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OWNERSHIP OF DOCUMENTS

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IOWA SECTION

CERTIFICATION OF THE IMPLEMENTATION OF APPROVED CLOSURE PLAN AND AMENDMENT

HAZARDOUS WASTE DRUM STORAGE AREA

Klinger Paint Company, Inc.
Cedar Rapids, Iowa 52401

EPA ID# IAD 000651265

21 April 1992

I hereby certify that this certification of Closure Plan implementation was prepared by me or under my direct supervision and that I am a duly registered Professional Engineer under the laws of the State of Iowa.

Gene H. Fritch, P.E.
Iowa Registration No. 6367

21 April 1992

Carol E. Wilson, E.I.T.

21 April 1992

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APPENDIX B ANALYTICAL REPORTS & CHAIN-OF-CUSTODY FORMS
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CLOSURE SUMMARY

(10/91) The concrete pad was scrubbed and rinsed repeatedly with a pressure washer. All fluids generated during this process were collected in a 55-gallon drum. A sample of the final rinse from the pad was collected from the wet vacuum canister. Analysis indicated barium, chromium, cobalt, lead, mercury, zinc, and acetone at levels exceeding Closure Performance Standards (see Table 1-3).

(10/91) Three samples were collected from soil underlying the concrete pad by coring through the concrete and compositing material brought up with a stainless steel auger from depth 0-24". Two samples were collected off the pad down-gradient to surface run-off. These samples were analyzed, the results indicating metals and organics exceeding the Closure Performance Standards (see Table 1-3).

(12/91) Two composite soil samples were collected from the area underlying the concrete pad and analyzed by TCLP for the metals listed in Table 1-1. The results indicated that metals detected in the soil at Klinger Paint Company are not soluble (mobile).

(3/92) Concrete was broken and removed and soil excavated to the top of the bedrock in the area underlying the hazardous waste drum storage pad.

(3/92) Four soil samples were removed from the floor of the excavation and two from location down gradient with respect to surface run-off from the pad. All were analyzed for the constituents in Table 1-1. Analytical results indicate that chromium and lead concentrations exceeded the Closure Performance Standards in all six samples. The standards for barium and mercury were exceeded in five samples, cobalt in one sample, and toluene in one sample (see Table 2-1).

(3/92) All concrete, soil, and rock removed during closure activities was placed into two metal transport containers at the site. This waste, approximately 37 yd^3, has been accepted by U.S. Pollution Control, Inc. at their permitted landfill facility near Lone Mountain, Oklahoma. (Actual transport and disposal may be delayed until mid-May, 1992, due to conflicts with other disposers meeting a deadline for land disposal of "Third third" wastes. In no case will the waste remain on-site longer than 90 days, however.)

1.0 CLOSURE PLAN IMPLEMENTATION

Klinger Paint Company operates a paint, varnish, and related products manufacturing facility. A variety of wastes are generated and are either recycled in on-site processes or disposed off-site. Wastes generated that have been classified as hazardous by the U.S. Environmental Protection Agency (EPA) are designated by hazardous waste codes D007, D009, F003, and F005. The hazardous constituents involved are listed in the tables of approved Closure Performance Standards in this section.

Klinger Paint Company currently operates as a generator of hazardous waste in accordance with 40 CFR 262.34 and will continue to operate in this manner after closure is final.

Hazardous wastes are collected in 55-gallon drums at satellite accumulation points in the facility. Filled drums are transferred to the hazardous waste drum storage area within 72 hours. The wastes are manifested and transported for treatment, storage, or disposal (TSD) to permitted facilities within 90 days of transfer to the storage area.

The hazardous waste drum storage area to be closed is located outside east of the Klinger Paint Company building. The area is a 6-inch thick concrete pad, with dimensions 20 x 20 feet.

On 26 October 1991, Klinger Paint Company and Green Environmental Services, Inc. implemented the approved Closure Plan for the hazardous waste drum storage area. EPA-authorized representatives from PRC Environmental, Kansas City, Kansas, were on site to observe and split samples during the closure activities.

A concrete surface scraping sample (C-1) could not be collected from the storage pad as set out in the Closure Plan due to wet conditions on the day the plan was implemented (see Photograph A).

In accordance with the approved Closure Plan, the concrete surface of the drum storage pad was washed with a pressure washer, all liquid collected with a wet vacuum, and a sample collected for analysis (see Photographs B and C).

A core drill with a 6" diameter carbide-tipped core barrel was used to penetrate the concrete pad in three locations (see Photographs D, E, and F). The presence of rock in the area underlying the pad required that composite soil samples from 0-24" of depth be collected using a stainless steel auger rather than discrete intervals as set out in the Closure Plan (see Photographs G and H). A sample of soil from one location down-gradient with respect to surface run-off from the pad was also collected

at intervals from 0-6" and 6-12". Deeper sampling could not be accomplished due to rocky soil (see Photograph I).

All field equipment decontamination rinses, pad rinses, and any other liquid generated during closure were collected and placed in a 55-gallon drum (container shown in Photographs B and C). This drum was not filled during closure implementations and remained on-site for use as a satellite accumulation drum during the implementation of the Closure Plan amendment. Solid waste, including gloves and disposable sampling equipment was collected in a dedicated container and managed for disposal by Klinger Paint Company.

Samples were sent to National Environmental Testing, Cedar Falls, Iowa for analysis in accordance with the approved Closure Plan. Analytical results and reason for amending the plan are discussed in this section.

The closure of the hazardous waste drum storage area at Klinger Paint Company is intended to be a clean closure, with all hazardous waste removed from the site and no post-closure monitoring required. Clean closure requires a demonstration that any hazardous constituents remaining on site do not pose a threat to human health or to the environment. This demonstration can be made by documenting that on-site concentrations of

hazardous substances are at or below health-based standards or that residuals do not represent a hazard due to other considerations. Closure standards shown in Tables 1-1 and 1-2 were set by EPA as part of the approved Closure Plan.

Table 1-1

EPA-APPROVED SOIL CLOSURE PERFORMANCE STANDARDS

MATERIAL	CLOSURE STANDARD	REFERENCE	ANALYTICAL METHOD[1]
Acetone	1,000 mg/kg	-	Method 8240
Ethylbenzene	70 mg/kg	MCL x 100	Method 8240
Methylene Chloride[2]	93 mg/kg	RFI	Method 8240
Naphthalene	40 mg/kg	RFI	Method 8100
Toluene	100 mg/kg	MCL x 100	Method 8240
Xylenes	1,000 mg/kg	MCL x 100	Method 8240
1,1,1-Trichloroethane	20 mg/kg	MCL x 100	Method 8240
Barium	100 mg/kg	MCL x 100	Method 7080
Chromium	5.0 mg/kg	MCL x 100	Method 7190
Cobalt[3]	25.0 mg/kg	Natural	Method 7200
Lead	5.0 mg/kg	MCL x 100	Method 7420
Mercury	0.2 mg/kg	MCL x 100	Method 7470
Zinc	500 mg/kg	SMCL x 100	Method 7950

Table 1-2

EPA-APPROVED RINSE WATER CLEAN-UP TARGET LEVELS

MATERIAL	TARGET LEVEL	REFERENCE	ANALYTICAL METHOD
Acetone	0.01 mg/l	MDL	Method 8240
Ethylbenzene	0.7 mg/l	MCL	Method 8240
Methylene Chloride	0.01 mg/l	MDL	Method 8240
Naphthalene	0.02 mg/l	MDL	Method 8100
Toluene	1 mg/l	MCL	Method 8240
Xylenes	10 mg/l	MCL	Method 8240
1,1,1-Trichloroethane	0.2 mg/l	MCL	Method 8240
Barium	1 mg/l	MCL	Method 7080
Chromium	0.5 mg/l	MCL	Method 7190
Cobalt	0.2 mg/l	MDL	Method 7200
Lead	0.05 mg/l	MCL	Method 7420
Mercury	0.002 mg/l	MCL	Method 7470
Zinc	5 mg/l	SMCL	Method 7950

[1]All analytical methods found in EPA publication SW-846, Test Methods for Evaluating Solid Waste
[2]Carcinogen
[3]Mason, Brian. Principles of Geochemistry. John Wiley & Sons, NY: 1966, Page 45.

Comparison of the closure sampling analytical results to the closure standards shows that some of the standards were exceeded as shown in Table 1-3 (see Analytical Reports in Appendix B):

TABLE 1-3

Comparison of Analytical Results to Closure Performance Standards

Sample/Compound	Concentration	Closure Standard
S-1 (0-24" composite underlying pad)		
Barium	160 mg/kg	100 mg/kg
Chromium	12 mg/kg	5 mg/kg
Lead	58 mg/kg	5 mg/kg
Mercury	0.23 mg/kg	0.2 mg/kg
S-4 (0-6" soil down-gradient from pad)		
Barium	120 mg/kg	100 mg/kg
Chromium	46 mg/kg	5 mg/kg
Lead	210 mg/kg	5 mg/kg
S-5 (6-12" soil down-gradient from pad)		
Barium	180 mg/kg	100 mg/kg
Chromium	41 mg/kg	5 mg/kg
Lead	160 mg/kg	5 mg/kg
Mercury	0.50 mg/kg	0.2 mg/kg
S-7 (0-24" composite underlying pad)		
Barium	140 mg/kg	100 mg/kg
Chromium	32 mg/kg	5 mg/kg
Lead	250 mg/kg	5 mg/kg
Mercury	0.20 mg/kg	0.2 mg/kg
Toluene	206 mg/kg	100 mg/kg
Xylenes	1,300 mg/kg	1000 mg/kg

TABLE 1-3 continued
Comparison of Analytical Results
to Closure Performance Standards

Sample/Compound	Concentration	Closure Standard
S-10 (0-24" composite underlying pad)		
Chromium	28 mg/kg	5 mg/kg
Cobalt	66 mg/kg	25 mg/kg
Lead	160 mg/kg	5 mg/kg
Mercury	0.60 mg/kg	0.2 mg/kg
Zinc	1,100 mg/kg	500 mg/kg
C-2 (pad surface rinse water)		
Barium	7.9 mg/L	1 mg/L
Chromium	1.2 mg/L	0.05 mg/L
Cobalt	0.65 mg/L	0.2 mg/L
Lead	7.1 mg/L	0.05 mg/L
Mercury	0.6 mg/L	0.002 mg/L
Zinc	24 mg/L	5 mg/L
Acetone	23.6 ug/l	10 ug/l

Due to concentrations of target compounds in soil samples and concrete rinse samples at the site, an amendment to the approved Closure Plan was submitted by Klinger Paint Company, Inc. in accordance with Subpart G of Title 40 Code of Federal Regulations (40 CFR) Part 265.112(c). The amendment included additional steps needed to close the existing hazardous waste drum storage area. The amended plan was designed to ensure that the hazardous waste drum storage area, when closed, would not present a threat

to human health or the environment. The amendment was submitted to EPA 2 January 1992 in response to the discovery of a condition requiring modification of closure activities, as set out in Section 8.0 of the Approved Closure Plan. Modifications to the amendment were submitted 7 February 1992 and 6 March 1992.

2.0 AMENDED CLOSURE PROCEDURES

Two samples were collected from the soil underlying the pad on 17 December 1991. The concrete was penetrated using a drill rig and hollow stem auger with a concrete bit. The soil samples were composites from 0-24" of depth, the same interval from which three samples were collected during implementation of the Closure Plan in October, 1991.

The samples collected in October, 1991 were analyzed for total metals and volatiles in accordance with the approved Closure Plan. As reported in the submittal to EPA dated 2 January 1992, several metals (barium, chromium, lead, mercury, cobalt, and zinc) were detected at levels above Closure Performance Standards in the soil underlying the hazardous waste storage pad. Organics (xylene and toluene) were also detected at levels exceeding the standard.

The two soil samples collected 17 December 1991 were analyzed by Toxic Characteristic Leaching Procedure (TCLP) for leachable metals and organics. No TCLP organics were detected in these samples. Metals were either undetected or detected at levels below the TCLP Maximum Concentrations, demonstrating that the hazardous constituents in the soil underlying the slab are not mobile (see Analytical Reports in Appendix B).

On 16-17 March 1992, the concrete pad was broken and removed (see Photographs J, K, L and M) and the soil underlying the pad was excavated to the top of the bedrock (depths ranging from 10 to 28 inches) as shown in Photographs N and O. Concrete and soil were placed in lined metal waste transport containers (capacity 20 yd^3) and secured with transport tarps (see Photographs P and Q). The soil on the floor of the 20 ft x 20 ft excavation was sampled in four locations (one sample per 100 ft^2) as shown on Figure 1. The excavation was left open, but covered with plastic sheeting until analytical results could be examined. Due to the shallow bedrock formation, it was clear at the time the soil was removed that further excavation was not feasible (see Photograph R).

A 2 ft x 20 ft area south of the storage pad was also excavated to a depth of 18-20 inches (top of bedrock) as shown in Photographs S and T. This excavation removed material around the down-gradient sample collected during the previous closure work done in October, 1991. A second down-gradient location was selected for sampling as shown on the attached drawing and soil collected from 0-8".

549050

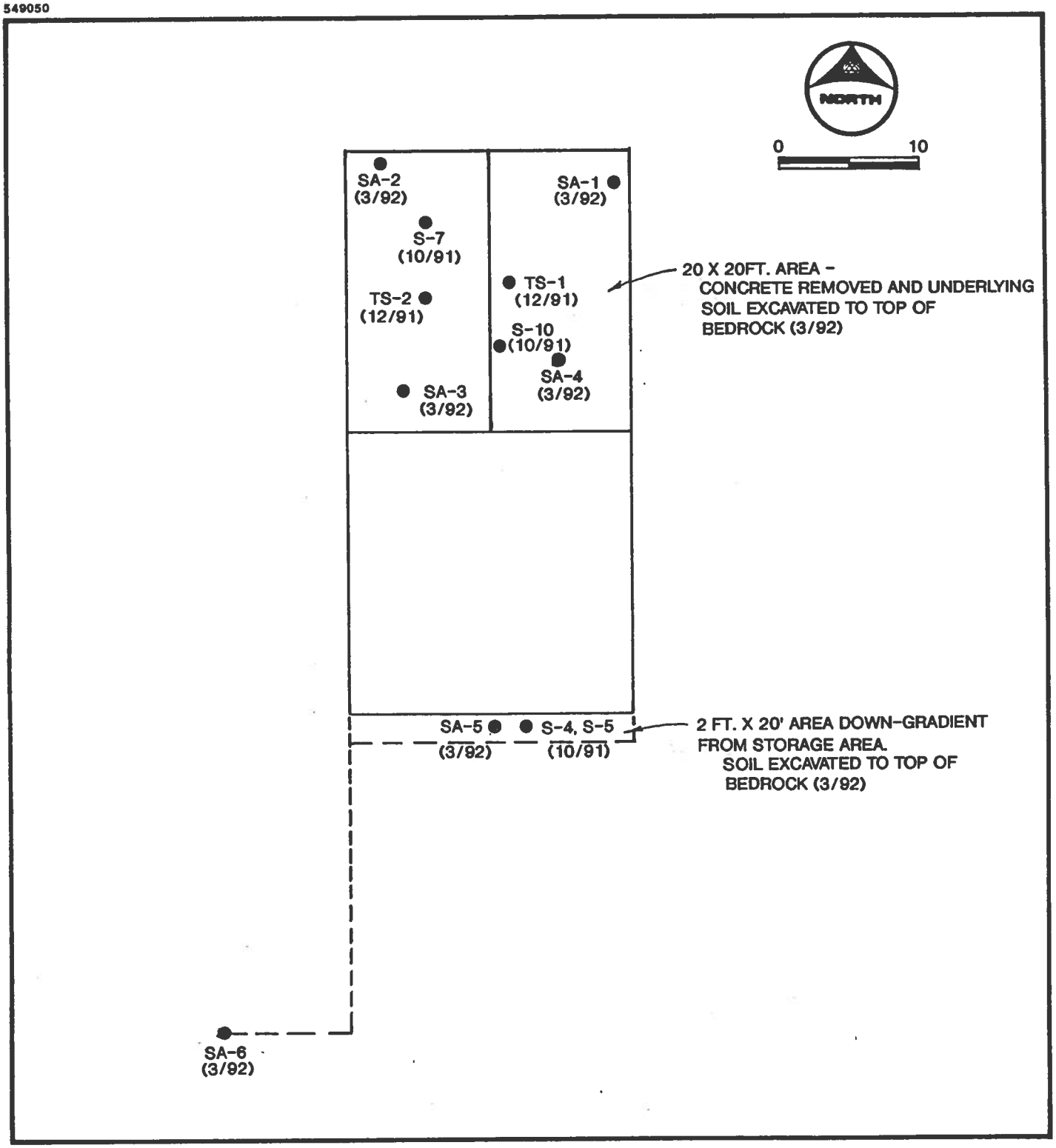

FIGURE 1

SOIL SAMPLING LOCATIONS
HAZARDOUS WASTE STORAGE AREA

KLINGER PAINT COMPANY, INC.
CEDAR RAPIDS, IOWA
APRIL, 1992

Green Environmental Services, Inc.

DCK 708340-J-0540

Samples SA-4 (southwest slab quadrant) and SA-6 (off-pad down gradient location) were collected with a stainless steel auger. All others were collected with a stainless steel spoon. Stainless steel pans were used to hold the samples prior to packing into 4-ounce glass jars, as shown in Photographs U, V, and W.

All six samples were analyzed for the compounds listed in the approved Closure Plan. The analytical results are compared to Closure Performance Standards in Table 2-1.

5.0 CLOSURE CERTIFICATION

The parties designated below hereby declare that the Hazardous Waste Drum Storage Area at Klinger Paint Company, Cedar Rapids, Iowa, IAD000651265 has been closed in accordance with the Closure Plan and the Amendment to the Closure Plan approved by the U.S. Environmental Protection Agency for this facility. The observation of closure activities and the preparation of this report were accomplished by Green Environmental Services, Inc. under the direction of an Iowa Registered Professional Engineer.

This information is, to the best of our knowledge and belief, true, accurate, and complete. We are aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowingly violating regulations applicable to this Closure.

ACKNOWLEDGEMENTS

Donald Klinger
Vice President
Klinger Paint Company, Inc.
IAD 000651265

21 April 1992

Gene H. Fritch, P.E.
Vice President
Green Environmental Services, Inc.
Iowa Registration No. 6367

21 April 1992

APPENDIX A

Site Safety Plans

HOWARD R. GREEN COMPANY
AND
GREEN ENVIRONMENTAL SERVICES, INC.

SITE SAFETY PLAN
FOR
KLINGER PAINT COMPANY

I. GENERAL INFORMATION

PROJECT NUMBER 708340-J

TASK/PHASE ---

CLIENT: Klinger Paint - Bob Kraemer

PROJECT MANAGER: Carol Wilson

SITE SAFETY COORDINATOR: Carol Wilson

SITE SUPERVISOR: Carol Wilton

SITE LOCATION: 5555 Willow Creek Drive SW, Cedar Rapids, Iowa

BACKGROUND INFORMATION AVAILABLE FROM:

Green Environmental Services, Inc.
3851 River Ridge Drive N.E.
Cedar Rapids, IA 52402
Phone: (319) 395-0578

II. EMERGENCY INFORMATION

A. Local Emergency Contacts

National Response Center (Washington, D.C.): 800/424-8802

Environmental and Chemical Spills: 515/281-8694

Poison Information: 319/369-7105 or 1-800-332-5470

Police: 911

Fire: 911

Ambulance: 911

B. Emergency Routes

1. Proceed from the Klinger facility north on Willow Creek Drive.
2. Turn right (east) onto Waconia Avenue and continue to Highway 30 on ramp.
3. Take Highway 30 east bound to I-380 north.
4. Proceed on I-380 north and exit at 7th Street.
5. From 7th Street; turn left (east) at A Avenue.
6. Proceed to St. Luke's Emergency Room entrance.

C. Procedures for Emergencies Posing Immediate Threat to Personnel

- Pursue most direct route away from danger area.
- Evaluate situation.
- Implement emergency contacts.

D. Procedures for Minor Accidents

1. Evaluate situation.
2. Pursue medical attention.
3. Notify Project Manager and HRG/GES Health and Safety Manager.
4. Notify Dean Kruger or Don Klinger of Klinger Paints.

E. Emergency Contacts at HRG/GES

1. Project Manager: Carol Wilson
   At site

2. HRG/GES Health and Safety Manager: Martin P. Mineck
   Phone: 319/395-7805 or 319/395-0578 (W)
   1-800-728-7805 or 1-800-728-0578
   319/378-9562 (H)

3. Worker's Compensation Administrator: Michael G. Daniel
   Phone: 319/395-7805 or 319/395-0578 (W)
   1-800-728-7805 or 1-800-728-0578
   319/362-1174 (H)

NOTE: If a work-related injury or exposure occurs, notify the Workman's Administrator as soon as possible after obtaining medical attention for the injured party. Notification must be made within twenty-four hours of the injury.

F. Contingency Plan

In the event the Site Safety Coordinator is incapacitated and cannot direct, implement or follow the Site Safety Plan, remaining HRG/GES personnel on-site shall follow the emergency procedures in Section II.

III. SITE CHARACTERISTICS

A. Facility Description

Klinger Paint manufactures various paints from raw products at the Willow Creek facility.

B. Status

Active

C. Principal Disposal Method

N/A

D. Features and Unusual Conditions

None

E. History

None

IV. SCOPE OF WORK

A. Summary of Previous Site Activities

None

B. Planned Site Activities and Dates

October 23, 1991 - Activities associated with site closure

C. Number of People On-Site

3 - GES
2 - PRC Environmental

D. Team Organization

Team Member	Responsibility
Carol Wilson	HRG/GES Site Safety Coordinator/Project Manager
Brad Ferguson	HRG/GES Representative
Rachelle Schmidtke	HRG/GES Representative
Nate Meyer	EPA Representative
_____	EPA Representative

E. Number of Days to Complete Work

One

V. WASTE CHARACTERISTICS

A. Waste Type(s)

Liquid X Solid ____ Sludge ____

Gas ____ Other ____

B. Waste Characteristics

Corrosive ____ Ignitable X Radioactive ____

Volatile X Toxic X Reactive ____

Unknown ____ Other (name) ____

VI. HAZARD EVALUATION

A. Chemical Hazards

	Chemical of Concern	Respiration Exposure Limits OSHA (mg/m^3)	NIOSH (mg/m^3)	ACGIH (mg/m^3)	IDLH
1ppm = 2.42 mg/m³	Acetone	1,800	590	1,780	20,000 ppm
1ppm = 4.41 "	Ethylbenzene	435	435	434	2,000 ppm
1ppm = 3.53 mg/m³	Methylene Chloride	Ca	Ca	175	5,000 ppm
1ppm = 4.5 mg/m³	Naphthalene	50	50	52	500 ppm
1ppm = 3.83 mg/m³	Toluene	375	375	377	2,000 ppm
1ppm = 5.04 mg/m³	Xylenes	435	435	434	1,000 ppm
1ppm = 5.55 mg/m³	1,1,1-Trichloroethane	350	350	350	N/A
	Barium	0.5	0.5	0.5	
	Chromium	0.5	0.5	0.5	
	Colbalt[3]	0.05	0.05	0.05	20 mg/m^3
	Lead	0.10	0.05	0.15	28 mg/m^3
	Mercury	0.05	0.05	0.05	
	Zinc	N/A	N/A	N/A	N/A

B. Physical Hazards

Overhead and underground utilities.

C. Hazards Posed by Site Activities

Explosion or electrocution.

D. Unusual Hazards

None

E. Overall Hazard Level

Low - utilities are not found in the work area.

VI. PROCEDURES

A. Training Requirements

All personnel who will be engaged in hazardous waste operations must present, to the Site Safety Coordinator, certification of completion, within the 12 months prior to the beginning of site activities, of a hazardous waste site investigation training course or refresher course. The training must comply with OSHA regulations found at 29 CFR 1910.120 et.seq. The certification must be presented before site activities begin.

B. Medical Monitoring Requirements

All personnel who will be engaged in hazardous waste operations must present, to the Site Safety Coordinator, certification of completion, within the 12 months prior to the beginning of site activities, of a comprehensive medial monitoring examination. The examination must comply with OSHA regulations found at 29 CFR 1910.120 et. seq. The certification must be signed by a medical doctor and indicate any work limitation placed on the individual. The certification also must specify that the individual is capable of working while wearing respiratory protective equipment. The certification must be presented before site activities begin.

C. Personnel Protective Equipment

Level of Protection

A_____ B_____ C_____ D__X____

Modifications:

Action Levels:

Instrument	Reading	Action
OVA (organic vapors)	Background	Level D
	Up to 5 ppm above background	Level C with appropriate cartridges
	Greater than 5 ppm above background	Level B
O_2 Meter	Less than 19.5% O_2	Level B; explosimeter readings not valid
	19.5% - 22% O_2	SCBA not needed on basis of O_2 content only
	Greater than 22% O_2	Evacuate; explosion hazard
LEL Meter	Up to 10% LEL	Continue activities
	10% - 25% LEL	Caution; ID source
	Greater than 25% LEL	Evacuate; explosion hazard
Radiation Meter	Background	Continue activities
	Greater than background	Evacuate
Draeger Tube (CN)	Any indication	Level B
Draeger Tube (other species)	Species dependent	Consult Health & Safety Manager
Dust Meter	Up to 5 mg/m^3	* Level D, based on dust level only
	Greater than 5 mg/m^3	* Level C, based on dust levels only
Noise Meter	Up to 85 dBA	Continue activities
	Greater than 85 dBA	Hearing protection required

* Consult HRG/GES Health and Safety Manager relative to reading action levels for toxic dust contaminants.

Monitoring Requirements

Ambient air monitoring will be conducted while site activities are in progress. Monitoring instruments will include the following:

N/A OVA (FID) for organic vapors

X O_2/LEL meter

N/A Radiation detector

N/A Draeger pump and tubes for cyanide (optional; other species as required)

N/A Noise Meter

N/A Dust Meter

The Site Safety Coordinator will take instrument readings every 15 minutes and record significant changes. Upgrade/downgrade decisions will be based on monitoring results in the breathing zone and the action levels listed above. Calibration and maintenance of monitoring equipment will be the responsibility of the Site Safety Coordinator and will be conducted in accordance with manufacturer's requirements as listed in the appropriate manual.

D. Site Organization and Control

Map/Sketch Attached? No Site Secured? Yes

Perimeter Identified? Yes

E. Initial Procedures

- Locate nearest available telephone
- Confirm and post emergency telephone numbers and route to hospital
- Designate at least one vehicle for emergency use
- Determine prevailing wind location, establish preliminary work zones (support area, contamination reduction area, exclusion area)
- Perform initial site reconnaissance
- Hold safety briefing for all participants before work begins
- Other: None

F. Work Limitations

- No eating, drinking, or smoking on-site
- No contact lenses to be worn on-site
- Work restricted to daylight hours only
- Buddy system in use at all times in exclusion zone
- Work to stop during thunderstorms or electrical storms
- No facial hair that would interfere with respirator fit
- Air monitoring to occur while site activities are in progress
- Other: None

G. Decontamination Procedures

For Personnel: Discard gloves and protective clothing in solid waste receptacle.

For Equipment: Water rinse.

For Vehicles: N/A

H. Disposal Procedures

Contaminated Liquids:

Contaminated Clothing:

I. Safety Equipment

- Fire extinguishers
- First aid kits
- Eye-wash kits
- Blanket or stretcher

J. Confined Space Entry Procedures

N/A

VIII. PLAN PREPARATION

PREPARED BY: Carol Wilson by RAS DATE: 10/23/91
(Project Manager)

APPROVED BY: [illegible] DATE: 10/23/91
(HRG/GES Health & Safety Manager)

NOTICE

This safety plan is produced for the use of HRG/GES personnel on the specific Project indicated herein. This safety plan is not intended or represented to be suitable for use by others on the Project, or for reuse on extensions of the Project, or for use on any other project. Any use without written verification or adaptation by HRG/GES will be at the user's sole risk and without liability or legal exposure to HRG/GES.

IX. PLAN DISTRIBUTION

A. Draft SSP:	Program Administrator	X
	Division Manager	
B. Final SSP:	Program Administrator	X
	Division Manager	X
	Client	X
	Project Manager	X
	SS Coordinator	
	Site Supervisor	
	Others:	

X. CERTIFICATIONS

(NOTE: This page should be retained by the Site Safety Coordinator and incorporated into the project file).

By my signature, I certify that:

1. I have read,

2. I understand, and

3. I will abide by

the Site Safety Plan for the Klinger Hazardous Waste site.

Printed Name	Signature	Date	Affiliation
Carol Wilson	Carol E Wilson	10/21/92	GES
Brad Ferguson	Brad Ferguson	10/21/92	GES
Rachelle Schmidtke	Rachelle Schmidtke	10/21/92	GES

HOWARD R. GREEN COMPANY
AND
GREEN ENVIRONMENTAL SERVICES, INC.

SITE SAFETY PLAN
FOR
KLINGER PAINT COMPANY

I. GENERAL INFORMATION

HRG/GES PROJECT NUMBER 708340-J

SITE LOCATION: 5555 Willow Creek Drive SW Cedar Rapids, Iowa

CLIENT: Klinger Paint Company - Bob Kraemer/Don Klinger

PROJECT MANAGER: Carol Wilson

SITE SAFETY COORDINATOR: Brad Ferguson

SITE SUPERVISOR: Carol Wilson

BACKGROUND INFORMATION:

The Klinger Paint facility is used for the manufacture of retail and wholesale quantities of paint products. Due to contaminants found at an outside storage area, a RCRA closure of the area is required.

II. EMERGENCY INFORMATION

A. Local Emergency Contacts

Ambulance: 911

Police: 911

Fire: 911

Poison Information: 1-800-332-5470 or 319-369-7105

Job Name_____
Job No._____

B. <u>Emergency Route to Nearest Medical Facility</u>

1. Proceed from the Klinger facility north on Willow Creek Drive
2. Turn right (east) onto Waconia Ave. and continue to Highway 30 on ramp
3. Take highway 30 east bound to I-380 north.
4. Proceed on I-380 north and exit at 7th Street.
5. Turn left (east) at A avenue.
6. Proceed to St. Lukes Emergency Room Entrance.

Job Name_____
Job No._____

C. Procedures for Emergencies Posing Immediate Threat to Personnel

- Pursue most direct route away from danger area.
- Evaluate situation.
- Implement emergency contacts.

D. Procedures for Accidents

- Evaluate situation.
- OR Implement first aid.
- Notify Project Manager if medical attention is required.
- Notify HRG/GES Health & Safety Manager.

NOTE: If a work-related injury or exposure occurs, notify the HRG/GES Workers' Compensation Administrator as soon as possible after obtaining medical attention for the injured party. Notification must be made within twenty-four hours of the injury.

E. Emergency Contacts at HRG/GES

1. Project Manager: Carol Wilson
   (at site)

2. HRG/GES Health and Safety Manager: Martin P. Mineck
   Phone: 319/395-7805 or 319/395-0578 (W)
   1-800-728-7805 or 1-800-728-0578
   319/378-9562 (H)

3. Worker's Compensation Administrator: Michael G. Daniel
   Phone: 319/395-7805 or 319/395-0578 (W)
   1-800-728-7805 or 1-800-728-0578
   319/362-1174 (H)

F. Contingency Plan

1. In the event the Site Safety Coordinator is incapacitated and cannot direct, implement or follow the Site Safety Plan, remaining HRG/GES personnel on-site shall follow the emergency procedures in Section II above.

Job Name_____
Job No._____

2. The Site Safety Coordinator shall ask Client to perform a search before closing the site if Site Safety Coordinator has not checked out with the Client by the time of closing.

III. SITE CHARACTERISTICS

A. Facility Description
Klinger paint manufactures various paints from raw products at the Willow Creek facility.

B. Status
Active

C. Features and Unusual Conditions
Care must be taken to avoid contact with overhead and buried utilities.

D. Environmental History

Job Name_____
Job No._____

IV. SCOPE OF WORK

A. Summary of Previous Site Activities

October 23, 1991 - GES on site with EPA to perform site closure activities.

B. Planned Site Activities and Dates

1. Check-in with Client to inform Client of site activities and to provide an estimate of required time on-site.

2. Check-out with the Client upon departure from the site.
3. March 16, 1992 - Excavate concrete pad and soils in area for site closure activities. Includes soil sampling.

C. Number of People On-Site

Green Environmental Services
Brad Ferguson
Carol Wilson
Randy Gavin

EPA Representative

_____

D. Team Organization

Team Member	Responsibility
Carol Wilson	GES Project manager
Brad Ferguson	Site Safety Coordinator
Randy Gavin	GES Representative

V. WASTE CHARACTERISTICS

A. Waste Type(s)

Liquid_____ Solid X____ Sludge_____

Gas _____ Other_____

B. Waste Characteristics

Corrosive_____ Ignitable X___ Radioactive_____

Volatile X___ Toxic X___ Reactive _____

Unknown _____ Other (name) _____

Job Name_____
Job No._____

VI. HAZARD EVALUATION

A. Chemical Hazards

Chemical of Concern	OSHA ppm	NIOSH ppm	ACGIH ppm
RESPIRATORY			
Acetone	750	250	750
Toluene	100	100	100
Xylenes	100	100	100
DERMAL	mg/m3	mg/m3	mg/m3
Barium	0.5	0.5	0.5
Chromium	0.5	0.5	0.5
Cobalt	0.05	0.05	0.05
Lead	0.10	0.05	0.15
Mercury	0.05	0.05	0.05

B. Physical Hazards

Overhead and Underground Utilities.

Temperatures. Follow ACGIH guidelines when working in temps <40 F

C. Hazards Posed by Site Activities

Explosion

D. Overall Hazard Level

Low - Utilities are not found in the area.
Concentrations of contaminants are relatively low.

VII. PROCEDURES

A. Personnel Protective Equipment

1. Level of Protection:

A_____ B_____ C_____ D__X___

Modifications:

Job Name_____
Job No._____

2. Instruments and Action Levels:

Instrument	Reading	Action	Instrument Required
Organic vapor monitors	Background	Level D	yes
	Up to 5 ppm above background	Level C with appropriate cartridges	
	Greater than 5 ppm above background	Level B	
O_2 Meter	Less than 19.5% O_2	Level B; explosimeter readings not valid	no
	19.5% - 22% O_2	SCBA not needed on basis of O_2 content only	
	Greater than 22% O_2	Evacuate; explosion hazard	
LEL Meter	Up to 10% LEL	Continue activities	yes
	10% - 25% LEL	Caution; ID source	
	Greater than 25% LEL	Evacuate; explosion hazard	
Radiation Meter	Background	Continue activities	no
	Greater than background	Evacuate	
Dust Meter	Up to 5 mg/m^3	Level D, based on dust level only	no
	Greater than 5 mg/m^3	Level C, based on dust levels only	
Noise Meter	Up to 85 dBA	Continue activities	no
	Greater than 85 dBA	Hearing protection required	

NOTE: Ambient air monitoring will be conducted continuously while site activities are in progress.

Job Name_____
Job No._____

The Site Safety Coordinator will take instrument readings every 15____

and record significant changes. Upgrade/downgrade decisions will be based on monitoring results in the breathing zone and the action levels listed above. Calibration and maintenance of monitoring equipment will be the responsibility of the Site Safety Coordinator and will be conducted in accordance with manufacturer's requirements as listed in the appropriate manual.

B. Site Organization and Control

Attached Map/Sketch? __Yes__ Site Secured? __no____

Perimeter Identified? __no____

NOTE: Work zones within the site (exclusion area, contamination reduction area, support area) should be established so that the support area is upwind of the exclusion area.

C. Initial Procedures - to be reviewed with site personnel before starting site work.

- Locate nearest available telephone
- Confirm and post emergency telephone numbers and route to hospital
- Designate at least one vehicle for emergency use
- Determine prevailing wind location, establish preliminary work zones (support area, contamination reduction area, exclusion area)
- Perform initial site reconnaissance
- Hold safety briefing for all participants before work begins
- Other___none_____

Job Name_____
Job No._____

D. Work Limitations for Action Levels A, B, C

- No eating, drinking, or smoking on-site
- No contact lenses to be worn on-site
- Work restricted to daylight hours only when outdoors
- Buddy system in use at all times in exclusion zone
- Work to stop during thunderstorms or electrical storms
- No facial hair that would interfere with respirator fit
- Other none

E. Decontamination Procedures

For Personnel: Discard gloves and protective clothing in solid waste receptacle.

For Equipment: Water Rinse

For Vehicles: N/A

F. Disposal Procedures

Contaminated Liquids: To be drummed.

Contaminated Clothing: Discard in waste receptacle.

G. Safety Equipment

- Fire extinguisher
- Eye-wash kits
- First aid kits
- Blanket or stretcher

Job Name_____
Job No._____

VIII. PLAN PREPARATION

PREPARED BY: _____ DATE: _____
(Project Manager)

APPROVED BY: _____ DATE: 3/13/92
(HRG/GES Health & Safety Manager)

NOTICE

This safety plan is produced for the use of HRG/GES personnel on the specific Project indicated herein. This safety plan is not intended or represented to be suitable for use by others on the Project, or for reuse on extensions of the Project, or for use on any other project. Any use without written verification or adaptation by HRG/GES will be at the user's sole risk and without liability or legal exposure to HRG/GES.

IX. PLAN DISTRIBUTION

A. Unsigned Site Safety Plan:	Health & Safety Manager	X
	Project Manager	X
B. Signed Site Safety Plan:	Health & Safety Manager	X
	Department Head	X
	Client	X
	Project Manager (Project File)	X
	Site Safety Coordinator	X
	Site Supervisor	X
	Subcontractors	X
	Others: _____	

Job Name_____
Job No._____

X. CERTIFICATIONS

A. Training Requirements

All personnel who will be engaged in hazardous waste operations must present, to the Health & Safety Manager, certification of completion, within the 12 months prior to the beginning of site activities, of a hazardous waste site investigation training course or refresher course. The training must comply with OSHA regulations found at 29 CFR 1910.120 et.seq. The certification must be verified to the Health & Safety Manager before site activities begin.

B. Medical Monitoring Requirements

All personnel who will be engaged in hazardous waste operations must present, to the Health & Safety Manager, certification of completion, within the 12 months prior to the beginning of site activities, of a comprehensive medial monitoring examination. The examination must comply with OSHA regulations found at 29 CFR 1910.120 et. seq. The certification must be signed by a medical doctor and indicate any work limitation placed on the individual. The certification also must specify that the individual is capable of working while wearing respiratory protective equipment. The certification must be verified to the Health & Safety Manager before site activities begin.

By my signature, I certify that:

1. I have read,

2. I understand, and

3. I will abide by

the Site Safety Plan for the Klinger Paint Company site.

Printed Name	Signature	Date	Affiliation
RANDALL T. GAVIN	Randall T. G	3-16-92	G.E.S.
Bradley D. Ferguson	Bradley D. Ferguson	3/16/92	G.E.S.
Carol E Wilson	Carol E Wilson	3/16/92	GES

Job Name_____
Job No._____

APPENDIX B

Analytical Reports and Chain of Custody Forms

NATIONAL ENVIRONMENTAL TESTING, INC.

NET Midwest, Inc.
Cedar Falls Division
704 Enterprise Drive
P.O. Box 625
Cedar Falls, IA 50613
Tel: (319) 277-2401
Fax: (319) 277-2425

ANALYTICAL REPORT

Carol Wilson
HOWARD R. GREEN CO.
P.O. Box 9009
Cedar Rapids, IA 52409-9009

11/07/1991

Sample No.: 149838
Job Number: 91.3889

Sample Description: S-1 #708340
SOIL

Date Taken: 10/24/1991

Date Received: 10/26/1991

Solids, Total	77.87	%
Barium	160.	mg/kg
Chromium, Total	12.	mg/kg
Cobalt	15.	mg/kg
Lead	58.	mg/kg
Mercury	0.23	mg/kg
Zinc	120.	mg/kg
VOLATILES 8260-Med.level soil		
Acetone	<5.0	ug/g
Ethylbenzene	3.5	ug/g
Methylene chloride	<2.5	ug/g
Napthalene	0.8	ug/g
Toluene	24.2	ug/g
1,1,1-Trichloroethane	<0.5	ug/g
Xylenes, Total	44.8	ug/g

Cheryl L. Wilson
Project Manager

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ANALYTICAL REPORT

Carol Wilson
HOWARD R. GREEN CO.
P.O. Box 9009
Cedar Rapids, IA 52409-9009

11/07/1991

Sample No.: 149839
Job Number: 91.3889

Sample Description: S-4 #708340
SOIL

Date Taken: 10/24/1991

Date Received: 10/26/1991

Solids, Total	88.09	%
Barium	120.	mg/kg
Chromium, Total	46.	mg/kg
Cobalt	21.	mg/kg
Lead	210.	mg/kg
Mercury	<0.20	mg/kg
Zinc	170.	mg/kg
VOLATILES 8260-Med.level soil		
Acetone	<5.0	ug/g
Ethylbenzene	<0.5	ug/g
Methylene chloride	<2.5	ug/g
Napthalene	0.5	ug/g
Toluene	<0.5	ug/g
1,1,1-Trichloroethane	<0.5	ug/g
Xylenes, Total	<0.5	ug/g

Cheryl L. Wilson
Project Manager

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ANALYTICAL REPORT

Carol Wilson
HOWARD R. GREEN CO.
P.O. Box 9009
Cedar Rapids, IA 52409-9009

11/07/1991

Sample No.: 149840
Job Number: 91.3889

Sample Description: S-5 #708340
SOIL

Date Taken: 10/24/1991

Date Received: 10/26/1991

Solids, Total	92.76	%
Barium	180.	mg/kg
Chromium, Total	41.	mg/kg
Cobalt	18.	mg/kg
Lead	160.	mg/kg
Mercury	0.50	mg/kg
Zinc	170.	mg/kg
VOLATILES 8260-Med.level soil		
Acetone	<5.0	ug/g
Ethylbenzene	<0.5	ug/g
Methylene chloride	<2.5	ug/g
Napthalene	<0.5	ug/g
Toluene	<0.5	ug/g
1,1,1-Trichloroethane	<0.5	ug/g
Xylenes, Total	<0.5	ug/g

Cheryl L. Wilson
Project Manager

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ANALYTICAL REPORT

Carol Wilson
HOWARD R. GREEN CO.
P.O. Box 9009
Cedar Rapids, IA 52409-9009

11/07/1991

Sample No.: 149841
Job Number: 91.3889

Sample Description: S-7 #708340
SOIL

Date Taken: 10/24/1991

Date Received: 10/26/1991

Solids, Total	82.06	%
Barium	140.	mg/kg
Chromium, Total	32.	mg/kg
Cobalt	15.	mg/kg
Lead	250.	mg/kg
Mercury	0.20	mg/kg
Zinc	110.	mg/kg
VOLATILES 8260-Med.level soil		
Acetone	<5.0	ug/g
Ethylbenzene	34.9	ug/g
Methylene chloride	<2.5	ug/g
Napthalene	1.7	ug/g
Toluene	206.	ug/g
1,1,1-Trichloroethane	<0.5	ug/g
Xylenes, Total	1300.	ug/g

Cheryl L. Wilson
Project Manager

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ANALYTICAL REPORT

Carol Wilson
HOWARD R. GREEN CO.
P.O. Box 9009
Cedar Rapids, IA 52409-9009

11/07/1991

Sample No.: 149842
Job Number: 91.3889

Sample Description: S-10 #708340
SOIL

Date Taken: 10/24/1991

Date Received: 10/26/1991

Solids, Total	82.11	%
Barium	89.	mg/kg
Chromium, Total	28.	mg/kg
Cobalt	66.	mg/kg
Lead	160.	mg/kg
Mercury	0.60	mg/kg
Zinc	1100.	mg/kg
VOLATILES 8260-Med.level soil		
Acetone	<5.0	ug/g
Ethylbenzene	<0.5	ug/g
Methylene chloride	<2.5	ug/g
Napthalene	<0.5	ug/g
Toluene	0.9	ug/g
1,1,1-Trichloroethane	<0.5	ug/g
Xylenes, Total	7.4	ug/g

Cheryl L. Wilson
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ANALYTICAL REPORT

Carol Wilson
HOWARD R. GREEN CO.
P.O. Box 9009
Cedar Rapids, IA 52409-9009

11/05/1991

Sample No.: 149835

NET Job No: 91.3888

Sample Description: R-1 #708340

Date Taken: 10/24/1991 Date Received: 10/26/1991

	Result	Units	Date Analyzed	Analyst	Analysis Method	Method Reporting Limit
Barium	<0.50	mg/L	10/29/1991	llw	EPA 208.1	0.50 mg/L
Chromium, Total (GFAA)	<0.0020	mg/L	10/29/1991	ajp	EPA 218.2	0.0020 mg/L
Cobalt	<0.20	mg/L	11/04/1991	llw	EPA 219.1	0.20 mg/L
Lead, GFAA	0.1410	mg/L	10/30/1991	ajp	EPA 239.2	0.0050 mg/L
Mercury,Cold Vapor	0.0014	mg/L	11/01/1991	ajp	EPA 245.1	0.0005 mg/L
Zinc	0.250	mg/L	11/01/1991	llw	EPA 289.1	0.050 mg/L
VOLATILE COMPOUNDS - 624						
Acetone	10.5	ug/L	10/29/1991	dmd	E-624	
Ethylbenzene	<1.0	ug/L	10/29/1991	dmd	E-624	1.0
Methylene chloride	<5.0	ug/L	10/29/1991	dmd	E-624	5.0 ug/L
Napthalene	<10.	ug/L	10/29/1991	dmd	E-624	10.
Toluene	7.0	ug/L	10/29/1991	dmd	E-624	1.0 ug/L
1,1,1-Trichloroethane	<1.0	ug/L	10/29/1991	dmd	E-624	

Cheryl L. Wilson
Project Manager

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ANALYTICAL REPORT

Carol Wilson
HOWARD R. GREEN CO.
P.O. Box 9009
Cedar Rapids, IA 52409-9009

11/05/1991

Sample No.: 149835

NET Job No: 91.3888

Sample Description: R-1 #708340

Date Taken: 10/24/1991 Date Received: 10/26/1991

	Result	Units	Date Analyzed	Analyst	Analysis Method	Method Reporting Limit
Xylenes, Total	3.9	ug/L	10/29/1991	dmd	E-624	

Cheryl L. Wilson
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ANALYTICAL REPORT

Carol Wilson
HOWARD R. GREEN CO.
P.O. Box 9009
Cedar Rapids, IA 52409-9009

11/05/1991

Sample No.: 149836

NET Job No: 91.3888

Sample Description: R-2 #708340

Date Taken: 10/24/1991 Date Received: 10/26/1991

	Result	Units	Date Analyzed	Analyst	Analysis Method	Method Reporting Limit
Barium	<0.50	mg/L	10/29/1991	llw	EPA 208.1	0.50 mg/L
Chromium, Total (GFAA)	<0.0020	mg/L	10/29/1991	ajp	EPA 218.2	0.0020 mg/L
Cobalt	<0.20	mg/L	11/04/1991	llw	EPA 219.1	0.20 mg/L
Lead, GFAA	0.0150	mg/L	10/30/1991	ajp	EPA 239.2	0.0050 mg/L
Mercury,Cold Vapor	<0.0005	mg/L	11/01/1991	ajp	EPA 245.1	0.0005 mg/L
Zinc	<0.050	mg/L	11/01/1991	llw	EPA 289.1	0.050 mg/L
VOLATILE COMPOUNDS - 624						
Acetone	<10.	ug/L	10/29/1991	dmd	E-624	
Ethylbenzene	<1.0	ug/L	10/29/1991	dmd	E-624	1.0
Methylene chloride	<5.0	ug/L	10/29/1991	dmd	E-624	5.0 ug/L
Napthalene	<10.	ug/L	10/29/1991	dmd	E-624	10.
Toluene	<1.0	ug/L	10/29/1991	dmd	E-624	1.0 ug/L
1,1,1-Trichloroethane	<1.0	ug/L	10/29/1991	dmd	E-624	

Cheryl L. Wilson
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ANALYTICAL REPORT

Carol Wilson
HOWARD R. GREEN CO.
P.O. Box 9009
Cedar Rapids, IA 52409-9009

11/05/1991

Sample No.: 149836

NET Job No: 91.3888

Sample Description: R-2 #708340

Date Taken: 10/24/1991 Date Received: 10/26/1991

	Result	Units	Date Analyzed	Analyst	Analysis Method	Method Reporting Limit
Xylenes, Total	<1.0	ug/L	10/29/1991	dmd	E-624	

Cheryl L. Wilson
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ANALYTICAL REPORT

Carol Wilson
HOWARD R. GREEN CO.
P.O. Box 9009
Cedar Rapids, IA 52409-9009

11/05/1991

Sample No.: 149834

NET Job No: 91.3888

Sample Description: T-1 #708340

Date Taken: 10/24/1991 Date Received: 10/26/1991

	Result	Units	Date Analyzed	Analyst	Analysis Method	Method Reporting Limit
Barium	<0.50	mg/L	10/29/1991	llw	EPA 208.1	0.50 mg/L
Chromium, Total (GFAA)	<0.0020	mg/L	10/29/1991	ajp	EPA 218.2	0.0020 mg/L
Cobalt	<0.20	mg/L	11/04/1991	llw	EPA 219.1	0.20 mg/L
Lead, GFAA	0.0120	mg/L	10/30/1991	ajp	EPA 239.2	0.0050 mg/L
Mercury,Cold Vapor	<0.0005	mg/L	11/01/1991	ajp	EPA 245.1	0.0005 mg/L
Zinc	<0.050	mg/L	11/01/1991	llw	EPA 289.1	0.050 mg/L
VOLATILE COMPOUNDS - 624						
Acetone	<10.	ug/L	10/29/1991	dmd	E-624	
Ethylbenzene	<1.0	ug/L	10/29/1991	dmd	E-624	1.0
Methylene chloride	<5.0	ug/L	10/29/1991	dmd	E-624	5.0 ug/L
Napthalene	<10.	ug/L	10/29/1991	dmd	E-624	10.
Toluene	<1.0	ug/L	10/29/1991	dmd	E-624	1.0 ug/L
1,1,1-Trichloroethane	3.2	ug/L	10/29/1991	dmd	E-624	

Cheryl L. Wilson
Project Manager

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ANALYTICAL REPORT

Carol Wilson
HOWARD R. GREEN CO.
P.O. Box 9009
Cedar Rapids, IA 52409-9009

11/05/1991

Sample No.: 149834

NET Job No: 91.3888

Sample Description: T-1 #708340

Date Taken: 10/24/1991 Date Received: 10/26/1991

	Result	Units	Date Analyzed	Analyst	Analysis Method	Method Reporting Limit
Xylenes, Total	<1.0	ug/L	10/29/1991	dmd	E-624	

Cheryl L. Wilson
Project Manager

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ANALYTICAL REPORT

Carol Wilson
HOWARD R. GREEN CO.
P.O. Box 9009
Cedar Rapids, IA 52409-9009

11/05/1991

Sample No.: 149837

NET Job No: 91.3888

Sample Description: C-2 #708340 Rinse Water

Date Taken: 10/24/1991 Date Received: 10/26/1991

	Result	Units	Date Analyzed	Analyst	Analysis Method	Method Reporting Limit
Barium	7.9	mg/L	10/29/1991	llw	EPA 208.1	0.50 mg/L
Chromium, Total (GFAA)	1.2	mg/L	10/29/1991	ajp	EPA 218.2	0.0020 mg/L
Cobalt	0.65	mg/L	11/04/1991	llw	EPA 219.1	0.20 mg/L
Lead, GFAA	7.1	mg/L	10/30/1991	ajp	EPA 239.2	0.0050 mg/L
Mercury,Cold Vapor	<0.0005	mg/L	11/01/1991	ajp	EPA 245.1	0.0005 mg/L
Zinc	24.	mg/L	11/01/1991	llw	EPA 289.1	0.050 mg/L
*VOLATILE COMPOUNDS - 624						
Acetone	23.6	ug/L	10/29/1991	dmd	E-624	
Ethylbenzene	<2.0	ug/L	10/29/1991	dmd	E-624	1.0
Methylene chloride	<10.	ug/L	10/29/1991	dmd	E-624	5.0 ug/L
Napthalene	<20.	ug/L	10/29/1991	dmd	E-624	10.
Toluene	<2.0	ug/L	10/29/1991	dmd	E-624	1.0 ug/L
1,1,1-Trichloroethane	<2.0	ug/L	10/29/1991	dmd	E-624	

*High reporting limits due to matrix effect.

Cheryl L. Wilson
Project Manager

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ANALYTICAL REPORT

Carol Wilson
HOWARD R. GREEN CO.
P.O. Box 9009
Cedar Rapids, IA 52409-9009

11/05/1991

Sample No.: 149837

NET Job No: 91.3888

Sample Description: C-2 #708340

Date Taken: 10/24/1991 Date Received: 10/26/1991

	Result	Units	Date Analyzed	Analyst	Analysis Method	Method Reporting Limit
Xylenes, Total	<2.0	ug/L	10/29/1991	dmd	E-624	

Cheryl L. Wilson
Project Manager

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ANALYTICAL REPORT

Carol Wilson
HOWARD R. GREEN CO.
P.O. Box 9009
Cedar Rapids, IA 52409-9009

01/14/1992

Sample No.: 155458
Job Number: 91.5548

Sample Description: TS-1 #708340
SOIL

Date Taken: 12/17/1991

Date Received: 12/19/1991

TCLP - Arsenic	0.1160	mg/L
TCLP - Barium	<5.0	mg/L
TCLP - Cadmium	<0.20	mg/L
TCLP - Chromium	<1.0	mg/L
TCLP - Lead	<1.0	mg/L
TCLP - Mercury	0.0700	mg/L
TCLP - Selenium	<0.0500	mg/L
TCLP - Silver	<0.50	mg/L
TCLP - pH	9.9	units
TCLP - Final pH	5.9	units
Extractable pH	9.4	units
VOLATILES - TCLP		
TCLP-Benzene	<0.02	mg/L
TCLP-Carbon tetrachloride	<0.02	mg/L
TCLP-Chlorobenzene	<0.02	mg/L
TCLP-Chloroform	<0.02	mg/L
TCLP-1,2-Dichloroethane	<0.02	mg/L
TCLP-1,1-Dichloroethene	<0.02	mg/L
TCLP-Methyl ethyl ketone (MEK	<0.2	mg/L
TCLP-Tetrachloroethene	<0.02	mg/L
TCLP-Trichloroethene	<0.02	mg/L
TCLP-Vinyl chloride	<0.2	mg/L
BASE NEUTRAL COMPOUNDS - TCLP		
TCLP-1,4-Dichlorobenzene	<0.07	mg/L
TCLP-2,4-Dinitrotoluene	<0.07	mg/L
TCLP-Hexachlorobenzene	<0.07	mg/L
TCLP-Hexachlorobutadiene	<0.07	mg/L
TCLP-Hexachloroethane	<0.07	mg/L
TCLP-Nitrobenzene	<0.07	mg/L
TCLP-Pyridine	<0.07	mg/L

Cheryl L. Wilson
Project Manager

OCEAN GROUP

NATIONAL ENVIRONMENTAL TESTING, INC.

NET Midwest, Inc.
Cedar Falls Division
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P.O. Box 625
Cedar Falls, IA 50613
Tel: (319) 277-2401
Fax: (319) 277-2425

ANALYTICAL REPORT

Carol Wilson
HOWARD R. GREEN CO.
P.O. Box 9009
Cedar Rapids, IA 52409-9009

01/14/1992

Sample No.: 155458
Job Number: 91.5548

Sample Description: TS-1 #708340
SOIL

Date Taken: 12/17/1991

Date Received: 12/19/1991

ACID COMPOUNDS - TCLP		
TCLP-Cresols, Total	<0.07	mg/L
TCLP-Pentachlorophenol	<0.35	mg/L
TCLP-2,4,5-Trichlorophenol	<0.07	mg/L
TCLP-2,4,6-Trichlorophenol	<0.07	mg/L

Cheryl L. Wilson
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ANALYTICAL REPORT

Carol Wilson
HOWARD R. GREEN CO.
P.O. Box 9009
Cedar Rapids, IA 52409-9009

01/14/1992

Sample No.: 155459
Job Number: 91.5548

Sample Description: TS-2 #708340
SOIL

Date Taken: 12/17/1991

Date Received: 12/19/1991

TCLP - Arsenic	<0.0500	mg/L
TCLP - Barium	<5.0	mg/L
TCLP - Cadmium	<0.20	mg/L
TCLP - Chromium	<1.0	mg/L
TCLP - Lead	<1.0	mg/L
TCLP - Mercury	0.1100	mg/L
TCLP - Selenium	<0.0500	mg/L
TCLP - Silver	<0.50	mg/L
TCLP - pH	9.8	units
TCLP - Final pH	5.7	units
Extractable pH	9.4	units
VOLATILES - TCLP		
TCLP-Benzene	<0.02	mg/L
TCLP-Carbon tetrachloride	<0.02	mg/L
TCLP-Chlorobenzene	<0.02	mg/L
TCLP-Chloroform	<0.02	mg/L
TCLP-1,2-Dichloroethane	<0.02	mg/L
TCLP-1,1-Dichloroethene	<0.02	mg/L
TCLP-Methyl ethyl ketone (MEK	<0.2	mg/L
TCLP-Tetrachloroethene	<0.02	mg/L
TCLP-Trichloroethene	<0.02	mg/L
TCLP-Vinyl chloride	<0.2	mg/L
BASE NEUTRAL COMPOUNDS - TCLP		
TCLP-1,4-Dichlorobenzene	<0.07	mg/L
TCLP-2,4-Dinitrotoluene	<0.07	mg/L
TCLP-Hexachlorobenzene	<0.07	mg/L
TCLP-Hexachlorobutadiene	<0.07	mg/L
TCLP-Hexachloroethane	<0.07	mg/L
TCLP-Nitrobenzene	<0.07	mg/L
TCLP-Pyridine	<0.07	mg/L

Cheryl L. Wilson
Project Manager

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Cedar Falls, IA 50613
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ANALYTICAL REPORT

Carol Wilson
HOWARD R. GREEN CO.
P.O. Box 9009
Cedar Rapids, IA 52409-9009

01/14/1992

Sample No.: 155459
Job Number: 91.5548

Sample Description: TS-2 #708340
SOIL

Date Taken: 12/17/1991

Date Received: 12/19/1991

ACID COMPOUNDS - TCLP		
TCLP-Cresols, Total	<0.07	mg/L
TCLP-Pentachlorophenol	<0.35	mg/L
TCLP-2,4,5-Trichlorophenol	<0.07	mg/L
TCLP-2,4,6-Trichlorophenol	<0.07	mg/L

Cheryl L. Wilson
Project Manager

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ANALYTICAL REPORT

Ms. Carol Wilson
HOWARD R. GREEN CO.
P.O. Box 9009
Cedar Rapids, IA 52409-9009

03/30/1992

Sample No.: 163057
Job Number: 92.2122

Sample Description: SA-1 #708340-J

Date Taken: 03/17/1992

Date Received: 03/19/1992

	Result	Units	Date Analyzed
Solids, Total	83.44	%	03/24/1992
Barium	150.	mg/kg	03/30/1992
Chromium, Total	27.	mg/kg	03/25/1992
Cobalt	12.	mg/kg	03/30/1992
Lead	130.	mg/kg	03/24/1992
Mercury	1.2	mg/kg	03/25/1992
Zinc	210.	mg/kg	03/27/1992
VOLATILES (NONAQUEOUS)			
Acetone	<5.0	ug/g	03/19/1992
Ethylbenzene	7.2	ug/g	03/19/1992
Methylene chloride	<2.5	ug/g	03/19/1992
Napthalene	<0.5	ug/g	03/19/1992
Toluene	<0.5	ug/g	03/19/1992
1,1,1-Trichloroethane	<0.5	ug/g	03/19/1992
Xylenes, Total	81.8	ug/g	03/19/1992

NOTE: Reporting limits may vary due to matrix effects.

Cheryl L. Wilson
Project Manager

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ANALYTICAL REPORT

Ms. Carol Wilson
HOWARD R. GREEN CO.
P.O. Box 9009
Cedar Rapids, IA 52409-9009

03/30/1992

Sample No.: 163058
Job Number: 92.2122

Sample Description: SA-2 #708340-J

Date Taken: 03/17/1992

Date Received: 03/19/1992

	Result	Units	Date Analyzed
Solids, Total	84.82	%	03/24/1992
Barium	110.	mg/kg	03/30/1992
Chromium, Total	19.	mg/kg	03/25/1992
Cobalt	13.	mg/kg	03/30/1992
Lead	110.	mg/kg	03/24/1992
Mercury	1.2	mg/kg	03/25/1992
Zinc	64.	mg/kg	03/27/1992
VOLATILES (NONAQUEOUS)			
Acetone	<5.0	ug/g	03/19/1992
Ethylbenzene	1.2	ug/g	03/19/1992
Methylene chloride	<2.5	ug/g	03/19/1992
Napthalene	<0.5	ug/g	03/19/1992
Toluene	4.3	ug/g	03/19/1992
1,1,1-Trichloroethane	<0.5	ug/g	03/19/1992
Xylenes, Total	14.4	ug/g	03/19/1992

NOTE: Reporting limits may vary due to matrix effects.

Cheryl L. Wilson
Project Manager

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ANALYTICAL REPORT

Ms. Carol Wilson
HOWARD R. GREEN CO.
P.O. Box 9009
Cedar Rapids, IA 52409-9009

03/30/1992

Sample No.: 163059
Job Number: 92.2122

Sample Description: SA-3 #708340-J

Date Taken: 03/17/1992

Date Received: 03/19/1992

	Result	Units	Date Analyzed
Solids, Total	91.85	%	03/24/1992
Barium	130.	mg/kg	03/30/1992
Chromium, Total	18.	mg/kg	03/25/1992
Cobalt	29.	mg/kg	03/30/1992
Lead	62.	mg/kg	03/24/1992
Mercury	<0.20	mg/kg	03/25/1992
Zinc	370.	mg/kg	03/27/1992
VOLATILES (NONAQUEOUS)			
Acetone	<5.0	ug/g	03/19/1992
Ethylbenzene	<0.5	ug/g	03/19/1992
Methylene chloride	<2.5	ug/g	03/19/1992
Napthalene	<0.5	ug/g	03/19/1992
Toluene	<0.5	ug/g	03/19/1992
1,1,1-Trichloroethane	<0.5	ug/g	03/19/1992
Xylenes, Total	0.9	ug/g	03/19/1992

NOTE: Reporting limits may vary due to matrix effects.

Cheryl L. Wilson
Project Manager

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ANALYTICAL REPORT

Ms. Carol Wilson
HOWARD R. GREEN CO.
P.O. Box 9009
Cedar Rapids, IA 52409-9009

03/30/1992

Sample No.: 163060
Job Number: 92.2122

Sample Description: SA-4 #708340-J

Date Taken: 03/17/1992

Date Received: 03/19/1992

	Result	Units	Date Analyzed
Solids, Total	84.56	%	03/24/1992
Barium	91.	mg/kg	03/30/1992
Chromium, Total	15.	mg/kg	03/25/1992
Cobalt	9.2	mg/kg	03/30/1992
Lead	59.	mg/kg	03/24/1992
Mercury	0.22	mg/kg	03/25/1992
Zinc	79.	mg/kg	03/27/1992
VOLATILES (NONAQUEOUS)			
Acetone	<5.0	ug/g	03/19/1992
Ethylbenzene	<0.5	ug/g	03/19/1992
Methylene chloride	<2.5	ug/g	03/19/1992
Napthalene	<0.5	ug/g	03/19/1992
Toluene	140.	ug/g	03/19/1992
1,1,1-Trichloroethane	<0.5	ug/g	03/19/1992
Xylenes, Total	81.8	ug/g	03/19/1992

NOTE: Reporting limits may vary due to matrix effects.

Cheryl L. Wilson
Project Manager

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ANALYTICAL REPORT

Ms. Carol Wilson
HOWARD R. GREEN CO.
P.O. Box 9009
Cedar Rapids, IA 52409-9009

03/30/1992

Sample No.: 163061
Job Number: 92.2122

Sample Description: SA-5 #708340-J

Date Taken: 03/17/1992

Date Received: 03/19/1992

	Result	Units	Date Analyzed
Solids, Total	92.71	%	03/24/1992
Barium	210.	mg/kg	03/30/1992
Chromium, Total	65.	mg/kg	03/25/1992
Cobalt	11.	mg/kg	03/30/1992
Lead	200.	mg/kg	03/24/1992
Mercury	1.4	mg/kg	03/25/1992
Zinc	410.	mg/kg	03/27/1992
VOLATILES (NONAQUEOUS)			
Acetone	<5.0	ug/g	03/19/1992
Ethylbenzene	0.8	ug/g	03/19/1992
Methylene chloride	<2.5	ug/g	03/19/1992
Napthalene	<0.5	ug/g	03/19/1992
Toluene	<0.5	ug/g	03/19/1992
1,1,1-Trichloroethane	<0.5	ug/g	03/19/1992
Xylenes, Total	18.2	ug/g	03/19/1992

NOTE: Reporting limits may vary due to matrix effects.

Cheryl L. Wilson
Project Manager

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ANALYTICAL REPORT

Ms. Carol Wilson
HOWARD R. GREEN CO.
P.O. Box 9009
Cedar Rapids, IA 52409-9009

03/30/1992

Sample No.: 163062
Job Number: 92.2122

Sample Description: SA-6 #708340-J

Date Taken: 03/17/1992

Date Received: 03/19/1992

	Result	Units	Date Analyzed
Solids, Total	91.93	%	03/24/1992
Barium	110.	mg/kg	03/30/1992
Chromium, Total	34.	mg/kg	03/25/1992
Cobalt	17.	mg/kg	03/30/1992
Lead	240.	mg/kg	03/24/1992
Mercury	0.33	mg/kg	03/25/1992
Zinc	140.	mg/kg	03/27/1992
VOLATILES (NONAQUEOUS)			
Acetone	<5.0	ug/g	03/19/1992
Ethylbenzene	<0.5	ug/g	03/19/1992
Methylene chloride	<2.5	ug/g	03/19/1992
Napthalene	<0.5	ug/g	03/19/1992
Toluene	<0.5	ug/g	03/19/1992
1,1,1-Trichloroethane	<0.5	ug/g	03/19/1992
Xylenes, Total	10.0	ug/g	03/19/1992

NOTE: Reporting limits may vary due to matrix effects.

Cheryl L. Wilson
Project Manager

OCEAN GROUP

APPENDIX C

Photographs of Closure Activities

Howard R. Green Company
CONSULTING ENGINEERS

Chain of Custody

DATE _____ PAGE _____ OF _____

PROJ. MGR. Carol Wilson
COMPANY HOWARD R. GREEN COMPANY
ADDRESS 4250 GLASS RD. NE
CEDAR RAPIDS, IA 52409

SAMPLERS (SIGNATURE) (PHONE NO.)

ANALYSIS REQUEST

SAMPLE ID.	DATE	TIME	MATRIX	LAB ID.	BASE/NEU/ACID CMPDS. GC/MS/ 625/8270	VOLATILE CMPDS. GC/MS/ 624/8240 (See list)	PESTICIDES/PCB 608/8080	POLYNUCLEAR AROMATIC 610/8310	PHENOLS, SUB PHENOLS 604/8040	HALOGENATED VOLATILES 601/8010	AROMATIC VOLATILES 602/8020	TOTAL ORGANIC CARBON 415/9060	TOTAL ORGANIC HALIDES 9020	PETROLEUM HYDROCARBONS 418	Total metals - See List		PRIORITY POLLUTANT METALS (13)	CAM METALS (18) TTLC/STLC	EP TOX METALS (8)	SWDA-INORGANICS PRIMARY/SECONDARY	HAZARDOUS WASTE PROFILE				NUMBER OF CONTAINERS
T-1	10/24	am	water	1	X	X									X										
R-1	10/24	am	water	1	X	X									X										
R-2	10/24	am	water	1	X	X									X										
S-1	10/24	am	soil	2	X	X									X										
S-4	10/24	am	soil	2	X	X									X										
S-5	10/24	am	soil	2	X	X									X										
S-7	10/24	pm	soil	2	X	X									X										
S-10	10/24	pm	soil	2	X	X									X										
C-2	10/24	am	water	1	X	X									X										

PROJECT INFORMATION	SAMPLE RECEIPT	
708340	TOTAL NO. OF CONTAINERS	
PROJECT NUMBER	CHAIN OF CUSTODY SEALS	
	REC'D GOOD CONDITION/COLD	
SHIPPING ID. NO.	CONFORMS TO RECORD	
VIA:	LAB NO.	

SPECIAL INSTRUCTIONS/COMMENTS:
1 Each water sample in 3 x 40 ml vials + 1 amber quart + 1 treated plastic
2 Each soil sample in 2 x 4 oz glass jars

Volatiles
Acetone
ethylbenzene
methylene chloride
toluene
xylenes
1,1,1-trichloroethane
Semi-Volatile
Naphthalene
Metals Barium, chromium, cobalt, lead, mercury, zinc

RELINQUISHED BY	RELINQUISHED BY
Carol E Wilson	
(Signature) (Time)	(Signature) (Time)
Carol E Wilson	
(Printed Name) (Date)	(Printed Name) (Date)
CES 10/25/91	
(Company)	(Company)
RECEIVED BY	RECEIVED BY (LABORATORY)
	Melene Faccian 800
(Signature) (Time)	(Signature) (Time)
	Melene Faccian 10-26-91
(Printed Name) (Date)	(Printed Name)
(Company)	NET Midwest

TRIBU... WHI... NARY ...ORAT... • P... ORIGI...

Howard R. Green Company
CONSULTING ENGINEERS

Chain of Custody

DATE _____ PAGE _____ OF _____

PROJ. MGR. Carol Wilson
COMPANY HOWARD R. GREEN COMPANY
ADDRESS 4250 GLASS RD. NE
CEDAR RAPIDS, IA 52409

SAMPLERS (SIGNATURE) Carole E Wilson (PHONE NO.) 319-395-0578

ANALYSIS REQUEST

SAMPLE ID.	DATE	TIME	MATRIX	LAB ID.	BASE/NEU/ACID CMPDS. GC/MS/ 625/8270	VOLATILE CMPDS. GC/MS/ 624/8240	PESTICIDES/PCB 608/8080	POLYNUCLEAR AROMATIC 610/8310	PHENOLS, SUB PHENOLS 604/8040	HALOGENATED VOLATILES 601/8010	AROMATIC VOLATILES 602/8020	TOTAL ORGANIC CARBON 415/9060	TOTAL ORGANIC HALIDES 9020	PETROLEUM HYDROCARBONS 418	TCLP Metals	TCLP Organics	PRIORITY POLLUTANT METALS (13)	CAM METALS (18) TTLC/STLC	EP TOX METALS (8)	SWDA-INORGANICS PRIMARY/SECONDARY	HAZARDOUS WASTE PROFILE				NUMBER OF CONTAINERS
S-1	12/17	pm	soil	3x 4oz											X	X									
S-2	12/17	pm	soil	3x 4oz											X	X									

PROJECT INFORMATION	SAMPLE RECEIPT	
	TOTAL NO. OF CONTAINERS	6
PROJECT NUMBER 708340	CHAIN OF CUSTODY SEALS	
SHIPPING ID. NO.	REC'D GOOD CONDITION/COLD	
VIA:	CONFORMS TO RECORD	
	LAB NO.	

SPECIAL INSTRUCTIONS/COMMENTS:
1 S-2 JAR Broken
Per Canal TCLP metals, vols & semivols not spiked per SOW

RELINQUISHED BY	RELINQUISHED BY
Carole E Wilson	
(Signature) (Time)	(Signature) (Time)
Carole E Wilson	
(Printed Name) (Date)	(Printed Name) (Date)
GRG 12-17-91	
(Company)	(Company)
RECEIVED BY	RECEIVED BY (LABORATORY)
	Helene Faccani 920
(Signature) (Time)	(Signature) (Time)
	Helene Faccani
(Printed Name) (Date)	(Printed Name)
(Company)	NEI

DISTRIBUTION: WHITE, CANARY, GOLDENROD • ORIGINATOR

Howard R. Green Company
CONSULTING ENGINEERS

Chain of Custody

DATE 3-18-92 PAGE 1 OF 1

PROJ. MGR. Carol Wilson
COMPANY HOWARD R. GREEN COMPANY
ADDRESS 4250 GLASS RD. NE
CEDAR RAPIDS, IA 52409

SAMPLERS (SIGNATURE) Carol E. Wilson (PHONE NO.) 319-395-0578

ANALYSIS REQUEST

SAMPLE ID.	DATE	TIME	MATRIX	LAB ID.	BASE/NEU/ACID CMPDS. GC/MS/ 625/8270	VOLATILE CMPDS. GC/MS/ 624/8240 (→ See List)	PESTICIDES/PCB 608/8080	POLYNUCLEAR AROMATIC 610/8310	PHENOLS, SUB PHENOLS 604/8040	HALOGENATED VOLATILES 601/8010	AROMATIC VOLATILES 602/8020	TOTAL ORGANIC CARBON 415/9060	TOTAL ORGANIC HALIDES 9020	PETROLEUM HYDROCARBONS 418	Total Metals See List (→ See List)		PRIORITY POLLUTANT METALS (13)	CAM METALS (18) TTLC/STLC	EP TOX METALS (8)	SWDA-INORGANICS PRIMARY/SECONDARY	HAZARDOUS WASTE PROFILE				NUMBER OF CONTAINERS
SA-1	3/17	a.m.	soil	①	X	X									X										2
SA-2	3/17	pm	soil	①	X	X									X										2
SA-3	3/17	p.m	soil	①	X	X									X										2
SA-4	3/17	a.m.	soil	①	X	X									X										2
SA-5	3/17	pm	soil	①	X	X									X										2
SA-6	3/17	pm	soil	①	X	X									X										2
~~RA-1 CEW~~	~~3/pm~~		~~water~~		~~X~~	~~X~~									~~X~~										~~5~~

PROJECT INFORMATION	SAMPLE RECEIPT	
708340-J	TOTAL NO. OF CONTAINERS	
PROJECT NUMBER	CHAIN OF CUSTODY SEALS	
SHIPPING ID. NO.	REC'D GOOD CONDITION/COLD	
VIA:	CONFORMS TO RECORD	
	LAB NO.	

SPECIAL INSTRUCTIONS/COMMENTS:
① Each soil sample in 2 x 4oz glass jars
~~② Water in 3 x 40 ml vials + 1 amber qt + 1 preated plastic qt~~

Volatiles
Acetone
Ethylbenzene
Methylene chloride
Toluene
Xylenes
1,1,1-trichloroethane
Semi-Volatile
Naphthalene
Metals Barium, chromium, cobalt, lead, mercury, zinc

RELINQUISHED BY	RELINQUISHED BY
Carol E. Wilson	
(Signature) (Time) Carol E Wilson 3-18-92	(Signature) (Time)
(Printed Name) (Date) CES	(Printed Name) (Date)
(Company)	(Company)
RECEIVED BY	RECEIVED BY (LABORATORY)
(Signature) (Time)	(Signature) (Time) Norma Fabian 9:30
(Printed Name) (Date)	(Printed Name) Norma Fabian 3/19/92
(Company)	NET Midwest

DISTRIBUTION: WHITE, CANARY, LABORATORY • PINK, ORIGINATOR

TABLE 2-1

Comparison of Analytical Results to Closure Performance Standards

Sample/Compound	Concentration	Closure Standard
SA-1 (northeast quadrant of pad excavation at depth 20-28" below pad surface)		
Barium	150 mg/kg	100 mg/kg
Chromium	27 mg/kg	5 mg/kg
Lead	130 mg/kg	5 mg/kg
Mercury	1.2 mg/kg	0.2 mg/kg
SA-2 (northwest quadrant at depth 18-20")		
Barium	110 mg/kg	100 mg/kg
Chromium	19 mg/kg	5 mg/kg
Lead	110 mg/kg	5 mg/kg
Mercury	1.2 mg/kg	0.2 mg/kg
SA-3 (southwest quadrant at depth 10-14")		
Barium	130 mg/kg	100 mg/kg
Chromium	18 mg/kg	5 mg/kg
Cobalt	29 mg/kg	25 mg/kg
Lead	62 mg/kg	5 mg/kg
SA-4 (southeast quadrant at depth 20-28")		
Chromium	15 mg/kg	5 mg/kg
Lead	59 mg/kg	5 mg/kg
Mercury	0.22 mg/kg	0.2 mg/kg
Toluene	140 mg/kg	100 mg/kg

TABLE 2-1 continued
Comparison of Analytical Results
to Closure Performance Standards

Sample/Compound	Concentration	Closure Standard
SA-5 (18-20" from trench floor south of pad)		
Barium	210 mg/kg	100 mg/kg
Chromium	65 mg/kg	5 mg/kg
Lead	200 mg/kg	5 mg/kg
Mercury	1.4 mg/kg	0.2 mg/kg
SA-6 (0-8" soil down-gradient)		
Barium	110 mg/kg	100 mg/kg
Chromium	34 mg/kg	5 mg/kg
Lead	240 mg/kg	5 mg/kg
Mercury	0.33 mg/kg	0.2 mg/kg

As noted in the October, 1991 sampling results, barium, chromium, lead, and mercury (used in paint pigments at Klinger Paint Company) are also the materials most often detected at levels exceeding Closure Performance Standards in the soil from the March, 1992 samples. Maximum Concentration Levels for these metals have been set by the Toxic Characteristics Leaching Procedure (TCLP), which may be used to determine if a waste must be managed as hazardous for treatment or disposal. Cobalt is not listed as hazardous waste in 40 CFR 261 or as a hazardous constituent in 40 CFR 261 Appendix VIII.

None of the organic compounds of concern (acetone, ethylbenzene, methylene chloride, naphthalene, toluene, xylene, and 1,1,1-trichloroethane) are constituents for which Maximum Concentration Levels have been set by the TCLP.

Two soil samples (one each from the October, 1991 and March, 1992 sampling events) showed toluene at levels exceeding the Closure Performance Standards.

Acetone, ethylbenzene, and xylene (hazardous waste code F003) are listed as hazardous compounds only due to the characteristic of ignitability. Acetone and ethylbenzene were not detected in the soil underlying the concrete pad. Xylene was found in only one sample and the measured concentration (1300 ppm) does not cause the soil to meet the definition of ignitability in 40 CFR 261.

3.0 CLOSURE CONSIDERATIONS

3.1 The approved Closure Plan and the approved Amendment were designed to ensure that the hazardous waste drum storage area, when closed, would not present a threat to human health or the environment.

3.2 The concrete and all the soil underlying the hazardous waste storage pad have been removed to the top of the Cedar Valley limestone/dolomite bedrock. Portions of the weathered bedrock surface were also removed.

3.3 Soil has also been removed down to bedrock in a second location down-gradient of surface run-off from the storage pad.

3.4 Soil from the excavation floor or from outcrops on the excavation walls near the floor showed several total metals and, in one case, toluene above Closure Performance Standards.

3.5 Composite samples collected from the area underlying the pad and analyzed by Toxic Characteristic Leaching Procedure indicate that the metals are not soluble, or mobile in the environment.

3.6 The area in which toluene was found is one in which material has been excavated to the bedrock. One sample taken in October, 1991 in which xylene was detected is also from the area under the pad from which all material has been excavated.

3.7 Consideration should be given to the evidence that there are no residual organic compounds in the bedrock underlying the hazardous waste storage pad.

3.8 Consideration should be given to the evidence that residual total metals are not harmful to human health or the environment because the metals are present as insoluble compounds. As such, these compounds are not likely to be taken up by vegetation at the site or enter the food chain in any other manner, nor will they leach from the surface to the groundwater.

4.0 SAMPLE MANAGEMENT AND ANALYSIS

Sample handling, preservation, and documentation in all cases were in accordance with the procedures set out in EPA Publication SW-846:

Soil samples were place in 4-ounce glass jars with Teflon lined lids. Samples were packed with zero head space.

Rinse water samples were placed in 40-ml purge vials, glass amber quart jars, or plastic quarts, depending on the analysis. Water samples were contained with zero head space.

Sample containers were labeled to indicate location, date, time, sampler, and sample type.

Chain-of-custody was completed for each sampling event, noting sample identifications, container types, sample matrices, and requested analysis for each sample.

Samples were temperature controlled at 4°C and delivered to the analytical laboratory within appropriate holding times.

All samples were analyzed by EPA approved methods as listed Tables 1-1 and 1-2.

Analytical methods for each substance for which a closure performance standard has been set had a detection limit less than or equal to the performance standard.

Analytical reports and chain-of-custody documents are included as Appendix B to this report.