABLE, WE DO NOT GUARANTEE THEIR ACCURACY. CERTAIN FIXED INCOME SECURITIES, AS WELL AS CERTAIN INFREQUENTLY TRADED ASSETS, CANNOT BE READILY PRICED.

****

ACCOUNT SUMMARY 01/01/95 TO 03/31/95

MARKET VALUE ON 01/01/95	65,566.41
RECEIPTS	
OTHER CASH RECEIPTS	6,365.58
TOTAL RECEIPTS	6,365.58
DISBURSEMENTS	
OTHER CASH DISBURSEMENTS	6,365.58-
TOTAL DISBURSEMENTS	6,365.58-
INVESTMENT ACTIVITY	
INCOME EARNED	873.35
REALIZED GAIN/(LOSS)	0.00
UNREALIZED GAIN/(LOSS)	0.00
TOTAL INVESTMENT ACTIVITY	873.35
MARKET VALUE ON 03/31/95	66,439.76
ACCRUED INCOME ON 03/31/95	0.00
TOTAL VALUE (WITH ACCRUED INCOME) ON 03/31/95	66,439.76

INVESTMENT PORTFOLIO SUMMARY REPORT 03/31/95

	ACQUISITION COST	MARKET VALUE	PERCENT OF MARKET VALUE	ESTIMATED ANNUAL INCOME	ACCRUED INCOME
CASH & EQUIVALENTS					
CASH EQUIVALENTS	66,439.76	66,439.76	100.0%	3,795.29	0.00
TOTAL ASSETS AND CASH	66,439.76	66,439.76	100.0%	3,795.29	0.00
ACCRUED INCOME		0.00			
TOTAL VALUE (WITH ACCRUED INCOME)		66,439.76			

INVESTMENT PORTFOLIO DETAIL REPORT 03/31/95

ACCOUNT NO. 6871061400 MASTER METALS INC EPA TRUST

DESCRIPTION	SHARES/ FACE VALUE	ACQUISITION COST	MARKET PRICE	MARKET VALUE	ESTIMATED ANNUAL INCOME	ACCRUED INCOME	YIELD ON MARKET
CASH EQUIVALENTS							
THE ONE GROUP US TREA SEC MNY MKT FD CUSIP: 681937108	66,439.76	66,439.76	1.000	66,439.76	3,795.29	0.00	5.71
CASH		0.00		0.00			
TOTAL ASSETS AND CASH		66,439.76		66,439.76	3,795.29	0.00	5.71
ACCRUED INCOME				0.00			
TOTAL VALUE (WITH ACCRUED INCOME)				66,439.76			

BANK ONE

STATEMENT OF ACCOUNT 01/01/95 TO 03/31/95

DATE	DESCRIPTION		AMOUNT	INVESTMENTS
12/31/94	ENDING BALANCE PRIOR PERIOD		0.00	65,566.41
01/03/95	INCOME EARNED ON THE ONE GROUP US TREA SEC MNY MKT FD INTEREST FROM 12/1/94 TO 12/31/94 CUSIP: 681937108	279.63		
01/11/95	CASH RECEIPT ADVISORY FEE REBATE THE ONE GROUP US TREA SEC MNY MKT FD FOR THE MONTH OF 12/94	10.03		
02/01/95	INCOME EARNED ON THE ONE GROUP US TREA SEC MNY MKT FD INTEREST FROM 1/1/95 TO 1/31/95 CUSIP: 681937108	284.60		
02/08/95	CASH RECEIPT ADVISORY FEE REBATE THE ONE GROUP US TREA SEC MNY MKT FD FOR THE MONTH OF 01/95	10.06		
03/01/95	INCOME EARNED ON THE ONE GROUP US TREA SEC MNY MKT FD INTEREST FROM 2/1/95 TO 2/28/95 CUSIP: 681937108	278.88		
03/09/95	CASH RECEIPT ADVISORY FEE REBATE THE ONE GROUP US TREA SEC MNY MKT FD FOR THE MONTH OF 02/95	10.15		

STATEMENT OF ACCOUNT 01/01/95 TO 03/31/95

DATE	DESCRIPTION		AMOUNT	INVESTMENTS
03/20/95	CASH DISBURSEMENT TRANSFER TO PRINCIPAL	1,259.86-		
03/20/95	CASH RECEIPT TRANSFER FROM INCOME		1,259.86	
03/20/95	CASH DISBURSEMENT TRANSFER TO PRINCIPAL	5,105.72-		
03/20/95	CASH RECEIPT TRANSFER FROM INCOME		5,105.72	
	MONEY MARKET TRANSACTIONS (SUMMARY)			
	TOTAL PURCHASES OF MONEY MARKET FUND FOR PERIOD 01/01/95 THRU 03/31/95 THE ONE GROUP US TREA SEC MNY MKT FD		6,949.90-	6,949.90
	TOTAL SALES OF MONEY MARKET FUND FOR PERIOD 01/01/95 TO 03/31/95 THE ONE GROUP US TREA SEC MNY MKT FD		6,076.55	6,076.55-
03/31/95	ENDING BALANCE THIS PERIOD		0.00	$66,439.76

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Waste Management Divisi
REGION

BANK ONE OHIO TRUST COMPANY, NA
CANTON TRUST OFFICE
101 CENTRAL PLAZA SOUTH, P.O. BOX 20820
CANTON, OH 44711-0820

STATEMENT OF ACCOUNT
FOR THE PERIOD 01/01/93 TO 03/31/93

RECEIVED
JUN 14 1993
OFFICE OF RCRA
WASTE MANAGEMENT D
EPA REGION

MASTER METAL INC EPA GRANTOR TRUST
DATED AUGUST 17, 1990

ACCOUNT NO. 6871061400

ACCOUNT ADMINISTRATOR
STEVE POHOLSKI
216-438-8390

BR CHIEF-US 5PA REGION 5 - RCRA
ENFORCEMENT BR, 5 HR-12
77 W. JACKSON BLVD.
CHICAGO, IL 60604

BANK ONE

ACCOUNT SUMMARY 01/01/93 TO 03/31/93

ACCOUNT NO. 6871061400 MASTER METALS INC EPA TRUST

MARKET VALUE ON 01/01/93		62,584.87
DISBURSEMENTS		
EXPENSES	77.01-	
TOTAL DISBURSEMENTS		77.01-
INVESTMENT ACTIVITY		
INCOME EARNED	465.79	
REALIZED GAIN/(LOSS)	0.00	
UNREALIZED GAIN/(LOSS)	0.00	
TOTAL INVESTMENT ACTIVITY		465.79
MARKET VALUE ON 03/31/93		62,973.65
ACCRUED INCOME ON 03/31/93		0.00
TOTAL VALUE (WITH ACCRUED INCOME) ON 03/31/93		62,973.65

BANK ONE.

INVESTMENT PORTFOLIO SUMMARY REPORT 03/31/93

	ACQUISITION COST	MARKET VALUE	PERCENT OF MARKET VALUE	ESTIMATED ANNUAL INCOME	ACCRUED INCOME
CASH & EQUIVALENTS					
CASH EQUIVALENTS	62,973.65	62,973.65	100.0%	1,590.65	0.00
TOTAL ASSETS AND CASH	62,973.65	62,973.65	100.0%	1,590.65	0.00
ACCRUED INCOME		0.00			
TOTAL VALUE (WITH ACCRUED INCOME)		62,973.65			

INVESTMENT PORTFOLIO DETAIL REPORT 03/31/93

ACCOUNT NO. 6871061400 MASTER METALS INC EPA TRUST

DESCRIPTION	SHARES/ FACE VALUE	ACQUISITION COST	MARKET PRICE	MARKET VALUE	PERCENT OF MARKET VALUE	ACCRUED INCOME
CASH EQUIVALENTS						
HELMSMAN U.S. TREASURY OBLIGATIONS	62,973.65	62,973.65	1.000	62,973.65	100.00	0.00
CASH		0.00		0.00	0.00	
TOTAL ASSETS AND CASH		62,973.65		62,973.65	100.00	0.00
ACCRUED INCOME				0.00		
TOTAL VALUE (WITH ACCRUED INCOME)				62,973.65		

BANK ONE.

STATEMENT OF ACCOUNT 01/01/93 TO 03/31/93

DATE	DESCRIPTION	AMOUNT	INVESTMENTS
12/31/92	ENDING BALANCE PRIOR PERIOD	0.00	62,584.87
01/04/93	CASH RECEIPT OF INTEREST EARNED ON HELMSMAN U.S. TREASURY OBLIGATIONS INTEREST FROM 12/1/92 TO 12/31/92	150.89	
01/04/93	AUTOMATED CASH MANAGEMENT FEE COLLECTED CASH MGT CHG: HELMSMAN U.S. TREASURY OBLIGATIONS TOTAL CHARGES: $26.25 COLLECTED BY DIRECT CHARGE	26.25-	
01/04/93	CASH RECEIPT OF INTEREST EARNED ON HELMSMAN U.S. TREASURY OBLIGATIONS INTEREST FROM 12/1/92 TO 12/31/92	0.09	
01/04/93	AUTOMATED CASH MANAGEMENT FEE COLLECTED CASH MGT CHG: HELMSMAN U.S. TREASURY OBLIGATIONS TOTAL CHARGES: $0.02 COLLECTED BY DIRECT CHARGE	0.02-	
01/08/93	CASH RECEIPT ADVISORY FEE REBATE HELMSMAN U.S. TREASURY OBLIGATIONS FOR THE MONTH OF 12/92	9.19	
01/08/93	CASH RECEIPT ADVISORY FEE REBATE HELMSMAN U.S. TREASURY OBLIGATIONS FOR THE MONTH OF 12/92	0.01	
02/01/93	CASH RECEIPT OF INTEREST EARNED ON HELMSMAN U.S. TREASURY OBLIGATIONS INTEREST FROM 1/1/93 TO 1/31/93	152.70	

STATEMENT OF ACCOUNT 01/01/93 TO 03/31/93

DATE	DESCRIPTION	AMOUNT	INVESTMENTS
02/01/93	AUTOMATED CASH MANAGEMENT FEE COLLECTED CASH MGT CHG: HELMSMAN U.S. TREASURY OBLIGATIONS TOTAL CHARGES: $26.63 COLLECTED BY DIRECT CHARGE	26.63-	
02/08/93	CASH RECEIPT ADVISORY FEE REBATE HELMSMAN U.S. TREASURY OBLIGATIONS FOR THE MONTH OF 01/93	9.31	
03/01/93	CASH RECEIPT OF INTEREST EARNED ON HELMSMAN U.S. TREASURY OBLIGATIONS INTEREST FROM 2/1/93 TO 2/28/93	134.90	
03/01/93	AUTOMATED CASH MANAGEMENT FEE COLLECTED CASH MGT CHG: HELMSMAN U.S. TREASURY OBLIGATIONS TOTAL CHARGES: $24.11 COLLECTED BY DIRECT CHARGE	24.11-	
03/05/93	CASH RECEIPT ADVISORY FEE REBATE HELMSMAN U.S. TREASURY OBLIGATIONS FOR THE MONTH OF 02/93	8.70	
	MONEY MARKET TRANSACTIONS (SUMMARY)		
	TOTAL PURCHASES OF MONEY MARKET FUND FOR PERIOD 01/01/93 THRU 03/31/93 HELMSMAN U.S. TREASURY OBLIGATIONS	388.78-	388.78
03/31/93	ENDING BALANCE THIS PERIOD	0.00	$62,973.65

BANK ONE OHIO TRUST COMPANY, NA
CANTON TRUST OFFICE
101 CENTRAL PLAZA SOUTH, P.O. BOX 20820
CANTON, OH 44711-0820

STATEMENT OF ACCOUNT
FOR THE PERIOD 04/01/94 TO 06/30/94

RECEIVED
OCT 3 1994
OFFICE OF RCRA
WASTE MANAGEMENT DIVISION
EPA REGION V

MASTER METAL INC EPA GRANTOR TRUST
DATED AUGUST 17, 1990

ACCOUNT NO. 6871061400

ACCOUNT ADMINISTRATOR
ALEXANDER HAYS, IV
216-438-8349

BR CHIEF-US 5PA REGION 5 - RCRA
ENFORCEMENT BR, HRE-8J
77 W. JACKSON BLVD.
CHICAGO, IL 60604

OHD 097 613 871

BANK ONE

STATEMENT MESSAGES

ACCOUNT NO. 6871061400 MASTER METALS INC EPA TRUST

COMMON AND COLLECTIVE TRUST FUND ANNUAL AUDIT REPORTS FOR THE YEAR ENDED DECEMBER 31, 1993 ARE NOW AVAILABLE. PLEASE CONTACT YOUR ACCOUNT ADMINISTRATOR FOR INFORMATION.

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PROPRIETARY MUTUAL FUNDS AND MARKETABLE SECURITIES ARE NOT INSURED OR GUARANTEED BY THE FEDERAL DEPOSIT INSURANCE CORPORATION (FDIC) OR ANY OTHER GOVERNMENT SPONSORED AGENCY OF THE FEDERAL GOVERNMENT OR ANY STATE. THE "ONE GROUP" FUNDS ARE NOT DEPOSITS OR OBLIGATIONS OF, OR GUARANTEED BY, BANC ONE CORPORATION OR ITS BANK OR NONBANK SUBSIDIARIES AND INVOLVE INVESTMENT RISKS, INCLUDING POSSIBLE LOSS OF PRINCIPAL AMOUNT INVESTED.

****

ALTHOUGH MARKET VALUES AND PRICES HAVE BEEN OBTAINED FROM SOURCES WE BELIEVE TO BE RELIABLE, WE DO NOT GUARANTEE THEIR ACCURACY. CERTAIN FIXED INCOME SECURITIES, AS WELL AS CERTAIN INFREQUENTLY TRADED ASSETS, CANNOT BE READILY PRICED.

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ACCOUNT SUMMARY 04/01/94 TO 06/30/94

MARKET VALUE ON 04/01/94		63,608.42
INVESTMENT ACTIVITY		
INCOME EARNED	551.52	
REALIZED GAIN/(LOSS)	0.00	
UNREALIZED GAIN/(LOSS)	0.00	
TOTAL INVESTMENT ACTIVITY		551.52
MARKET VALUE ON 06/30/94		64,159.94
ACCRUED INCOME ON 06/30/94		0.00
TOTAL VALUE (WITH ACCRUED INCOME) ON 06/30/94		64,159.94

INVESTMENT PORTFOLIO SUMMARY REPORT 06/30/94

	ACQUISITION COST	MARKET VALUE	PERCENT OF MARKET VALUE	ESTIMATED ANNUAL INCOME	ACCRUED INCOME
CASH & EQUIVALENTS					
CASH EQUIVALENTS	64,159.94	64,159.94	100.0%	2,368.23	0.00
TOTAL ASSETS AND CASH	64,159.94	64,159.94	100.0%	2,368.23	0.00
ACCRUED INCOME		0.00			
TOTAL VALUE (WITH ACCRUED INCOME)		64,159.94			

INVESTMENT PORTFOLIO DETAIL REPORT 06/30/94

DESCRIPTION	SHARES/ FACE VALUE	ACQUISITION COST	MARKET PRICE	MARKET VALUE	ESTIMATED ANNUAL INCOME	ACCRUED INCOME	YIELD ON MARKET
CASH EQUIVALENTS							
THE ONE GROUP US TREA SEC MNY MKT FD CUSIP: 681937108	64,159.94	64,159.94	1.000	64,159.94	2,368.23	0.00	3.69
CASH		0.00		0.00			
TOTAL ASSETS AND CASH		64,159.94		64,159.94	2,368.23	0.00	3.69
ACCRUED INCOME				0.00			
TOTAL VALUE (WITH ACCRUED INCOME)				64,159.94			

STATEMENT OF ACCOUNT 04/01/94 TO 06/30/94

DATE	DESCRIPTION	INCOME CASH	PRINCIPAL CASH	INVESTMENTS
03/31/94	ENDING BALANCE PRIOR PERIOD	3,534.24	3,534.24-	63,608.42
04/01/94	INCOME EARNED ON THE ONE GROUP US TREA SEC MNY MKT FD INTEREST FROM 3/1/94 TO 3/31/94 CUSIP: 681937108	161.75		
04/14/94	CASH RECEIPT ADVISORY FEE REBATE THE ONE GROUP US TREA SEC MNY MKT FD FOR THE MONTH OF 03/94	11.17		
05/02/94	INCOME EARNED ON THE ONE GROUP US TREA SEC MNY MKT FD INTEREST FROM 4/1/94 TO 4/30/94 CUSIP: 681937108	166.85		
05/11/94	CASH RECEIPT ADVISORY FEE REBATE THE ONE GROUP US TREA SEC MNY MKT FD FOR THE MONTH OF 04/94	10.82		
06/01/94	INCOME EARNED ON THE ONE GROUP US TREA SEC MNY MKT FD INTEREST FROM 5/1/94 TO 5/31/94 CUSIP: 681937108	189.80		
06/03/94	INCOME EARNED ON THE ONE GROUP US TREA SEC MNY MKT FD INTEREST FROM 5/1/94 TO 5/31/94 CUSIP: 681937108	0.53		

STATEMENT OF ACCOUNT 04/01/94 TO 06/30/94

DATE	DESCRIPTION	INCOME CASH	PRINCIPAL CASH	INVESTMENTS
06/08/94	CASH RECEIPT ADVISORY FEE REBATE THE ONE GROUP US TREA SEC MNY MKT FD FOR THE MONTH OF 05/94	10.60		
	MONEY MARKET TRANSACTIONS (SUMMARY)			
	TOTAL PURCHASES OF MONEY MARKET FUND FOR PERIOD 04/01/94 THRU 06/30/94 THE ONE GROUP US TREA SEC MNY MKT FD		551.52-	551.52
06/30/94	ENDING BALANCE THIS PERIOD	4,085.76	4,085.76-	$64,159.94

BANK ONE OHIO TRUST COMPANY, NA
CANTON TRUST OFFICE
101 CENTRAL PLAZA SOUTH, P.O. BOX 20820
CANTON, OH 44711-0820

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OFFICE OF RCRA
WASTE MANAGEMENT DIVISION
EPA, REGION V

STATEMENT OF ACCOUNT
FOR THE PERIOD 04/01/93 TO 06/30/93

MASTER METAL INC EPA GRANTOR TRUST
DATED AUGUST 17, 1990

ACCOUNT NO. 6871061400

ACCOUNT ADMINISTRATOR
ALEXANDER HAYS, IV
216-438-8349

BR CHIEF-US 5PA REGION 5 - RCRA
ENFORCEMENT BR, 5 HR-12
77 W. JACKSON BLVD.
CHICAGO, IL 60604

BANK ONE.

STATEMENT MESSAGES

ACCOUNT NO. 6871061400 MASTER METALS INC EPA TRUST

FUNDS INVESTED IN THE ONE GROUP FUND (FORMERLY KNOWN AS HELMSMAN) ARE NOT INSURED OR GUARANTEED BY THE FEDERAL DEPOSIT INSURANCE CORPORATION (FDIC) OR ANY OTHER GOVERNMENT AGENCY OR GOVERNMENT SPONSORED AGENCY OF THE FEDERAL GOVERNMENT OR ANY STATE.

COMMON AND COLLECTIVE TRUST FUND ANNUAL AUDIT REPORTS FOR THE YEAR ENDED DECEMBER 31, 1992 ARE NOW AVAILABLE. PLEASE CONTACT YOUR ACCOUNT ADMINISTRATOR FOR INFORMATION.

WE ARE PLEASED TO INFORM YOU THAT BANK ONE HAS MADE SEVERAL ENHANCEMENTS TO YOUR CUSTOMER STATEMENT. THE NEW UPDATES INCLUDE DISPLAYING THE INCOME PER ASSET AS A PERCENTAGE OF MARKET VALUE AND THE ESTIMATED ANNUAL INCOME FOR EACH ASSET. THE CUSIP NUMBER FOR ASSET RELATED TRANSACTIONS HAS BEEN ADDED TO THE TRANSACTION LISTING. WE HAVE ALSO RECLASSIFIED ASSETS BY TYPE FOR SPECIFIC EQUITY AND FIXED CATEGORIES.

THESE ENHANCEMENTS WERE MADE BASED ON THE REQUESTS AND COMMENTS THAT BANK ONE RECEIVED FROM ITS CUSTOMERS.

ACCOUNT SUMMARY 04/01/93 TO 06/30/93

ACCOUNT NO. 6871061400 MASTER METALS INC EPA TRUST

MARKET VALUE ON 04/01/93		62,973.65
DISBURSEMENTS		
EXPENSES	79.52-	
TOTAL DISBURSEMENTS		79.52-
INVESTMENT ACTIVITY		
INCOME EARNED	463.01	
REALIZED GAIN/(LOSS)	0.00	
UNREALIZED GAIN/(LOSS)	0.00	
TOTAL INVESTMENT ACTIVITY		463.01
MARKET VALUE ON 06/30/93		63,357.14
ACCRUED INCOME ON 06/30/93		0.00
TOTAL VALUE (WITH ACCRUED INCOME) ON 06/30/93		63,357.14

BANK ONE.

INVESTMENT PORTFOLIO SUMMARY REPORT 06/30/93

	ACQUISITION COST	MARKET VALUE	PERCENT OF MARKET VALUE	ESTIMATED ANNUAL INCOME	ACCRUED INCOME
CASH & EQUIVALENTS					
CASH EQUIVALENTS	63,357.14	63,357.14	100.0%	1,744.73	0.00
TOTAL ASSETS AND CASH	63,357.14	63,357.14	100.0%	1,744.73	0.00
ACCRUED INCOME		0.00			
TOTAL VALUE (WITH ACCRUED INCOME)		63,357.14			

INVESTMENT PORTFOLIO DETAIL REPORT 06/30/93

ACCOUNT NO. 6871061400 MASTER METALS INC EPA TRUST

DESCRIPTION	SHARES/ FACE VALUE	ACQUISITION COST	MARKET PRICE	MARKET VALUE	ESTIMATED ANNUAL INCOME	ACCRUED INCOME	YIELD ON MARKET
CASH EQUIVALENTS							
THE ONE GROUP U S TREAS MONEY MARKET (FORMERLY THE HELMSMAN FUND) CUSIP: 681937108	63,357.14	63,357.14	1.000	63,357.14	1,744.73	0.00	2.75
CASH		0.00		0.00			
TOTAL ASSETS AND CASH		63,357.14		63,357.14	1,744.73	0.00	2.75
ACCRUED INCOME				0.00			
TOTAL VALUE (WITH ACCRUED INCOME)				63,357.14			

STATEMENT OF ACCOUNT 04/01/93 TO 06/30/93

DATE	DESCRIPTION	AMOUNT	INVESTMENTS
03/31/93	ENDING BALANCE PRIOR PERIOD	0.00	62,973.65
04/01/93	CASH RECEIPT OF INTEREST EARNED ON HELMSMAN U.S. TREASURY OBLIGATIONS INCOME CREDIT $150.23 INTEREST FROM 3/1/93 TO 3/31/93 CUSIP: 681937108	150.23	
04/01/93	AUTOMATED CASH MANAGEMENT FEE COLLECTED CASH MGT CHG: HELMSMAN U.S. TREASURY OBLIGATIONS TOTAL CHARGES: $26.74 COLLECTED BY DIRECT CHARGE CUSIP: 681937108	26.74-	
04/08/93	CASH RECEIPT ADVISORY FEE REBATE HELMSMAN U.S. TREASURY OBLIGATIONS FOR THE MONTH OF 03/93	9.52	
05/03/93	CASH RECEIPT OF INTEREST EARNED ON HELMSMAN U.S. TREASURY OBLIGATIONS INCOME CREDIT $142.70 INTEREST FROM 4/1/93 TO 4/30/93 CUSIP: 681937108	142.70	
05/03/93	AUTOMATED CASH MANAGEMENT FEE COLLECTED CASH MGT CHG: HELMSMAN U.S. TREASURY OBLIGATIONS TOTAL CHARGES: $25.93 COLLECTED BY DIRECT CHARGE CUSIP: 681937108	25.93-	
05/07/93	CASH RECEIPT ADVISORY FEE REBATE HELMSMAN U.S. TREASURY OBLIGATIONS FOR THE MONTH OF 04/93	8.74	

STATEMENT OF ACCOUNT 04/01/93 TO 06/30/93

DATE	DESCRIPTION	AMOUNT	INVESTMENTS
06/01/93	CASH RECEIPT OF INTEREST EARNED ON THE ONE GROUP U S TREAS MONEY MARKET INCOME CREDIT $145.89 INTEREST FROM 5/1/93 TO 5/31/93 CUSIP: 681937108	145.89	
06/01/93	AUTOMATED CASH MANAGEMENT FEE COLLECTED CASH MGT CHG: THE ONE GROUP U S TREAS MONEY MARKET TOTAL CHARGES: $26.85 COLLECTED BY DIRECT CHARGE CUSIP: 681937108	26.85-	
06/07/93	CASH RECEIPT ADVISORY FEE REBATE THE ONE GROUP U S TREAS MONEY MARKET FOR THE MONTH OF 05/93	5.93	
	MONEY MARKET TRANSACTIONS (SUMMARY)		
	TOTAL PURCHASES OF MONEY MARKET FUND FOR PERIOD 04/01/93 THRU 06/30/93 THE ONE GROUP U S TREAS MONEY MARKET (FORMERLY THE HELMSMAN FUND)	258.52-	258.52
	TOTAL PURCHASES OF MONEY MARKET FUND FOR PERIOD 04/01/93 THRU 06/30/93 THE ONE GROUP U S TREAS MONEY MARKET (FORMERLY THE HELMSMAN FUND)	124.97-	124.97
06/30/93	ENDING BALANCE THIS PERIOD	0.00	$63,357.14

BANK ONE.

BANK ONE OHIO TRUST COMPANY, NA
CANTON TRUST OFFICE
101 CENTRAL PLAZA SOUTH, P.O. BOX 20820
CANTON, OH 44711-0820

STATEMENT OF ACCOUNT
FOR THE PERIOD 10/01/92 TO 12/31/92

RECEIVED
JAN 11 1993
OFFICE OF RCRA
Waste Management Division
U.S. EPA, REGION V

MASTER METAL INC EPA GRANTOR TRUST
DATED AUGUST 17, 1990

ACCOUNT NO. 6871061400

ACCOUNT ADMINISTRATOR
STEVE POHOLSKI
216-438-8390

BR CHIEF-US 5PA REGION 5 - RCRA
ENFORCEMENT BR, 5 HR-12
230 S DEARBORN ST
CHICAGO, IL 60604

BANK ONE.

ACCOUNT SUMMARY 10/01/92 TO 12/31/92

ACCOUNT NO. 6871061400 MASTER METALS INC EPA TRUST

MARKET VALUE ON 10/01/92		55,663.05
RECEIPTS		
OTHER CASH RECEIPTS	7,060.95	
TOTAL RECEIPTS		7,060.95
DISBURSEMENTS		
EXPENSES	567.96-	
TOTAL DISBURSEMENTS		567.96-
INVESTMENT ACTIVITY		
INCOME EARNED	428.83	
REALIZED GAIN/(LOSS)	0.00	
UNREALIZED GAIN/(LOSS)	0.00	
TOTAL INVESTMENT ACTIVITY		428.83
MARKET VALUE ON 12/31/92		62,584.87
ACCRUED INCOME ON 12/31/92		0.00
TOTAL VALUE (WITH ACCRUED INCOME) ON 12/31/92		62,584.87

INVESTMENT PORTFOLIO SUMMARY REPORT 12/31/92

	ACQUISITION COST	MARKET VALUE	PERCENT OF MARKET VALUE	ESTIMATED ANNUAL INCOME	ACCRUED INCOME
CASH & EQUIVALENTS					
CASH EQUIVALENTS	62,584.87	62,584.87	100.0%	1,794.56	0.00
TOTAL ASSETS AND CASH	62,584.87	62,584.87	100.0%	1,794.56	0.00
ACCRUED INCOME		0.00			
TOTAL VALUE (WITH ACCRUED INCOME)		62,584.87			

INVESTMENT PORTFOLIO DETAIL REPORT 12/31/92

ACCOUNT NO. 6871061400 MASTER METALS INC EPA TRUST

DESCRIPTION	SHARES/ FACE VALUE	ACQUISITION COST	MARKET PRICE	MARKET VALUE	PERCENT OF MARKET VALUE	ACCRUED INCOME
CASH EQUIVALENTS						
HELMSMAN U.S. TREASURY OBLIGATIONS	62,584.87	62,584.87	1.000	62,584.87	100.00	0.00
CASH		0.00		0.00	0.00	
TOTAL ASSETS AND CASH		62,584.87		62,584.87	100.00	0.00
ACCRUED INCOME				0.00		
TOTAL VALUE (WITH ACCRUED INCOME)				62,584.87		

STATEMENT OF ACCOUNT 10/01/92 TO 12/31/92

DATE	DESCRIPTION	AMOUNT	INVESTMENTS
09/30/92	ENDING BALANCE PRIOR PERIOD	0.00	55,663.05
10/01/92	CASH RECEIPT OF INTEREST EARNED ON HELMSMAN U.S. TREASURY OBLIGATIONS INTEREST FROM 9/1/92 TO 9/30/92	124.48	
10/01/92	AUTOMATED CASH MANAGEMENT FEE COLLECTED CASH MGT CHG: HELMSMAN U.S. TREASURY OBLIGATIONS TOTAL CHARGES: $22.31 COLLECTED BY DIRECT CHARGE	22.31-	
10/01/92	CASH RECEIPT OF INTEREST EARNED ON HELMSMAN U.S. TREASURY OBLIGATIONS INTEREST FROM 9/1/92 TO 9/30/92	3.14	
10/01/92	AUTOMATED CASH MANAGEMENT FEE COLLECTED CASH MGT CHG: HELMSMAN U.S. TREASURY OBLIGATIONS TOTAL CHARGES: $0.56 COLLECTED BY DIRECT CHARGE	0.56-	
10/08/92	CASH RECEIPT ADVISORY FEE REBATE HELMSMAN U.S. TREASURY OBLIGATIONS HELMSMAN FEE REBATE FOR 09/92	0.34	
10/08/92	CASH RECEIPT ADVISORY FEE REBATE HELMSMAN U.S. TREASURY OBLIGATIONS HELMSMAN FEE REBATE FOR 09/92	13.39	
11/02/92	CASH DISBURSEMENT PAID TO BANK ONE OHIO TRUST COMPANY, NA TRUSTEE FEES 9207452 FOR 8/1/91 TO 7/31/92	498.63-	

STATEMENT OF ACCOUNT 10/01/92 TO 12/31/92

DATE	DESCRIPTION	AMOUNT	INVESTMENTS
11/02/92	CASH RECEIPT OF INTEREST EARNED ON HELMSMAN U.S. TREASURY OBLIGATIONS INTEREST FROM 10/1/92 TO 10/31/92	136.55	
11/02/92	AUTOMATED CASH MANAGEMENT FEE COLLECTED CASH MGT CHG: HELMSMAN U.S. TREASURY OBLIGATIONS TOTAL CHARGES: $23.05 COLLECTED BY DIRECT CHARGE	23.05-	
11/02/92	CASH RECEIPT OF INTEREST EARNED ON HELMSMAN U.S. TREASURY OBLIGATIONS INTEREST FROM 10/1/92 TO 10/31/92	3.74	
11/02/92	AUTOMATED CASH MANAGEMENT FEE COLLECTED CASH MGT CHG: HELMSMAN U.S. TREASURY OBLIGATIONS TOTAL CHARGES: $0.63 COLLECTED BY DIRECT CHARGE	0.63-	
11/06/92	CASH RECEIPT ADVISORY FEE REBATE HELMSMAN U.S. TREASURY OBLIGATIONS HELMSMAN FEE REBATE FOR 10/92	7.98	
11/06/92	CASH RECEIPT ADVISORY FEE REBATE HELMSMAN U.S. TREASURY OBLIGATIONS HELMSMAN FEE REBATE FOR 10/92	0.22	
12/01/92	CASH RECEIPT OF INTEREST EARNED ON HELMSMAN U.S. TREASURY OBLIGATIONS INTEREST FROM 11/1/92 TO 11/30/92	128.50	
12/01/92	AUTOMATED CASH MANAGEMENT FEE COLLECTED CASH MGT CHG: HELMSMAN U.S. TREASURY OBLIGATIONS TOTAL CHARGES: $22.31 COLLECTED BY DIRECT CHARGE	22.31-	

STATEMENT OF ACCOUNT 10/01/92 TO 12/31/92

DATE	DESCRIPTION	AMOUNT	INVESTMENTS
12/01/92	CASH RECEIPT OF INTEREST EARNED ON HELMSMAN U.S. TREASURY OBLIGATIONS INTEREST FROM 11/1/92 TO 11/30/92	2.71	
12/01/92	AUTOMATED CASH MANAGEMENT FEE COLLECTED CASH MGT CHG: HELMSMAN U.S. TREASURY OBLIGATIONS TOTAL CHARGES: $0.47 COLLECTED BY DIRECT CHARGE	0.47-	
12/03/92	CASH RECEIPT ADDITION TO ACCOUNT FOR TRUST FUND EPA CLOSURE	7,060.95	
12/04/92	CASH RECEIPT ADVISORY FEE REBATE HELMSMAN U.S. TREASURY OBLIGATIONS FOR THE MONTH OF 11/92	7.62	
12/04/92	CASH RECEIPT ADVISORY FEE REBATE HELMSMAN U.S. TREASURY OBLIGATIONS FOR THE MONTH OF 11/92	0.16	
	MONEY MARKET TRANSACTIONS (SUMMARY)		
	TOTAL PURCHASES OF MONEY MARKET FUND FOR PERIOD 10/01/92 THRU 12/31/92 HELMSMAN U.S. TREASURY OBLIGATIONS	8,532.38-	8,532.38
	TOTAL SALES OF MONEY MARKET FUND FOR PERIOD 10/01/92 TO 12/31/92 HELMSMAN U.S. TREASURY OBLIGATIONS	1,610.56	1,610.56-
12/31/92	ENDING BALANCE THIS PERIOD	0.00	$62,584.87

BANK ONE OHIO TRUST COMPANY, NA
CANTON TRUST OFFICE
101 CENTRAL PLAZA SOUTH, P.O. BOX 20820
CANTON, OH 44711-0820

STATEMENT OF ACCOUNT
FOR THE PERIOD 04/01/92 TO 06/30/92

RECEIVED
JUL 13 1992
OFFICE OF RCRA
Waste Management Division
U.S. EPA, REGION V

MASTER METAL INC EPA GRANTOR TRUST
DATED AUGUST 17, 1990

ACCOUNT NO. 6871061400

ACCOUNT ADMINISTRATOR
STEVE POHOLSKI

BR CHIEF-US 5PA REGION 5 - RCRA
ENFORCEMENT BR, 5 HR-12
230 S DEARBORN ST
CHICAGO, IL 60604

BANK ONE.

ACCOUNT SUMMARY 04/01/92 TO 06/30/92

ACCOUNT NO. 6871061400 MASTER METALS INC EPA TRUST

MARKET VALUE ON 04/01/92		44,839.40
RECEIPTS		
OTHER CASH RECEIPTS	10,029.40	
TOTAL RECEIPTS		10,029.40
DISBURSEMENTS		
EXPENSES	59.40-	
TOTAL DISBURSEMENTS		59.40-
INVESTMENT ACTIVITY		
INCOME EARNED	449.54	
REALIZED GAIN/(LOSS)	0.00	
UNREALIZED GAIN/(LOSS)	0.00	
TOTAL INVESTMENT ACTIVITY		449.54
MARKET VALUE ON 06/30/92		55,258.94
ACCRUED INCOME ON 06/30/92		0.00
TOTAL VALUE (WITH ACCRUED INCOME) ON 06/30/92		55,258.94

INVESTMENT PORTFOLIO SUMMARY REPORT 06/30/92

	ACQUISITION COST	MARKET VALUE	PERCENT OF MARKET VALUE	ESTIMATED ANNUAL INCOME	ACCRUED INCOME
CASH & EQUIVALENTS					
CASH EQUIVALENTS	55,258.94	55,258.94	100.0%	1,832.00	0.00
TOTAL ASSETS AND CASH	55,258.94	55,258.94	100.0%	1,832.00	0.00
ACCRUED INCOME		0.00			
TOTAL VALUE (WITH ACCRUED INCOME)		55,258.94			

INVESTMENT PORTFOLIO DETAIL REPORT 06/30/92

ACCOUNT NO. 6871061400 MASTER METALS INC EPA TRUST

DESCRIPTION	SHARES/ FACE VALUE	ACQUISITION COST	MARKET PRICE	MARKET VALUE	PERCENT OF MARKET VALUE	ACCRUED INCOME
CASH EQUIVALENTS						
HELMSMAN U.S. TREASURY OBLIGATIONS	54,287.6	54,287.60	1.000	54,287.60	98.24	0.00
HELMSMAN U.S. TREASURY OBLIGATIONS	971.34	971.34	1.000	971.34	1.76	0.00
TOTAL CASH EQUIVALENTS		55,258.94		55,258.94	100.00	0.00
CASH		0.00		0.00	0.00	
TOTAL ASSETS AND CASH		55,258.94		55,258.94	100.00	0.00
ACCRUED INCOME				0.00		
TOTAL VALUE (WITH ACCRUED INCOME)				55,258.94		

STATEMENT OF ACCOUNT 04/01/92 TO 06/30/92

DATE	DESCRIPTION	AMOUNT	INVESTMENTS
03/31/92	ENDING BALANCE PRIOR PERIOD	0.00	44,839.40
04/01/92	CASH RECEIPT OF INTEREST EARNED ON HELMSMAN U.S. TREASURY OBLIGATIONS INTEREST FROM 3/1/92 TO 3/31/92	131.37	
04/01/92	AUTOMATED CASH MANAGEMENT FEE COLLECTED CASH MGT CHG: HELMSMAN U.S. TREASURY OBLIGATIONS TOTAL CHARGES: $17.97 COLLECTED BY DIRECT CHARGE	17.97-	
04/01/92	CASH RECEIPT OF INTEREST EARNED ON HELMSMAN U.S. TREASURY OBLIGATIONS INTEREST FROM 3/1/92 TO 3/31/92	1.78	
04/01/92	AUTOMATED CASH MANAGEMENT FEE COLLECTED CASH MGT CHG: HELMSMAN U.S. TREASURY OBLIGATIONS TOTAL CHARGES: $0.24 COLLECTED BY DIRECT CHARGE	0.24-	
04/06/92	CASH RECEIPT ADVISORY FEE REBATE HELMSMAN U.S. TREASURY OBLIGATIONS HELMSMAN FEE REBATE FOR 03/92	0.15	
04/06/92	CASH RECEIPT ADVISORY FEE REBATE HELMSMAN U.S. TREASURY OBLIGATIONS HELMSMAN FEE REBATE FOR 03/92	10.78	
04/09/92	CASH RECEIPT ADDITION TO ACCOUNT FOR TRUST FUND EPA CLOSURE	5,014.70	
05/01/92	CASH RECEIPT OF INTEREST EARNED ON HELMSMAN U.S. TREASURY OBLIGATIONS INTEREST FROM 4/1/92 TO 4/30/92	136.23	

STATEMENT OF ACCOUNT 04/01/92 TO 06/30/92

DATE	DESCRIPTION	AMOUNT	INVESTMENTS
05/01/92	AUTOMATED CASH MANAGEMENT FEE COLLECTED CASH MGT CHG: HELMSMAN U.S. TREASURY OBLIGATIONS TOTAL CHARGES: $19.63 COLLECTED BY DIRECT CHARGE	19.63-	
05/01/92	CASH RECEIPT OF INTEREST EARNED ON HELMSMAN U.S. TREASURY OBLIGATIONS INTEREST FROM 4/1/92 TO 4/30/92	2.00	
05/01/92	AUTOMATED CASH MANAGEMENT FEE COLLECTED CASH MGT CHG: HELMSMAN U.S. TREASURY OBLIGATIONS TOTAL CHARGES: $0.29 COLLECTED BY DIRECT CHARGE	0.29-	
05/07/92	CASH RECEIPT ADVISORY FEE REBATE HELMSMAN U.S. TREASURY OBLIGATIONS HELMSMAN FEE REBATE FOR 04/92	11.78	
05/07/92	CASH RECEIPT ADVISORY FEE REBATE HELMSMAN U.S. TREASURY OBLIGATIONS HELMSMAN FEE REBATE FOR 04/92	0.17	
06/01/92	CASH RECEIPT ADDITION TO ACCOUNT TRUST FUND FOR U.S. EPA CLOSURE	5,014.70	
06/01/92	CASH RECEIPT OF INTEREST EARNED ON HELMSMAN U.S. TREASURY OBLIGATIONS INTEREST FROM 5/1/92 TO 5/31/92	140.17	
06/01/92	AUTOMATED CASH MANAGEMENT FEE COLLECTED CASH MGT CHG: HELMSMAN U.S. TREASURY OBLIGATIONS TOTAL CHARGES: $20.92 COLLECTED BY DIRECT CHARGE	20.92-	

STATEMENT OF ACCOUNT 04/01/92 TO 06/30/92

DATE	DESCRIPTION	AMOUNT	INVESTMENTS
06/01/92	CASH RECEIPT OF INTEREST EARNED ON HELMSMAN U.S. TREASURY OBLIGATIONS INTEREST FROM 5/1/92 TO 5/31/92	2.34	
06/01/92	AUTOMATED CASH MANAGEMENT FEE COLLECTED CASH MGT CHG: HELMSMAN U.S. TREASURY OBLIGATIONS TOTAL CHARGES: $0.35 COLLECTED BY DIRECT CHARGE	0.35-	
06/05/92	CASH RECEIPT ADVISORY FEE REBATE HELMSMAN U.S. TREASURY OBLIGATIONS HELMSMAN FEE REBATE FOR 05/92	12.56	
06/05/92	CASH RECEIPT ADVISORY FEE REBATE HELMSMAN U.S. TREASURY OBLIGATIONS HELMSMAN FEE REBATE FOR 05/92	0.21	
	MONEY MARKET TRANSACTIONS (SUMMARY)		
	TOTAL PURCHASES OF MONEY MARKET FUND FOR PERIOD 04/01/92 THRU 06/30/92 HELMSMAN U.S. TREASURY OBLIGATIONS	10,419.54-	10,419.54
06/30/92	ENDING BALANCE THIS PERIOD	0.00	$55,258.94

BANK ONE OHIO TRUST COMPANY, NA
CANTON TRUST OFFICE
101 CENTRAL PLAZA SOUTH, P.O. BOX 20820
CANTON, OH 44711-0820

STATEMENT OF ACCOUNT
FOR THE PERIOD 01/01/92 TO 03/31/92

RECEIVED
APR 8 1992
OFFICE OF RCRA
Waste Management Division
U.S. EPA, REGION V

MASTER METAL INC EPA GRANTOR TRUST
DATED AUGUST 17, 1990

ACCOUNT NO. 6871061400

ACCOUNT ADMINISTRATOR
GEORGE BRIERCHECK
216-438-8390

BR CHIEF-US 5PA REGION 5 - RCRA
ENFORCEMENT BR, 5 HR-12
230 S DEARBORN ST
CHICAGO, IL 60604

BANK ONE.

ACCOUNT SUMMARY 01/01/92 TO 03/31/92

ACCOUNT NO. 6871061400 MASTER METALS INC EPA TRUST

MARKET VALUE ON 01/01/92		29,481.82
RECEIPTS		
OTHER CASH RECEIPTS	15,061.79	
TOTAL RECEIPTS		15,061.79
DISBURSEMENTS		
EXPENSES	40.56-	
TOTAL DISBURSEMENTS		40.56-
INVESTMENT ACTIVITY		
INCOME EARNED	336.35	
REALIZED GAIN/(LOSS)	0.00	
UNREALIZED GAIN/(LOSS)	0.00	
TOTAL INVESTMENT ACTIVITY		336.35
MARKET VALUE ON 03/31/92		44,839.40
ACCRUED INCOME ON 03/31/92		0.00
TOTAL VALUE (WITH ACCRUED INCOME) ON 03/31/92		44,839.40

INVESTMENT PORTFOLIO SUMMARY REPORT 03/31/92

	ACQUISITION COST	MARKET VALUE	PERCENT OF MARKET VALUE	ESTIMATED ANNUAL INCOME	ACCRUED INCOME
CASH & EQUIVALENTS					
CASH EQUIVALENTS	44,839.40	44,839.40	100.0%	1,720.75	0.00
TOTAL ASSETS AND CASH	44,839.40	44,839.40	100.0%	1,720.75	0.00
ACCRUED INCOME		0.00			
TOTAL VALUE (WITH ACCRUED INCOME)		44,839.40			

INVESTMENT PORTFOLIO DETAIL REPORT 03/31/92

ACCOUNT NO. 6871061400 MASTER METALS INC EPA TRUST

DESCRIPTION	SHARES/ FACE VALUE	ACQUISITION COST	MARKET PRICE	MARKET VALUE	PERCENT OF MARKET VALUE	ACCRUED INCOME
CASH EQUIVALENTS						
HELMSMAN U.S. TREASURY OBLIGATIONS	44,258.2	44,258.20	1.000	44,258.20	98.70	0.00
HELMSMAN U.S. TREASURY OBLIGATIONS	581.2	581.20	1.000	581.20	1.30	0.00
TOTAL CASH EQUIVALENTS		44,839.40		44,839.40	100.00	0.00
CASH		0.00		0.00	0.00	
TOTAL ASSETS AND CASH		44,839.40		44,839.40	100.00	0.00
ACCRUED INCOME				0.00		
TOTAL VALUE (WITH ACCRUED INCOME)				44,839.40		

STATEMENT OF ACCOUNT 01/01/92 TO 03/31/92

DATE	DESCRIPTION	AMOUNT	INVESTMENTS
12/31/91	ENDING BALANCE PRIOR PERIOD	0.00	29,481.82
01/02/92	CASH RECEIPT OF INTEREST EARNED ON HELMSMAN U.S. TREASURY OBLIG (D) INCLUDES REBATE FOR 12(B)-1 AND ADVISORY FEES	104.59	
01/02/92	AUTOMATED CASH MANAGEMENT FEE COLLECTED CASH MGT CHG: HELMSMAN U.S. TREASURY OBLIG (D) TOTAL CHARGES: $11.08 COLLECTED BY DIRECT CHARGE	11.08-	
01/02/92	CASH RECEIPT OF INTEREST EARNED ON HELMSMAN U.S. TREASURY OBLIGATIONS INTEREST FROM 12/1/91 TO 12/31/91	3.38	
01/02/92	AUTOMATED CASH MANAGEMENT FEE COLLECTED CASH MGT CHG: HELMSMAN U.S. TREASURY OBLIGATIONS TOTAL CHARGES: $0.40 COLLECTED BY DIRECT CHARGE	0.40-	
01/02/92	CASH RECEIPT OF INTEREST EARNED ON HELMSMAN U.S. TREASURY OBLIGATIONS INTEREST FROM 12/1/91 TO 12/31/91	0.03	
01/02/92	CASH RECEIPT 12B1 AND ADVISORY FEE REBATE HELMSMAN U.S. TREASURY OBLIGATIONS HELMSMAN FEE REBATE FOR 12/91	0.24	
01/07/92	CASH RECEIPT ADDITION TO ACCOUNT FOR TRUST FUND FOR EPA CLOSURE	5,014.70	
02/03/92	CASH RECEIPT OF INTEREST EARNED ON HELMSMAN U.S. TREASURY OBLIGATIONS INTEREST FROM 1/1/92 TO 1/31/92	113.38	

STATEMENT OF ACCOUNT 01/01/92 TO 03/31/92

DATE	DESCRIPTION	AMOUNT	INVESTMENTS
02/03/92	AUTOMATED CASH MANAGEMENT FEE COLLECTED CASH MGT CHG: HELMSMAN U.S. TREASURY OBLIGATIONS TOTAL CHARGES: $14.05 COLLECTED BY DIRECT CHARGE	14.05-	
02/03/92	CASH RECEIPT OF INTEREST EARNED ON HELMSMAN U.S. TREASURY OBLIGATIONS INTEREST FROM 1/1/92 TO 1/31/92	1.23	
02/03/92	AUTOMATED CASH MANAGEMENT FEE COLLECTED CASH MGT CHG: HELMSMAN U.S. TREASURY OBLIGATIONS TOTAL CHARGES: $0.15 COLLECTED BY DIRECT CHARGE	0.15-	
02/07/92	CASH RECEIPT ADVISORY FEE REBATE HELMSMAN U.S. TREASURY OBLIGATIONS HELMSMAN FEE REBATE FOR 01/92	0.09	
02/07/92	CASH RECEIPT ADVISORY FEE REBATE HELMSMAN U.S. TREASURY OBLIGATIONS HELMSMAN FEE REBATE FOR 01/92	8.43	
02/13/92	CASH RECEIPT ADDITION TO ACCOUNT FOR TRUST FUND EPA CLOSURE	5,014.70	
03/02/92	CASH RECEIPT OF INTEREST EARNED ON HELMSMAN U.S. TREASURY OBLIGATIONS INTEREST FROM 2/1/92 TO 2/29/92	112.34	
03/02/92	AUTOMATED CASH MANAGEMENT FEE COLLECTED CASH MGT CHG: HELMSMAN U.S. TREASURY OBLIGATIONS TOTAL CHARGES: $14.70 COLLECTED BY DIRECT CHARGE	14.70-	

STATEMENT OF ACCOUNT 01/01/92 TO 03/31/92

DATE	DESCRIPTION	AMOUNT	INVESTMENTS
03/02/92	CASH RECEIPT OF INTEREST EARNED ON HELMSMAN U.S. TREASURY OBLIGATIONS INTEREST FROM 2/1/92 TO 2/29/92	1.40	
03/02/92	AUTOMATED CASH MANAGEMENT FEE COLLECTED CASH MGT CHG: HELMSMAN U.S. TREASURY OBLIGATIONS TOTAL CHARGES: $0.18 COLLECTED BY DIRECT CHARGE	0.18-	
03/06/92	CASH RECEIPT ADVISORY FEE REBATE HELMSMAN U.S. TREASURY OBLIGATIONS HELMSMAN FEE REBATE FOR 02/92	0.11	
03/06/92	CASH RECEIPT ADVISORY FEE REBATE HELMSMAN U.S. TREASURY OBLIGATIONS HELMSMAN FEE REBATE FOR 02/92	8.82	
03/12/92	CASH RECEIPT ADDITION TO ACCOUNT FOR TRUST FUND EPA CLOSURE	5,014.70	
	MONEY MARKET TRANSACTIONS [SUMMARY]		
	TOTAL PURCHASES OF MONEY MARKET FUND FOR PERIOD 01/01/92 THRU 03/31/92 HELMSMAN U.S. TREASURY OBLIGATIONS	15,357.58-	15,357.58
03/31/92	ENDING BALANCE THIS PERIOD	0.00	$44,839.40

BANK ONE OHIO TRUST COMPANY, NA
CANTON TRUST OFFICE
101 CENTRAL PLAZA SOUTH, P.O. BOX 9280
CANTON, OH 44711-9280

STATEMENT OF ACCOUNT
FOR THE PERIOD 08/01/91 TO 09/30/91

RECEIVED
NOV - 5 1991
OFFICE OF RCRA
Waste Management Division
U.S. EPA, REGION V

MASTER METAL INC EPA GRANTOR TRUST
DATED AUGUST 17, 1990

ACCOUNT NO. 6871061400

ACCOUNT ADMINISTRATOR
GEORGE BRIERCHECK
216-438-8390

BR CHIEF-US 5PA REGION 5 - RCRA
ENFORCEMENT BR, 5 HR-12
230 S DEARBORN ST
CHICAGO, IL 60604

BANK ONE

ACCOUNT SUMMARY 08/01/91 TO 09/30/91

ACCOUNT NO. 6871061400 MASTER METALS INC EPA TRUST

MARKET VALUE ON 08/01/91		4,140.60
RECEIPTS		
OTHER CASH RECEIPTS	10,031.43	
TOTAL RECEIPTS		10,031.43
DISBURSEMENTS		
EXPENSES	3.13-	
TOTAL DISBURSEMENTS		3.13-
INVESTMENT ACTIVITY		
INCOME EARNED	60.40	
REALIZED GAIN/(LOSS)	0.00	
UNREALIZED GAIN/(LOSS)	0.00	
TOTAL INVESTMENT ACTIVITY		60.40
MARKET VALUE ON 09/30/91		14,229.30
TOTAL VALUE ON 09/30/91		14,229.30

BANK ONE.

INVESTMENT PORTFOLIO SUMMARY REPORT 09/30/91

	ACQUISITION COST	MARKET VALUE	PERCENT OF MARKET VALUE	ESTIMATED ANNUAL INCOME
CASH & EQUIVALENTS				
CASH EQUIVALENTS	14,229.30	14,229.30	100.0%	757.23
TOTAL ASSETS AND CASH	14,229.30	14,229.30	100.0%	757.23
TOTAL VALUE		14,229.30		

INVESTMENT PORTFOLIO DETAIL REPORT 09/30/91

DESCRIPTION	SHARES/ FACE VALUE	ACQUISITION COST	MARKET PRICE	MARKET VALUE	PERCENT OF MARKET VALUE
CASH EQUIVALENTS					
PNC GOVERNMENT MONEY MARKET PORTFOLIO	14,229.3	14,229.30	1.000	14,229.30	100.00
CASH		0.00		0.00	0.00
TOTAL ASSETS AND CASH		14,229.30		14,229.30	100.00
TOTAL VALUE				14,229.30	

STATEMENT OF ACCOUNT 08/01/91 TO 09/30/91

DATE	DESCRIPTION	AMOUNT	INVESTMENTS
07/31/91	ENDING BALANCE PRIOR PERIOD	0.00	4,140.60
08/05/91	CASH RECEIPT OF INTEREST EARNED ON PNC GOVT MONEY MARKET FD (SWEEP) INTEREST FROM 7/1/91 TO 7/31/91	20.75	
08/06/91	CASH RECEIPT MISC TAXABLE RECEIPTS REBATE ON PNC MONEY MARKET FUND, 07/91.	2.03	
08/06/91	CASH DISBURSEMENT ADMINISTRATIVE FEES CASH MANAGEMENT FEE FOR JULY 1991	1.12-	
08/08/91	CASH RECEIPT ESCROW DEPOSIT	5,014.70	
09/03/91	CASH RECEIPT OF INTEREST EARNED ON PNC GOVT MONEY MARKET FD (SWEEP) INTEREST FROM 8/1/91 TO 8/31/91	36.05	
09/03/91	AUTOMATED CASH MANAGEMENT FEE COLLECTED CASH MGT CHG: PNC GOVT MONEY MARKET FD (SWEEP) TOTAL CHARGES: $2.01 COLLECTED BY DIRECT CHARGE	2.01-	
09/12/91	CASH RECEIPT ADDITION TO ACCOUNT FOR TRUST FUND FOR EPA CLOSURE	5,014.70	
09/13/91	CASH RECEIPT OF INTEREST EARNED ON PNC GOVT MONEY MARKET FD REBATE OF AUGUST CASH MANAGEMENT FEES	3.60	

STATEMENT OF ACCOUNT 08/01/91 TO 09/30/91

DATE	DESCRIPTION	AMOUNT	INVESTMENTS
	MONEY MARKET TRANSACTIONS (SUMMARY)		
	TOTAL PURCHASES OF MONEY MARKET FUND FOR PERIOD 08/01/91 THRU 09/30/91 PNC GOVERNMENT MONEY MARKET PORTFOLIO	10,088.70-	10,088.70
09/30/91	ENDING BALANCE THIS PERIOD	0.00	$14,229.30

BANK ONE

BANK ONE OHIO TRUST COMPANY, NA

October 30, 1991

Dear Trust Client:

Enclosed you will find your Statement of Account for the period ending September 30, 1991. These are the first reports provided to you since our merger with Bank One Ohio Trust Company, NA. We are pleased with the new format and believe you will be also.

The format of your statements has changed but the Employee Benefit staff has not. We remain located in downtown Canton. Please be advised, though, that our address had changed to:

Bank One Ohio Trust Company, NA
101 Central Plaza, South
P.O. Box 20820
Canton, OH 44701-0820

Please contact our office at 438-8352 if you have any questions.

Sincerely,

George R. Briercheck
Trust Officer
Employee Benefits

GRB/cjk
Enclosures

BANK ONE OHIO TRUST COMPANY, NA
CANTON TRUST OFFICE
101 CENTRAL PLAZA SOUTH, P.O. BOX 9280
CANTON, OH 44711-9280

STATEMENT OF ACCOUNT
FOR THE PERIOD 08/01/91 TO 09/30/91

SUNPRO INC EPA GRANTOR TRUST DATED
AUGUST 1, 1990

ACCOUNT NO. 6871061700

ACCOUNT ADMINISTRATOR
GEORGE BRIERCHECK
216-438-8390

BR CHIEF-US 5PA REGION 5 - RCRA
ENFORCEMENT BR, 5 HR-12
230 S DEARBORN ST
CHICAGO, IL 60604

BANK ONE

ACCOUNT SUMMARY 08/01/91 TO 09/30/91

ACCOUNT NO. 6871061700 SUNPRO INC EPA TRUST

MARKET VALUE ON 08/01/91		3,318.83
RECEIPTS		
OTHER CASH RECEIPTS	1.52	
TOTAL RECEIPTS		1.52
DISBURSEMENTS		
EXPENSES	1.68-	
TOTAL DISBURSEMENTS		1.68-
INVESTMENT ACTIVITY		
INCOME EARNED	32.20	
REALIZED GAIN/(LOSS)	0.00	
UNREALIZED GAIN/(LOSS)	0.00	
TOTAL INVESTMENT ACTIVITY		32.20
MARKET VALUE ON 09/30/91		3,350.87
TOTAL VALUE ON 09/30/91		3,350.87

INVESTMENT PORTFOLIO SUMMARY REPORT 09/30/91

	ACQUISITION COST	MARKET VALUE	PERCENT OF MARKET VALUE	ESTIMATED ANNUAL INCOME
CASH & EQUIVALENTS				
CASH EQUIVALENTS	3,350.87	3,350.87	100.0%	178.32
TOTAL ASSETS AND CASH	3,350.87	3,350.87	100.0%	178.32
TOTAL VALUE		3,350.87		

INVESTMENT PORTFOLIO DETAIL REPORT 09/30/91

DESCRIPTION	SHARES/ FACE VALUE	ACQUISITION COST	MARKET PRICE	MARKET VALUE	PERCENT OF MARKET VALUE
CASH EQUIVALENTS					
PNC GOVERNMENT MONEY MARKET PORTFOLIO	3,350.87	3,350.87	1.000	3,350.87	100.00
CASH		0.00		0.00	0.00
TOTAL ASSETS AND CASH		3,350.87		3,350.87	100.00
TOTAL VALUE				3,350.87	

STATEMENT OF ACCOUNT 08/01/91 TO 09/30/91

DATE	DESCRIPTION	AMOUNT	INVESTMENTS
07/31/91	ENDING BALANCE PRIOR PERIOD	0.00	3,318.83
08/05/91	CASH RECEIPT OF INTEREST EARNED ON PNC GOVT MONEY MARKET FD (SWEEP) INTEREST FROM 7/1/91 TO 7/31/91	15.43	
08/06/91	CASH RECEIPT MISC TAXABLE RECEIPTS REBATE ON PNC MONEY MARKET FUND, 07/91.	1.52	
08/06/91	CASH DISBURSEMENT ADMINISTRATIVE FEES CASH MANAGEMENT FEE FOR JULY 1991	0.83-	
09/03/91	CASH RECEIPT OF INTEREST EARNED ON PNC GOVT MONEY MARKET FD (SWEEP) INTEREST FROM 8/1/91 TO 8/31/91	15.25	
09/03/91	AUTOMATED CASH MANAGEMENT FEE COLLECTED CASH MGT CHG: PNC GOVT MONEY MARKET FD (SWEEP) TOTAL CHARGES: $0.85 COLLECTED BY DIRECT CHARGE	0.85-	
09/13/91	CASH RECEIPT OF INTEREST EARNED ON PNC GOVT MONEY MARKET FD REBATE OF AUGUST CASH MANAGEMENT FEES	1.52	
	MONEY MARKET TRANSACTIONS (SUMMARY)		
	TOTAL PURCHASES OF MONEY MARKET FUND FOR PERIOD 08/01/91 THRU 09/30/91 PNC GOVERNMENT MONEY MARKET PORTFOLIO	32.04-	32.04
09/30/91	ENDING BALANCE THIS PERIOD	0.00	$3,350.87

CENTRAL TRUST

A PNC BANK

TRUST DEPARTMENT

STATEMENT OF TRANSACTIONS

SEP 27, 1990 THROUGH APR 30, 1991

ACCOUNT 70-73-003-0656003

ACCOUNT ADMINISTRATOR: GEORGE R. BRIERCHECK (216) 438-8390
INVESTMENT OFFICER:

MASTER METALS INC

RECEIVED
MAY 13 1991
OFFICE OF RCRA
Waste Management Division
U.S. EPA, REGION V

BR CHIEF-US EPA REGION 5 - RCRA
ENFORCEMENT BR, 5 HR-12
230 S DEARBORN ST
CHICAGO, IL
60604

T-117C (REV. 8/97)

CENTRAL TRUST

A PNC BANK

ACCOUNT SUMMARY

TRUST DEPARTMENT

09/27/90 THROUGH 04/30/91

ACCOUNT
70-73-003-0656003

MASTER METAL INC

	CASH
YOUR ACCOUNT BALANCES ON 09/27/90 WERE	
DURING THE PERIOD INCOME WAS RECEIVED FROM	
TAXABLE INTEREST	186.56
OTHER RECEIPTS	4,313.72
THUS THE TOTAL INCOME RECEIVED WAS	4,500.28
PAYMENTS OR EXPENSES	
FEES CHARGED	-1.11
OTHER PAYMENTS OR EXPENSES	-9.80
FOR A TOTAL OF	-10.91
CASH MANAGEMENT PURCHASES WERE	-4,489.37
YOUR BALANCES ON 04/30/91 ARE	

T-117C (REV. 8/90)

CENTRAL TRUST

A PNC BANK

STATEMENT OF TRANSACTIONS

TRUST DEPARTMENT

09/27/90 THROUGH 04/30/91

ACCOUNT
70-73-003-0656003

MASTER METAL INC

DATE	TRANSACTION DESCRIPTION	CASH
	BEGINNING BALANCES AS OF 09/27/90	0.00
09/28/90	PRINCIPAL CASH RECEIVED FOR ACI INVESTMENT AT CONVERSION	4,303.00
09/28/90	INCOME CASH RECEIVED THROUGH CONVERSION	10.72
09/28/90	PRINCIPAL CASH DISBURSEMENT TO COVER OVERDRAFT AT CONVERSION	-9.80
09/30/90	PNC GOVERNMENT MONEY MARKET PORTFOLIO NET INVESTMENT - PURCHASE	-4,303.00
10/01/90	INTEREST ON PNC GOVERNMENT MONEY MARKET PORTFOLIO INCLUDING REBATE OF 1.99	29.14
10/31/90	PNC GOVERNMENT MONEY MARKET PORTFOLIO NET INVESTMENT - PURCHASE	-28.95
11/05/90	PNC GOVERNMENT MONEY MARKET PORTFOLIO INTEREST TO 10/31/90 $ 27.14 LESS CASH MANAGEMENT FEE 1.11	26.03
11/08/90	REBATE ON PNC GOVERNMENT MONEY MARKET	1.99
11/30/90	PNC GOVERNMENT MONEY MARKET PORTFOLIO NET INVESTMENT - PURCHASE	-28.02
12/03/90	PNC GOVERNMENT MONEY MARKET PORTFOLIO INTEREST TO 11/30/90 $ 25.79 LESS CASH MANAGEMENT FEE 1.08	24.71

T-117C (REV. 8/90)

CENTRAL TRUST

A PNC BANK

STATEMENT OF TRANSACTIONS

TRUST DEPARTMENT

09/27/90 THROUGH 04/30/91

ACCOUNT
70-73-003-0656003

MASTER METAL INC

DATE	TRANSACTION DESCRIPTION	CASH
12/04/90	REBATE ON PNC GOVERNMENT MONEY MARKET	1.94
12/31/90	PNC GOVERNMENT MONEY MARKET PORTFOLIO NET INVESTMENT - PURCHASE	-26.65
01/02/91	PNC GOVERNMENT MONEY MARKET PORTFOLIO REBATE ON PNC GOVERNMENT MONEY MARKET	2.01
01/03/91	PNC GOVERNMENT MONEY MARKET PORTFOLIO INTEREST TO 12/31/90 $ 26.31 LESS CASH MANAGEMENT FEE 1.11	25.20
01/31/91	PNC GOVERNMENT MONEY MARKET PORTFOLIO NET INVESTMENT - PURCHASE	-27.21
02/01/91	PNC GOVERNMENT MONEY MARKET PORTFOLIO REBATE ON PNC GOVERNMENT MONEY MARKET	2.02
02/01/91	PNC GOVERNMENT MONEY MARKET PORTFOLIO INTEREST TO 01/31/91 $ 26.25 LESS CASH MANAGEMENT FEE 1.11	25.14
02/28/91	PNC GOVERNMENT MONEY MARKET PORTFOLIO NET INVESTMENT - PURCHASE	-27.16
03/01/91	PNC GOVERNMENT MONEY MARKET PORTFOLIO REBATE ON PNC GOVERNMENT MONEY MARKET	1.84

T-117C (REV. 8/90)

CENTRAL TRUST

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STATEMENT OF TRANSACTIONS

TRUST DEPARTMENT

09/27/90 THROUGH 04/30/91

ACCOUNT
70-73-003-0656003

MASTER METAL INC

DATE	TRANSACTION DESCRIPTION	CASH
03/01/91	PNC GOVERNMENT MONEY MARKET PORTFOLIO INTEREST TO 02/28/91 $ 22.92 LESS CASH MANAGEMENT FEE 1.03	21.89
03/31/91	PNC GOVERNMENT MONEY MARKET PORTFOLIO NET INVESTMENT - PURCHASE	-23.73
04/01/91	PNC GOVERNMENT MONEY MARKET PORTFOLIO INTEREST TO 03/31/91 $ 23.74 LESS CASH MANAGEMENT FEE 1.14	22.60
04/03/91	PNC GOVERNMENT MONEY MARKET PORTFOLIO REBATE ON PNC GOVERNMENT MONEY MARKET	2.05
04/30/91	PNC GOVERNMENT MONEY MARKET PORTFOLIO NET INVESTMENT - PURCHASE	-24.65
04/30/91	CENTRAL TRUST COMPANY FEE DURING PERIOD	-1.11
	NET TRANSACTIONS POSTED	0.00
	ENDING BALANCES AS OF 04/30/91	0.00

T-117C (REV. 8/90

CENTRAL TRUST

A PNC BANK

STATEMENT OF ASSETS

TRUST DEPARTMENT

AS OF 04/30/91

ACCOUNT
70-73-003-0656003

MASTER METAL INC

PAR VALUE /SHARES	ASSET DESCRIPTION	MARKET UNIT PRICE	MARKET VALUE	% OF MARKET	ESTIMATED INCOME	YIELD AT MARKET	CARRYING VALUE
MONEY MARKET FUNDS							
4,489.370	PNC GOVERNMENT MONEY MARKET PORTFOLIO	0.000	4,489.37	100.000	248.22	5.529	4,489.37
MONEY MARKET FUNDS							
TOTAL INVESTMENTS			4,489.37	100.000	248.22	5.529	4,489.37

T-117C (REV. 8/90)

CENTRAL TRUST

A PNC BANK

TRUST DEPARTMENT

S U M M A R Y O F A S S E T S

AS OF 04/30/91

ACCOUNT
70-73-003-0656003

MASTER METAL INC

	MARKET VALUE	% OF MARKET	ESTIMATED INCOME	YIELD AT MARKET	CARRYING VALUE
CASH	0.00				
FIXED INCOME					
CASH EQUIVALENTS	4,489.37	100.000	248.22	5.529	4,489.37
ACCOUNT TOTAL	4,489.37	100.000	248.22	5.529	4,489.37

T-117C (REV. 8/90)

CENTRAL TRUST

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TRUST DEPARTMENT

STATEMENT OF TRANSACTIONS

APR 30, 1991 THROUGH JUL 31, 1991

ACCOUNT 70-73-003-0656003

ACCOUNT ADMINISTRATOR: GEORGE R. BRIERCHECK (216) 438-8390
INVESTMENT OFFICER:

MASTER METALS INC

RECEIVED
OCT 30 1991
OFFICE OF RCRA
Waste Management Division
U.S. EPA, REGION V.

BR CHIEF-US EPA REGION 5 - RCRA
ENFORCEMENT BR, 5 HR-12
230 S DEARBORN ST
CHICAGO, IL
60604

CENTRAL TRUST

A PNC BANK

ACCOUNT SUMMARY

TRUST DEPARTMENT

04/30/91 THROUGH 07/31/91

ACCOUNT
70-73-003-0656003

MASTER METAL INC

	CASH
YOUR ACCOUNT BALANCES ON 04/30/91 WERE	
DURING THE PERIOD INCOME WAS RECEIVED FROM	
TAXABLE INTEREST	67.93
THUS THE TOTAL INCOME RECEIVED WAS	67.93
PAYMENTS OR EXPENSES	
FEES CHARGED	-416.70
FOR A TOTAL OF	-416.70
CASH MANAGEMENT PURCHASES WERE	-46.47
CASH MANAGEMENT SALES WERE	395.24
YOUR BALANCES ON 07/31/91 ARE	

CENTRAL TRUST

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STATEMENT OF TRANSACTIONS

TRUST DEPARTMENT

04/30/91 THROUGH 07/31/91

ACCOUNT
70-73-003-0656003

MASTER METAL INC

DATE	TRANSACTION DESCRIPTION	CASH
	BEGINNING BALANCES AS OF 04/30/91	0.00
05/01/91	PNC GOVERNMENT MONEY MARKET PORTFOLIO REBATE ON PNC GOVERNMENT MONEY MARKET	1.98
05/01/91	PNC GOVERNMENT MONEY MARKET PORTFOLIO INTEREST TO 04/30/91 $ 22.37 LESS CASH MANAGEMENT FEE 1.11	21.26
05/31/91	PNC GOVERNMENT MONEY MARKET PORTFOLIO NET INVESTMENT - PURCHASE	-23.24
06/03/91	PNC GOVERNMENT MONEY MARKET PORTFOLIO INTEREST TO 05/31/91 $ 22.32 LESS CASH MANAGEMENT FEE 1.14	21.18
06/04/91	PNC GOVERNMENT MONEY MARKET PORTFOLIO REBATE ON PNC GOVERNMENT MONEY MARKET	2.05
06/30/91	PNC GOVERNMENT MONEY MARKET PORTFOLIO NET INVESTMENT - PURCHASE	-23.23
07/01/91	PNC GOVERNMENT MONEY MARKET PORTFOLIO REBATE ON PNC GOVERNMENT MONEY MARKET	2.00
07/01/91	PNC GOVERNMENT MONEY MARKET PORTFOLIO INTEREST TO 06/30/91 $ 20.57 LESS CASH MANAGEMENT FEE 1.11	19.46

CENTRAL TRUST

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STATEMENT OF TRANSACTIONS

TRUST DEPARTMENT

04/30/91 THROUGH 07/31/91

ACCOUNT
70-73-003-0656003

MASTER METAL INC

DATE	TRANSACTION DESCRIPTION	CASH
07/31/91	PNC GOVERNMENT MONEY MARKET PORTFOLIO NET INVESTMENT - SALE	395.24
07/31/91	CENTRAL TRUST COMPANY FEE DURING PERIOD	-416.70
	NET TRANSACTIONS POSTED	0.00
	ENDING BALANCES AS OF 07/31/91	0.00

CENTRAL TRUST

A PNC BANK

STATEMENT OF ASSETS

TRUST DEPARTMENT

AS OF 07/31/91

ACCOUNT
70-73-003-0656003

MASTER METAL INC

PAR VALUE /SHARES	ASSET DESCRIPTION	MARKET UNIT PRICE	MARKET VALUE	% OF MARKET	ESTIMATED INCOME	YIELD AT MARKET	CARRYING VALUE
MONEY MARKET FUNDS							
4,140.600	PNC GOVERNMENT MONEY MARKET PORTFOLIO	0.000	4,140.60	100.000	212.45	5.130	4,140.60
MONEY MARKET FUNDS							
TOTAL INVESTMENTS			4,140.60	100.000	212.45	5.130	4,140.60

CENTRAL TRUST

A PNC BANK

TRUST DEPARTMENT

S U M M A R Y O F A S S E T S

AS OF 07/31/91

ACCOUNT
70-73-003-0656003

MASTER METAL INC

	MARKET VALUE	% OF MARKET	ESTIMATED INCOME	YIELD AT MARKET	CARRYING VALUE
CASH	0.00				
FIXED INCOME					
CASH EQUIVALENTS	4,140.60	100.000	212.45	5.130	4,140.60
ACCOUNT TOTAL	4,140.60	100.000	212.45	5.130	4,140.60