# Koppers Inc

## General Information

| ID | Branch | SIC | County | Basin | Start | End |
|---|---|---|---|---|---|---|
| 876 | Energy and Transportation | 2491 | Grenada | Yazoo River | 11/09/1981 | |

## Address

| Physical Address (Primary) | Mailing Address |
|---|---|
| 1 Koppers Drive<br>Tie Plant, MS 38960 | PO Box 160<br>Tie Plant, MS 38960 |

## Telecommunications

| Type | Address or Phone |
|---|---|
| Work phone number | (662) 226-4584, Ext. 11 |

## Alternate / Historic AI Identifiers

| Alt ID | Alt Name | Alt Type | Start Date | End Date |
|---|---|---|---|---|
| 2804300012 | Koppers Industries, Inc. | Air-AIRS AFS | 10/12/2000 | |
| 096000012 | Koppers Industries, Inc. | Air-Title V Fee Customer | 03/11/1997 | |
| 096000012 | Koppers Industries, Inc. | Air-Title V Operating | 03/11/1997 | 03/01/2002 |
| 096000012 | Koppers Industries, Inc. | Air-Title V Operating | 01/13/2004 | 01/01/2009 |
| MSR220005 | Koppers Industries, Inc. | GP-Wood Treating | 09/25/1992 | |
| MSD007027543 | Koppers Industries, Inc. | Hazardous Waste-EPA ID | 08/27/1999 | |
| HW8854301 | Koppers Industries, Inc. | Hazardous Waste-TSD | 06/28/1988 | 06/28/1998 |
| HW8854301 | Koppers Industries, Inc. | Hazardous Waste-TSD | 11/10/1999 | 09/30/2009 |
| 876 | Koppers Industries, Inc. | Historic Site Name | 11/09/1981 | 12/11/2006 |
| 876 | Koppers, Inc. | Official Site Name | 12/11/2006 | |
| MSP090300 | Koppers Industries, Inc. | Water-Pretreatment | 11/14/1995 | 11/13/2000 |
| MSP090300 | Koppers Industries, Inc. | Water-Pretreatment | 09/18/2001 | 08/31/2006 |
| MSU081080 | Koppers Industries, Inc. | Water-SOP | 11/09/1981 | 11/30/1985 |

## Regulatory Programs

| Program | SubProgram | Start Date | End Date |
|---|---|---|---|
| Air | Title V - major | 06/01/1900 | |
| Hazardous Waste | Large Quantity Generator | 08/27/1999 | |
| Hazardous Waste | TSD - Not Classified | 06/28/1988 | |
| Water | Baseline Stormwater | 01/01/1900 | |
| Water | PT CIU | 11/14/1995 | |
| | PT CIU - Timber Products | | |

| | | | |
|---|---|---|---|
| Water | Processing (Subpart 429) | 11/14/1995 | |
| Water | PT SIU | 11/14/1995 | |

## Locational Data

| Latitude | Longitude | Metadata | S / T / R | Map Links |
|---|---|---|---|---|
| 33 ° 44 ' 3 .00 (033.734167) | 89 ° 47 ' 8 .06 (089.785572) | **Point Desc:** PG- Plant Entrance (General). Data collected by Mike Hardy on 11/8/2005. Elevation 223 feet. Just inside entrance gate.<br><br>**Method:** GPS Code (Psuedo Range) Standard Position (SA Off)<br>**Datum:** NAD83<br>**Type:** MDEQ | Section:<br>Township:<br>Range: | SWIMS<br>TerraServer<br>Map It |

12/20/2006 12:16:40 PM

# Mississippi Department of Environmental Quality
## Office of Pollution Control

# I-sys 2000 Master Site Detail Report

## Site Name: Koppers Industries Inc

**PHYSICAL ADDRESS**

| | |
|---|---|
| LINE 1: | Tie Plant Road |
| LINE 2: | |
| LINE 3: | |
| MUNICIPALITY: | Tie Plant |
| STATE CODE: | MS |
| ZIP CODE: | 38960- |

**MAILING ADDRESS**

| | |
|---|---|
| LINE 1: | PO Box 160 |
| LINE 2: | |
| LINE 3: | |
| MUNICIPALITY: | Tie Plant |
| STATE CODE: | MS |
| ZIP CODE: | 38960- |

**OTHER INFORMATION**

| | |
|---|---|
| MASTER ID: | 000876 |
| COUNTY: | Grenada |
| REGION | NRO |
| SIC 1: | 2491 |
| AIR TYPE: | TITLE V |
| HW TYPE: | TSD |
| SOLID TYPE: | |
| WATER TYPE: | INDUSTRIAL |
| BRANCH: | Energy Branch |

ECED CONTACT:
Collier, Melissa

BASIN:
Yazoo River Basin

**AIR PROGRAMS** ☑ SIP ☐ PSD ☐ NSPS ☐ NESHAPS ☐ MACT

# Mississippi Department of Environmental Quality
## Office of Pollution Control

### Pemits

| PROGRAM | PERMIT TYPE | PERMIT # | MDEQ PERMIT CONTACT | ACTIVE |
|---|---|---|---|---|
| AIR | TITLE V | 096000012 | Burchfield, David | YES |
| WATER | PRE-TREATMENT | MSP090300 | Collins, Bryan | YES |
| HAZ. WASTE | TSD | HW8854301 | | NO |
| HAZ. WASTE | EPA ID | MSD007027543 | | NO |
| HAZ. WASTE | TSD | HW8854301 | Stover, Wayne | YES |
| GENERAL | BASELINE | MSR22005 | | NO |
| WATER | SOP | MSU081080 | | NO |
| WATER | PRE-TREATMENT | MSP090300 | Rao, Maya | NO |

### Compliance Actions

| MEDIA | ACTIVITY TYPE | SCHEDULED | COMPLETED | INSPECTED B |
|---|---|---|---|---|
| HAZ WASTE | | | | , |
| AIR | State Compliance Inspection | 09/28/2001 | | Collier, Melissa |
| HAZ WASTE | Financial Record Review | 01/18/2000 | 01/18/2000 | Twitty, Russ |
| WATER | CMI - PRETREATMENT | | 11/16/1999 | Whittington, Darryail |
| WATER | CEI - PRETREATMENT | 09/29/2000 | | , |
| WATER | CEI - NPDES | 09/29/2000 | | Twitty, Russ |
| HAZ WASTE | Operation and Maintenance Inspec | 09/29/2000 | 09/13/2000 | Stover, Wayne |
| AIR | State Compliance Inspection | 09/29/2000 | | , |
| WATER | CEI - NPDES | 03/02/1999 | 03/02/1999 | Twitty, Russ |
| HAZ WASTE | Compliance Evaluation Inspection | 03/02/1999 | 03/02/1999 | Twitty, Russ |
| AIR | State Compliance Inspection | 03/02/1999 | 03/02/1999 | Twitty, Russ |

T. Cook

**OGDEN** ENVIRONMENTAL AND ENERGY SERVICES

239 Littleton Road, Suite 1B
Westford, MA 01886
978 692 9090
Fax 978 692 6633

July 21, 1998

RECEIVED
JUL 27 1998
Dept. of Environmental Quality
Office of Pollution Control

Mr. Wesley Hardegree
South Programs Section
U.S. Environmental Protection Agency
61 Forsyth Street SW
Atlanta, Georgia, 30303

RE: Central Ditch Sediment Characterization Plan
KII/Beazer East – Grenada Facility
EPA I.D. No. MSD 007 027 543

Dear Mr. Hardegree:

On behalf of Beazer East, Inc., Ogden Environmental is submitting the Central Ditch Sediment Characterization Work Plan for the Koppers Industries, Incorporated facility in Grenada, Mississippi. The Work Plan reflects changes verbally agreed to by EPA in a July 21, 1998 conversation between yourself, Mike Bollinger of Beazer East, Inc., and Paul Anderson of Ogden Environmental and Energy Services.

If you have any questions regarding the submittal of this work plan, please contact Mike Bollinger at (412) 208-8864.

Sincerely,

Paul Anderson, PhD
Vice President,
Director of Risk Assessment

Samuel P. Farnsworth
Project Geologist

Enclosure

Cc: Narindar Kumar/EPA
Jerry Cain/Mississippi DEQ
Mike Bollinger/Beazer East, Inc.

# Mississippi Department of Environmental Quality
## Office of Pollution Control

## I-sys 2000 Master Site Detail Report

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HW TYPE: TSD
SOLID TYPE:
WATER TYPE: INDUSTRIAL
BRANCH: Energy
ECED CONTACT:
Collier, Melissa
BASIN:

**AIR PROGRAMS** ☑ SIP ☐ PSD ☐ NSPS ☐ NESHAPS ☐ MACT

# Mississippi Department of Environmental Quality
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| HAZ. WASTE | EPA ID | MSD007027543 | | YES |
| HAZ. WASTE | TSD | HW8854301 | Stover, Wayne | YES |

## Compliance Actions

| MEDIA | ACTIVITY TYPE | SCHEDULED | COMPLETED | INSPECTED B |
|---|---|---|---|---|
| HAZ WASTE | Financial Record Review | 1/18/00 | 1/18/00 | Twitty, Russ |
| WATER | CMI - PRETREATMENT | | | Whittington, Darryail |
| WATER | CEI - PRETREATMENT | 9/30/00 | | Twitty, Russ |
| WATER | CEI - NA | 9/30/00 | | Twitty, Russ |
| HAZ WASTE | Compliance Evaluation Inspection | 9/30/00 | | Twitty, Russ |
| AIR | State Compliance Inspection | 9/30/00 | | Twitty, Russ |
| WATER | CEI - NA | 3/2/99 | 3/2/99 | Twitty, Russ |
| HAZ WASTE | Compliance Evaluation Inspection | 3/2/99 | 3/2/99 | Twitty, Russ |
| AIR | State Compliance Inspection | 3/2/99 | 3/2/99 | Twitty, Russ |

Solutions Taking Shape

# Central Ditch Sediment Characterization Work Plan

Koppers Industries, Incorporated
Tie Plant, MS

Prepared for:

Beazer East, Incorporated
Pittsburgh, PA

Prepared by:

Ogden Environmental and Energy Services
Westford, MA

June 1998

# Central Ditch Sediment Characterization Work Plan

## Koppers Industries Incorporated Facility
## Tie Plant, Mississippi

June 1998

# Table of Contents

## 1.0 Overview

The Koppers Industries, Inc. (KII) site in Tie Plant, Mississippi is an active wood treating facility (the Site). The Site is a 171-acre facility that has been in operation since 1904. The wood treatment activities on-site incorporate creosote and pentachlorophenol based preservatives. An Interim Measures Work Plan (IM Work Plan) was approved by the Environmental Protection Agency (EPA) on January 25, 1996, as part of the scope of activities outlined in IM Work Plan, the Interim Measures Predesign Investigation Report and Conceptual Design, dated December 16, 1997 was submitted to the EPA. A Final Phase II RCRA Facility Investigation (RFI) Report was submitted to EPA) and MDEQ in January 1998. The RFI presented the results and conclusions of investigations conducted on-site from 1991 through 1997. The proposed work is being performed as an Interim Action.

An area known as the Central Ditch bisects the central portion of the Site from southwest to the northeast. The Central Ditch contains an unnamed stream that flows northeast off-site to the Batupan Bogue, approximately 0.4 miles east of the site. The RFI identified the presence of polycyclic aromatic hydrocarbons (PAH) in the Central Ditch sediments adjacent to, and immediately downstream of, the Site.

To further delineate the lateral and vertical extent of sediments containing PAHs, additional sediment sampling will be performed. Based on the vertical extent of sediments containing elevated PAH, several remedial strategies will be considered.

## 2.0 Introduction

The investigation of the Central Ditch will be divided into three areas: 1) the upper portion of the Central Ditch which includes that section east of the on-site railroad bridge to the first off-site crossing of the stream (a farm road approximately 600 feet off-site), 2) the central section of the Central Ditch which runs east from the farm road for approximately 1,000 feet, and 3) the lower section of the Central Ditch which runs from the central section to the Batupan Bogue.

Sediment samples previously collected in these portions of the Central Ditch indicate a sharp downward gradient in PAH concentrations with increasing downstream distance from the Site. However, previous sampling locations were located 350 feet apart in the upper portion of the Central Ditch and up to 1,200 feet apart in the central and lower sections of the Central Ditch. This investigation will provide additional sampling data in the upper, central and lower (if necessary) sections of the Central Ditch to determine more precisely the extent of sediments that might require remediation.

In each section of the Central Ditch, transects consisting of a series of boreholes will be installed to characterize the Central Ditch sediment. Analytical samples, sediment core

logging, geophysical information will be collected at transects in the upper and central sections of the Central Ditch. The geophysical information will be used to determine the compressive strength of sediments. These measurements will be collected to determine if the stream bottom will support heavy equipment activity associated with dredging.

Approximate sediment transect locations are illustrated in Figure 1. In the upper section the central ditch, transects will be installed every 100 feet from the railroad bridge to the farm road. In the upper section adjacent to the Former Wastewater Treatment System, Solid Waste Management Unit (SWMU) No. 11, approximately three additional transects will be installed. As the sampling team proceeds down the Central Ditch streambed, any creosote seeps will be noted and mapped. In the central section, transects will be installed every 200 feet for approximately 1,000 feet downstream of the farm road. In the lower section of the Central Ditch, two transects will be installed (Figure 1). During installation of the boreholes, sediments will be screened for visual and olfactory indications of PAH. Sampling of the lower section transects will depend upon screening results. If upstream samples are clean these transects may not need to be sampled.

## 3.0 Sediment Sampling Locations

The following table summarizes the approximate number of proposed sediment transects and their relative location in the Central Ditch:

| Central Ditch Transect Locations | |
|---|---|
| **Location** | **Number of Transects** |
| Upper Section | 13 |
| Upper Section - Additional Characterization adjacent to SWMU No.11 | 3 |
| Central Section | 5 |
| Lower Section | 2 |

The upper section of the Central Ditch, which runs from the on-site railroad bridge to the first downstream crossing (a farm road), is approximately 1,200 feet long. Sediment sampling transects will be installed in this section every 100 feet, for a total of approximately thirteen transects. These transects will be logged and visually/olfactory screened for the presence of PAH. No analytical samples will be collected from on-site transects. At off-site sampling locations in this section, one analytical sample per transect will be collected from the shallowest sediments which show no evidence of the presence of PAH when they are encountered.

Additional transects in the upper section of the Central Ditch will be installed at 50 foot intervals adjacent to SWMU No.1 over a 200 foot distance. These transects, combined with transects being installed every 100 feet, will provide additional characterization in this section of the Central Ditch. The additional transects will be logged and visually/olfactory screened for the presence of PAH. A total of two sediment samples which represent sediments which show no evidence of the presence of PAH or sediments

which may represent a vertical PAH concentration gradient will be selected for analysis from the transects in the area of SWMU No. 11.

The central section runs from the farm road approximately 1,000 feet downstream. Transects will be installed in this section every 200 feet, for a total of approximately five transects. These transects will be logged and visually/olfactory screened for the presence of PAH. One analytical sample per transect will be collected from the shallowest sediments which show no evidence of the presence of PAH when they are encountered.

The lower section runs approximately 1,100 feet from the central section to the Bautapan Bogue. A total of two transects will be installed in this section of the stream, if necessary, as shown on Figure 1. The need for these transects will be determined in the field based on sediment observations from upper and central sections.

At off-site transect locations in all sections of the Central Ditch, when screening indicates no evidence of the presence of PAH, a composite sample of that depth interval will be collected for laboratory analysis. If visual/olfactory screening indicates that sediment from several consecutive transects show no evidence of the presence of PAH, analysis of representative sediments will be performed only periodically downstream to confirm these observations.

## 3.1 Sediment Sampling Protocol

Stream transects will be installed as noted above at the locations shown on Figure 1-1. Each transect will consist of up to five sediment boreholes in the stream bottom. The number of boreholes installed at each transect will be determined in the field based on the width of the stream (the stream is generally 8-10 feet in width). A minimum of three boreholes will be installed at each transect to ensure complete sediment characterization. The boreholes will be oriented along a line perpendicular to the Central Ditch banks. The boreholes will be spaced equally across the transect from one bank to the other if there is no variability in sediment features within the transect. At transects where different sediment features (meanders, pools, sandbars) exist, the borings will be spaced to collect representative samples from different features. Sediment boreholes will be advanced until sediment showing no evidence of the presence of PAH (determined by visible/olfactory screening) or refusal is encountered or until the borehole is 5 feet deep.

Each borehole will be advanced in 6" increments using a stainless steel hand auger. The core from each borehole will be logged geologically and screened every 12" for visual and olfactory indication of creosote, which may indicate the presence of PAH. Variations in sediment grain size and visual and olfactory evidence of PAH or creosote will be noted on the logs. The logs at each transect will be combined to created a geologic cross-section at each transect location. The cross-sections will be used to create a detailed map of the Central Ditch sediments.

Sediment samples that are selected for laboratory analysis will be collected from the same depth interval in each sediment borehole within a transect. These samples will be combined to form one composite sample for the particular depth interval within a transect. Sediment samples will be composited in a stainless steel bowl with a stainless steel spoon. Sediment samples will be composited by quartering the composite volume and thoroughly mixing the samples.

### 3.2 Sample Handling and Analysis

All sampling equipment will be decontaminated between sampling locations per Ogden Standard Operating Procedure (SOP) FP-D-5. Generally, sampling equipment will be cleaned using soap and water, rinsed using tap water, rinsed with isopropyl alcohol, and finally rinsed with deionized water.

All sediment samples will be stored in a cooler at $4^{O}$ Celsius. Samples will be submitted to a laboratory using proper Chain-of-Custody procedures per Ogden SOPs FP-F-6 and FP-F-7. The sediment samples will be analyzed for PAH by EPA Method 8270 and for total organic carbon (TOC) by the Whatley-Black Method.

### 3.3 Geophysical Procedures

A dynamic cone penetrometer (DCP) will be used to measure the compressive strength of sediment in the upper and central sections of the Central Ditch. The DCP consists of a small diameter drill rod with a 1-inch diameter cone on the end of the rod. The cone-end on the rod is driven in one-foot intervals into the sediment using a 24-pound weight as a hammer. The blow counts are recorded in 6" intervals. After the rod is driven each one-foot interval, it is removed, the borehole is advanced using a hand auger to the last depth the DCP was driven. The process is then repeated. The DCP will be advanced to 5 feet below the sediment surface.

The compressive strength of stream sediments will be measured in transects in the upper and middle sections of the Central Ditch which contain visible evidence of PAH. One borehole per transect will be measured.

## 4.0 Reporting

Analytical results will be tabulated and present PAH results, TOC results and TOC adjusted values for total PAH. Based on the results of transect characterization and sampling, cross-sections and a base map will be created which map the presence of PAH in sediments in the Central Ditch.

## EQUIPMENT DECONTAMINATION

Approved/Date

Paul T. Pettit, Jr., P.E.
Program Manager

### 1.0 PURPOSE

The purpose of this procedure is to provide standard equipment decontamination methods for use during site activities at Ogden Program sites.

### 2.0 SCOPE

These procedures shall be employed where applicable during decontamination of field equipment used for sampling environmental media.

This procedure has been developed to serve as management-approved professional guidance for the Ogden Program. As professional guidance for specific activities, this procedure is not intended to obviate the need for professional judgment to accommodate unforeseen circumstances. Deviation from this procedure in planning or in the execution of planned activities must be approved by the Project Manager and Ogden Program Manager.

### 3.0 DEFINITIONS

None.

### 4.0 RESPONSIBILITIES

The Field Program Manager is responsible for ensuring that all field equipment is decontaminated according to this procedure.

The Project Manager is responsible for identifying instances of non-compliance with this procedure and ensuring that decontamination activities are in compliance with this procedure.

The Ogden Program Manager is responsible for ensuring that decontamination activities conducted during all projects are in compliance with this procedure.

## 5.0 PROCEDURES

Decontamination of ground-water monitoring well drilling and developing equipment, as well as ground-water, surface water, sediment, waste, wipe, asbestos, and unsaturated zone sampling equipment is necessary to prevent cross-contamination, and to maintain the highest integrity possible in collected samples. Planning a decontamination program requires consideration of the following:

- The location where the decontamination procedures will be conducted;
- The types of equipment requiring decontamination;
- The frequency of equipment decontamination;
- The cleaning technique and types of cleaning solutions;
- The method for containing the residual contaminants and wash water from the decontamination process; and
- The use of a quality control measure to determine the effectiveness of the decontamination procedure.

This subsection describes standards for decontamination. The techniques to be used, frequency of decontamination, cleaning solutions, and effectiveness are among the standards presented.

### 5.1 DECONTAMINATION AREA

An appropriate location for the decontamination area at a site shall be selected based on the ability to control access to the area, control residual material removed from

equipment, store clean equipment, and access to the area being investigated. The decontamination area shall be located at an adequate distance away and upwind from potential contaminant sources to avoid contamination of clean equipment. Once equipment is cleaned, it shall be stored sufficiently far enough away from the potential contamination sources and the decontamination area to ensure that the equipment remains clean.

## 5.2 TYPES OF EQUIPMENT

Decontamination of drilling equipment includes drill bits, auger sections, drill-string tools, drill rods, split barrel samplers, tremie pipes, clamps, hand tools, and steel cable. Decontamination of monitoring well development and ground-water sampling equipment includes submersible pumps, bailers, interface probes, water level meters, bladder pumps, air lift pumps, peristaltic pumps, and lysimeters. Other sampling equipment that requires decontamination includes, but is not limited to, hand trowels, shovels, stainless steel spoons and bowls, soil sample liners, wipe sampling templates, COLIWASA samplers, and dippers. Equipment with a porous surface, such as rope, cloth hoses, and wooden blocks, cannot be thoroughly decontaminated and shall be properly disposed after one use.

## 5.3 FREQUENCY OF EQUIPMENT DECONTAMINATION

Down-hole drilling equipment and monitoring well development and purging equipment shall be decontaminated prior to initial use and between each borehole or well. However, down-hole drilling equipment may require more frequent cleaning to prevent cross-contamination between vertical zones within a single borehole. Where drilling through a shallow contaminated zone and installing a surface casing to seal-off the contaminated zone, the drilling tools shall be decontaminated prior to drilling deeper. Ground-water sampling shall be initiated by sampling in the location where the least contamination is suspected. All ground-water, surface water, and unsaturated zone sampling devices shall be decontaminated prior to initial use and between collection of each sample to prevent the possible introduction of contaminants into successive samples.

## 5.4 Cleaning Solutions and Techniques

Decontamination can be accomplished using a variety of techniques and fluids. The preferred method of decontamination of major equipment such as augers, drill string, pump drop-pipe, submersible pumps, etc., involves the use of steam cleaning. Steam cleaning is accomplished using a portable, high pressure steam cleaner equipped with a pressure hose and fittings. For this method, equipment shall be thoroughly steam washed and rinsed with water of known chemical quality to remove particulates and contaminants.

A rinse decontamination procedure is acceptable for equipment such as bailers, water level meters, re-used soil sample liners, and hand tools. The decontamination procedure shall consist of the following: 1) wash with a non-phosphate detergent (alconox, liquinox, or other suitable detergent) and potable water solution, 2) rinse in a bath with potable water, 3) spray with isopropyl alcohol (aqueous sampling devices for organic samples only), and 4) rinse with deionized or distilled water. If possible, equipment shall be disassembled prior to cleaning. A second wash should be added at the beginning of the process if very soiled equipment is present.

Submersible pumps require additional effort to properly decontaminate because internal surfaces become contaminated during usage. These pumps shall be decontaminated by washing and rinsing the outside surfaces using the procedure described for small equipment or by steam cleaning. The internal surfaces shall be decontaminated by recirculating fluids through the pump while it is operating. This recirculation can be done using several large diameter pipes (4-inch or greater) equipped with bottom caps. These pipes shall be filled with the decontamination fluids, the pump placed within the closed pipes, and the pump operated while recirculating the fluids. The decontamination sequence shall include 1) detergent and potable water wash, 2) potable water rinse, 3) isopropyl spray into the pump, and 4) potable water rinse. The decontamination fluids shall be changed after each decontamination cycle.

Solvents other than isopropyl alcohol may be used, depending upon the contaminants involved. For example, if polychlorinated biphenyls (PCBs) or chlorinated pesticides are contaminants of concern, hexane may be used as the decontamination solvent. However, if samples are also to be analyzed for volatile organics, hexane shall not be used. In addition, some decontamination solvents have health effects which must be considered. Decontamination solvents to be used during field activities will be specified in Project Work Plans or Quality Assurance Project Plans (QAPPs).

Equipment for measuring field parameters such as pH, temperature, specific conductivity, and turbidity shall be rinsed with deionized or distilled water after each measurement.

## 5.5 CONTAINMENT OF RESIDUAL CONTAMINANTS AND CLEANING SOLUTIONS

Unless required otherwise, site decontamination water will be disposed of on the ground surface at the sampling location provided the water will not discharge from the site.

When contaminated material and cleaning fluids must be contained from heavy equipment such as drill rigs and support vehicles, the area must be properly floored, preferably with a concrete pad which is sloped toward a sump pit. If a concrete pad is impractical, planking can be used to construct a solid flooring that is then covered by a nonporous surface and sloped toward a collection sump. If the decontamination area does not have a collection sump, plastic sheeting and blocks or other objects should be used to create a bermed area for collection of equipment decontamination water. Items such as auger flights that can be placed on stands, saw horses, or other similar equipment, should be situated on this equipment during decontamination to prevent contact with fluids generated by previous equipment decontamination. Clean equipment should also be stored in a separate location than the decontamination area to prevent recontamination. Decontamination fluids contained within the bermed area shall be collected and stored in secured containers as described below.

Catchment of fluids from the decontamination of lighter-weight drilling equipment and hand-held sampling devices shall be accomplished using wash buckets or tubs. The

decontamination fluids shall be collected and stored onsite until its disposition is determined based upon laboratory analytical results. Storage shall be in secured containers such as DOT-approved drums. Containers shall be labeled in accordance with FP-B-8.

### 5.6 EFFECTIVENESS OF DECONTAMINATION PROCEDURES

A decontamination program needs to incorporate quality control measures for determining the effectiveness of the cleaning methods. Quality control measures typically include collection of equipment rinsate samples or wipe testing. Equipment rinsates consist of analyte-free water which has been poured over or through the sample collection equipment after its final decontamination rinse. Wipe testing is performed by wiping a cloth over the surface of the equipment after cleaning. Further descriptions of these samples and their required frequency of collection is provided in the field procedure entitled Field QC Samples (Water, Soil). These quality control measures provide "after-the fact" information that may be useful to determine whether or not the cleaning methods were effective in removing the contaminants of concern.

## 6.0 RECORDS

Records shall be maintained as required by implementing procedures.

## 7.0 HEALTH AND SAFETY

Section 10 of the Ogden Health and Safety Management Plan, provides decontamination (decon) guidelines primarily for personnel. There is however, some information on equipment decon in this section also. It is the responsibility of the Onsite Health and Safety Coordinator (OHSC) to set up the site zones (i.e., exclusion, transition, and clean) and decon areas. Generally the decon area is located within the transition zone, upwind of intrusive activities, and serves as the area where both personnel and equipment are washed to minimize the spread of contamination into the clean zone. For equipment, a series of buckets within a visqueen-lined bermed area is set up for decon purposes. In

addition, separate spray bottles containing isopropyl alcohol and distilled water are available for final rinsing of equipment. Depending on the nature of hazards and the site location, decontamination of heavy equipment such as, augers, pump drop pipe, and vehicles may be accomplished using a variety of techniques. Guidelines for equipment selection, cleaning solutions and decontamination techniques are provided in Section 10.6 of the Ogden Health and Safety Management Plan.

Personnel responsible for equipment decon, must wear the PPE specified in the site-specific Health and Safety Plan (HSP). Generally this includes at a minimum: Tyvek coveralls, steel-toed boots with boot covers or steel-toed rubber boots, safety glasses, ANSI-Standard hard hats, and hearing protection (if heavy equipment is in operation). It should also be noted that air monitoring by the OHSC as required in Section 6 of the Ogden Health and Safety Management Plan may warrant an upgrade to the use of half-face respirators and cartridges in the decon area; therefore, this equipment must be available onsite. If safe alternatives are not achievable, site activities will be discontinued immediately.

In addition to the aforementioned precautions, the following safe work practices will be employed:

<u>Chemical Hazards Associated With Equipment Decontamination:</u>

1. Avoid skin contact with and/or incidental ingestion of decon solutions and water.
2. Utilize PPE as specified in the site-specific HSP to maximize splash protection.
3. Refer to MSDSs, safety personnel, and/or consult sampling personnel regarding appropriate safety measures (i.e., handling, PPE - skin, respiratory, etc.).
4. Take necessary precautions when handling detergents and reagents.

<u>Physical Hazards Associated With Equipment Decontamination:</u>

1. To avoid possible back strain, it is recommended that the decon area be raised 1-2 feet above ground level.

2. To avoid heat stress, over exertion, and exhaustion, it is a recommended Ogden health and safety policy that equipment decon be rotated among **all** Ogden site personnel.
3. Take necessary precautions when handling field sampling equipment.

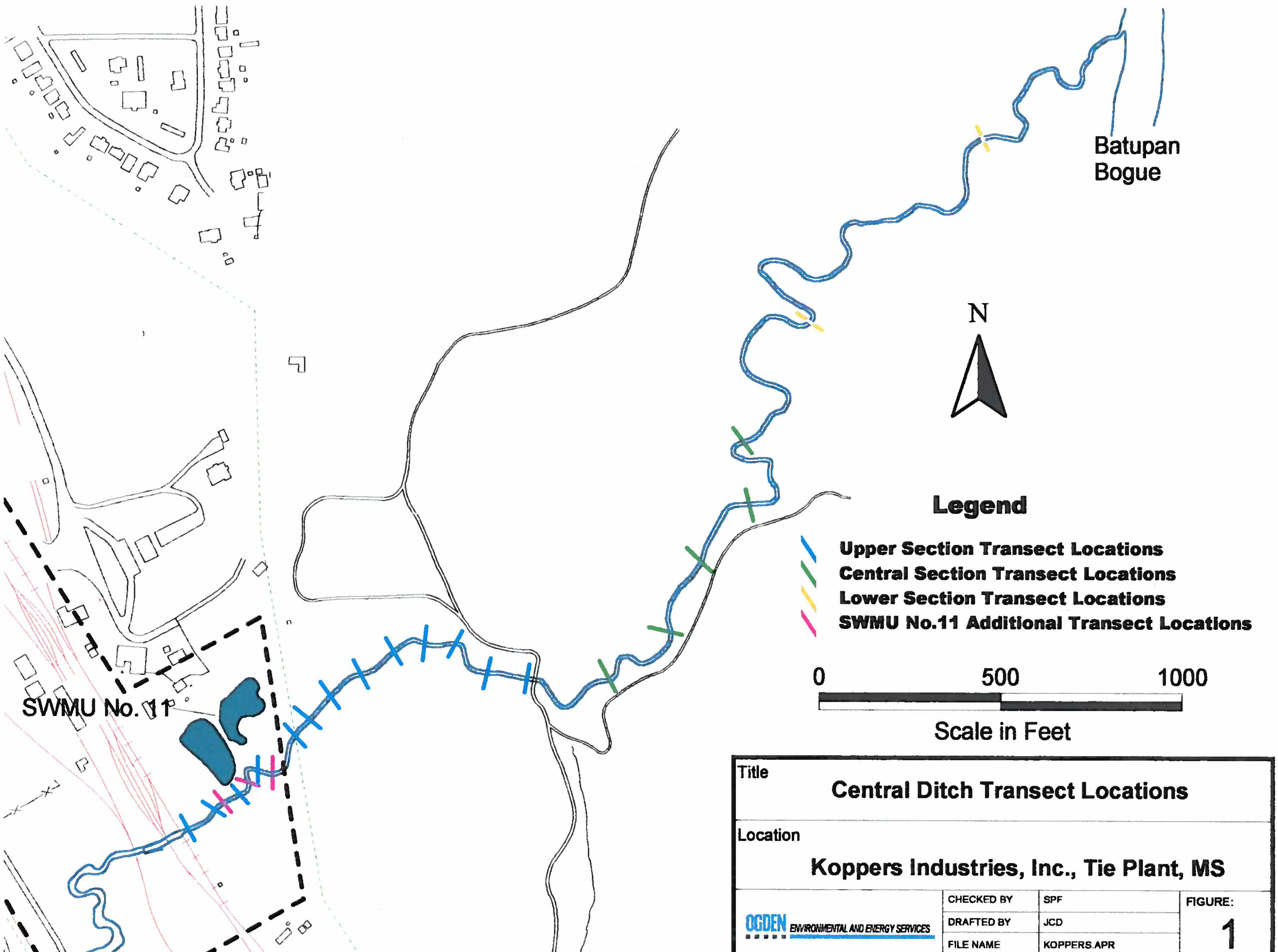
## 8.0 REFERENCES

Ogden Environmental and Energy Services, Inc.. 1992. Ogden Health and Safety Management Plan

U.S. EPA Environmental Response Team. 1988. Response Engineering and Analytical Contract Standard Operating Procedures. U.S. EPA, Research Triangle Park, NC.

## 9.0 ATTACHMENTS

None.




| | |
|---|---|
| Title | Central Ditch Transect Locations |
| Location | Koppers Industries, Inc., Tie Plant, MS |

| OGDEN ENVIRONMENTAL AND ENERGY SERVICES | | | FIGURE: |
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| | DATE | 06/26/98 | |

# RECORD KEEPING, SAMPLE LABELLING, AND CHAIN-OF-CUSTODY

Approved/Date

Paul T. Pettit, Jr., P.E.
Program Manager

## 1.0 PURPOSE

The purpose of this procedure is to establish standard protocols for all Ogden field personnel for use in maintaining field and sampling activity records, writing sample logs, labelling samples, and ensuring that proper sample custody procedures are utilized.

## 2.0 SCOPE

This procedure shall apply to all sample collection conducted during Ogden program activities.

This procedure has been developed to serve as management-approved professional guidance for the Ogden Program. As professional guidance for specific activities, this procedure is not intended to obviate the need for professional judgement to accommodate unforeseen circumstances. Deviation from this procedure in planning or in the execution of planned activities must be approved by management personnel and documented.

## 3.0 DEFINITIONS

### 3.1 LOGBOOK

A bound field notebook with consecutively numbered, water-repellent pages that is clearly identified with the name of the affected activity, the person assigned responsibility for maintenance of the logbook, and the beginning and ending dates of the entries.

### 3.2 Chain-of-Custody

The process by which possession of a sample changes hands from the time of its collection in the field to its receipt by the analytical laboratory.

## 4.0 RESPONSIBILITIES

Ogden field personnel are responsible for following these procedures during conduct of sampling activities. Ogden project field personnel are responsible for recording pertinent data into the logbook to satisfy project requirements and for attesting to the accuracy of the entries by dated signature.

The Field Supervisor is responsible for ensuring that all field personnel follow these procedures.

The Project Manager is responsible for determining which team members shall record information in the field logbook and for checking sample logbooks and chain-of-custody forms to ensure compliance with these procedures.

The Laboratory Project Manager or Sample Control Department Manager is responsible for reporting any sample documentation or chain-of-custody problems to the Project Manager.

The QA Program Manager is responsible for evaluating Project Manager and project compliance with these procedures. The QA Program Manager, or designee, is responsible for reviewing logbook entries, sample labeling, and chain-of-custody records to ensure that all are adequate to meet project requirements.

## 5.0 PROCEDURES

Standards for documenting field activities, labeling the samples, and documenting sample custody are provided in this procedure. The standards presented in this section are to be

followed to ensure that samples collected are maintained for their intended purpose and that the conditions encountered during field activities are documented.

## 5.1 Record Keeping

The field logbook serves as the primary record of field activities. Entries shall be made chronologically and in sufficient detail to allow the writer or a knowledgeable reviewer to reconstruct each day's events, as described in procedure number FP-F-5. All field descriptions and observations are entered into the logbook. Information entered in the logbook includes, but is not limited to the following:

- Names of personnel present;
- Trench well, or other sampling location identification number;
- Sample identification numbers;
- Sample collection date and time;
- Sample matrix and type (e.g., grab, composite, duplicate);
- Sampler's name;
- Well description, if applicable (e.g., water level, depth of well);
- Sample location and depth or height (includes sketch, if appropriate);
- Sample description (e.g., color, odor, suspended material, presence of immiscible layers);
- Sample field measurements including static water level, pH, temperature, specific conductance, and well yield characteristics (if applicable);
- Sample preservatives (if applicable);
- Type of sample equipment and methods used;
- Type, volume, and number of sample containers;
- Analyses to be performed on the sample;
- Method of sample shipment;
- Decontamination procedures;
- Purging methods, purge volume, pumping rate, and purging time period (if applicable);
- Weather conditions, including approximate ambient temperature and any significant rainfall events;

- Field observations of the sampling event and other notable occurrences and the time of occurrences; and
- Analytical laboratory to which samples will be shipped.

Errors in logbook entries shall be corrected by drawing a single line through the incorrect entry, initialing and dating the item, and entering an explanation for the correction.

Each entry or group of entries shall be signed and dated by the person making the entry, at the end of each day or when the logbook is returned to the Project Office, whichever is sooner.

In addition to the field logbook, individual log sheets may be generated for specific field sampling activities. These log sheets include, but are not limited to, boring logs and well sampling logs. Procedures for completing these log sheets are detailed in procedure FP-F-5, Logbooks.

## 5.2 Sample Labeling

A sample label shall be affixed to each individual sample container. Clear tape will then be placed over each label to prevent the labels from tearing or falling off and to prevent loss of information on the label. The following information shall be recorded with a waterproof marker on each label:

- Project name;
- Project number (if applicable);
- Sample identification number;
- Date and time of collection;
- Sampler's initials;
- Sample preservatives (if applicable); and
- Analysis to be performed on sample.

### 5.3 CUSTODY PROCEDURES

For samples intended for chemical analysis, sample custody procedures shall be followed through collection, transfer, analysis, and disposal to ensure that the integrity of the samples is maintained. Custody of samples shall be maintained in accordance with EPA chain-of-custody guidelines as prescribed in EPA *NEIC Policies and Procedures*, National Enforcement Investigations Center, Denver, Colorado, revised May 1986; EPA's *RCRA Ground Water Monitoring Technical Enforcement Guidance Document* (TEGD), *Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA* (EPA OSWER Directive 9355 3-01), Appendix 2 of the *Technical Guidance Manual for Solid Waste Water Quality Assessment Test (SWAT) Proposals and Reports*, and *Test Methods for Evaluating Solid Waste* (EPA SW-846). A description of sample custody procedures is provided below.

#### 5.3.1 Sample Collection Custody Procedures

According to EPA's *NEIC Policies and Procedures*, a sample is considered to be in custody if:

- It is in one's actual physical possession or view;
- It is in one's physical possession and has not been tampered with (i.e., it is under lock or official seal);
- It is retained in a secured area with restricted access; or
- It is placed in a container and secured with an official seal such that the sample cannot be reached without breaking the seal.

Custody seals shall be placed on shipping coolers if the cooler is to be removed from the sampler's custody. Custody seals will be placed in such a manner that they must be broken to open the containers or coolers. The custody seals shall be labeled with the following information:

- Sampler's initials; and

- Date and time that the sample/cooler was sealed.

These seals are designed to enable detection of sample tampering. An example of a custody seal is provided in Attachment 1.

Field personnel shall also log individual samples onto carbon copy chain-of-custody forms when a sample is collected, indicating sample identification number, matrix, date and time of collection, number of containers, analytical methods to be performed on the sample, and preservatives added (if any). The samplers will also sign the custody form signifying that they were the personnel who collected the samples. The chain-of-custody form shall accompany the samples from the field to the laboratory. When a cooler is ready for shipment to the analytical laboratory, the person delivering the samples for transport will sign and indicate the date and time on the accompanying chain-of-custody form. One copy of the chain-of-custody form will be retained by the sampler and the remaining copies of the chain-of-custody form shall be placed inside a zip-lock bag and taped to the inside of the cooler. Each cooler must be associated with a unique chain-of-custody form. Whenever a transfer of custody takes place, both parties shall sign and date the accompanying carbon copy chain-of-custody forms, and the individual relinquishing the samples shall retain a copy of each form. One exception is when the samples are shipped; the delivery service personnel will not sign or receive a copy. The laboratory shall attach a copy of the completed chain-of-custody forms to the reports containing the results of the analytical tests. An example of a chain-of-custody form is provided in Attachment 2.

### 5.3.2 Laboratory Custody Procedures

The following are custody procedures to be followed by an independent laboratory receiving samples for chemical analysis. A designated sample custodian shall take custody of all samples upon their arrival at the analytical laboratory. The custodian shall inspect all sample labels and custody forms to ensure that the information is consistent, and that each is properly completed. The custodian will also measure the temperature of

the samples in the coolers upon arrival. The custodian shall also note the condition of the samples including:

- If the samples show signs of damage or tampering;
- If the containers are broken or leaking;
- If headspace is present in sample vials; and
- If any sample holding times have been exceeded.

All of the above information shall be documented on a sample receipt sheet by the custodian. The custodian shall then assign a unique laboratory number to each sample and distribute the samples to secured storage areas maintained at 4°C. The unique laboratory number for each sample, the field sample ID, the client name, date and time received, analysis due date, and storage shall also be manually logged onto a sample receipt record and later entered into the laboratory's computerized data management system. The custodian shall also sign the shipping bill and maintain a copy.

Laboratory personnel will be responsible for the care and custody of samples from the time of their receipt at the laboratory through their exhaustion or disposal. Samples should be logged in and out on internal laboratory chain-of-custody forms each time they are removed from storage for extraction or analysis.

## 6.0 RECORDS

Following the completion of sampling activities, the sample logbook and chain-of-custody forms will be transmitted to the Project Manager for storage in project files.

## 7.0 REFERENCES

State of California Water Resources Control Board. 1988. Technical Guidance Manual for Solid Waste Water Quality Assessment Test (SWAT) Proposals and Reports.

USEPA. 1986. EPA NEIC Policies and Procedures, National Enforcement Investigations Center, Denver, Colorado.

USEPA. 1986. RCRA Ground-Water Monitoring Technical Enforcement Guidance Document (TEGD).

USEPA. 1987. Test Methods for Evaluating Solid Waste (SW-846).

USEPA. 1988. Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA (EPA USWER Directive 9355 3-01).

## 8.0 ATTACHMENTS

1. Chain-of-Custody Seal; and
2. Chain-of-Custody Form.

# ATTACHMENT 1
## CHAIN-OF-CUSTODY SEAL

# ATTACHMENT 2
# CHAIN-OF-CUSTODY FORM

# SAMPLE HANDLING, STORAGE, AND SHIPPING

Approved/Date

Paul T. Pettit, Jr., P.E.
Program Manager

## 1.0 PURPOSE

The objective of this procedure is to provide standard methods for use by Ogden field personnel in handling, storing, and transporting samples following their collection.

## 2.0 SCOPE

This procedure is applicable to all samples, and sample containers handled, stored, shipped, or otherwise transported during Ogden program project activities.

This procedure has been developed to serve as management-approved professional guidance for the Ogden Program. As professional guidance for specific activities, this procedure is not intended to obviate the need for professional judgement to accommodate unforeseen circumstances. Deviation from this procedure in planning or in the execution of planned activities must be approved by management personnel and documented.

## 3.0 DEFINITIONS

None.

## 4.0 RESPONSIBILITIES

The Field Supevisor is responsible for ensuring that all samples are shipped according to this procedure.

The Project Manager and the Laboratory Project Manager are responsible for identifying instances of non-compliance with this procedure and ensuring that future sample transport activities are in compliance with this procedure.

The QA Program Manager is responsible for ensuring that sample handling, storage, and transport activities conducted during all projects are in compliance with this procedure.

## 5.0 PROCEDURE

All appropriate U.S. Department of Transportation regulations (e.g., 49 CFR, Parts 100-199) shall be followed in shipment of air, soil and water samples collected during monitoring programs. Procedures include those listed in this subsection.

Immediately following collection, all samples will be labeled according to the procedures in the field procedure entitled Record Keeping, Sample Labeling, and Chain-of-Custody (FP-F-6). The lids of the containers shall not be sealed with duct tape, but may be covered with custody seals or placed directly into self sealing bags. The sample containers will be placed in an insulated cooler with frozen gel packs (such as "blue ice") or ice in double, sealed zip-lock bags. Samples should occupy the lower portion of the cooler, while the ice should occupy the upper portion. Prior to shipping, glass sample containers should be wrapped on the sides, tops, and bottoms with bubble wrap or other appropriate padding to prevent breakage during transport. Samples shall be shipped as soon as possible to allow the laboratory to meet holding times for analyses. Prior to shipment, the ice or cold packs in the coolers will be replaced so that samples will be maintained as close to 4°C as possible from the time of collection through transport of the samples to the analytical laboratory.

Another activity that may be performed to keep samples as close to 4°C as possible during sample storage and transport is to place dry ice in the cooler with the samples during sample collection. If dry ice should be removed prior to shipment, it should be replaced with ice in double, sealed ziplock bags or frozen gel packs. Dry ice should only be used with non-glass sample containers, since the dry ice may freeze the samples. Prior

to shipment, containers previously packed with dry ice should be placed in coolers with glass samples in containers to provide additional sample cooling effects.

When a cooler is ready for shipment to the laboratory, two copies of the chain-of-custody form shall be placed inside a zip-lock bag and taped to the inside of the cooler. The coolers will then be sealed with strapping tape and labeled "Fragile," "This-End-Up" or other appropriate notices. A letter stating the names and telephone numbers of Ogden and laboratory personnel at various locations who can be contacted in the event of problems with the sample shipment should also be taped to the outside of the cooler. Chain-of-custody seals will be placed on the coolers as discussed in the field procedure entitled Record Keeping, Sample Labeling, and Chain-of-Custody (FP-F-6).

Upon receipt of sample coolers at the laboratory, the sample custodian shall inspect the sample containers as discussed in the field procedure entitled Record Keeping, Sample Labeling, and Chain-of-Custody (FP-F-6). The samples shall then be either immediately extracted and/or analyzed, or stored in a refrigerated storage area until they are removed for extraction and/or analysis. Whenever the samples are not being extracted or analyzed, they shall be returned to refrigerated storage.

## 6.0 RECORDS

Records shall be maintained as required by implementing procedures.

## 7.0 REFERENCES

Ogden Program, Quality Assurance Management Plan.

## 8.0 ATTACHMENTS

None.

Solutions Taking Shape

# Central Ditch Sediment Characterization Work Plan

Koppers Industries, Incorporated
Tie Plant, MS

Prepared for:

Beazer East, Incorporated
Pittsburgh, PA

Prepared by:

Ogden Environmental and Energy Services
Westford, MA

July 1998

# Central Ditch Sediment Characterization Work Plan

Koppers Industries Incorporated Facility
Tie Plant, Mississippi

July 1998

# Table of Contents

## 1.0 Overview

The Koppers Industries, Inc. (KII) site in Tie Plant, Mississippi is an active wood treating facility (the Site). The Site is a 171-acre facility that has been in operation since 1904. The wood treatment activities on-site incorporate creosote and pentachlorophenol based preservatives. An Interim Measures Work Plan (IM Work Plan) was approved by the Environmental Protection Agency (EPA) on January 25, 1996, as part of the scope of activities outlined in IM Work Plan, the Interim Measures Predesign Investigation Report and Conceptual Design, dated December 16, 1997 was submitted to the EPA. A Final Phase II RCRA Facility Investigation (RFI) Report was submitted to EPA) and MDEQ in January 1998. The RFI presented the results and conclusions of investigations conducted on-site from 1991 through 1997. The proposed work is being performed as an Interim Action.

An area known as the Central Ditch bisects the central portion of the Site from southwest to the northeast. The Central Ditch contains an unnamed stream that flows northeast off-site to the Batupan Bogue, approximately 0.4 miles east of the site. The RFI identified the presence of polycyclic aromatic hydrocarbons (PAH) in the Central Ditch sediments adjacent to, and immediately downstream of, the Site.

To further delineate the lateral and vertical extent of sediments containing PAHs, additional sediment sampling will be performed. Based on the vertical extent of sediments containing elevated PAH, several remedial strategies will be considered.

## 2.0 Introduction

The investigation of the Central Ditch will be divided into three areas: 1) the upper portion of the Central Ditch which includes that section east of the on-site railroad bridge to the first off-site crossing of the stream (a farm road approximately 600 feet off-site), 2) the central section of the Central Ditch which runs east from the farm road for approximately 1,000 feet, and 3) the lower section of the Central Ditch which runs from the central section to the Batupan Bogue.

Sediment samples previously collected in these portions of the Central Ditch indicate a sharp downward gradient in PAH concentrations with increasing downstream distance from the Site. However, previous sampling locations were located 350 feet apart in the upper portion of the Central Ditch and up to 1,200 feet apart in the central and lower sections of the Central Ditch. This investigation will provide additional sampling data in the upper, central and lower (if necessary) sections of the Central Ditch to determine more precisely the extent of sediments that might require remediation.

In each section of the Central Ditch, transects consisting of a series of boreholes will be installed to characterize the Central Ditch sediment. Analytical samples, sediment core

logging, geophysical information will be collected at transects in the upper and central sections of the Central Ditch. The geophysical information will be used to determine the compressive strength of sediments. These measurements will be collected to determine if the stream bottom will support heavy equipment activity associated with dredging.

Approximate sediment transect locations are illustrated in Figure 1. In the upper section the central ditch, transects will be installed every 100 feet from the railroad bridge to the farm road. In the upper section adjacent to the Former Wastewater Treatment System, Solid Waste Management Unit (SWMU) No. 11, approximately three additional transects will be installed. As the sampling team proceeds down the Central Ditch streambed, any creosote seeps will be noted and mapped. In the central section, transects will be installed every 200 feet for approximately 1,000 feet downstream of the farm road. In the lower section of the Central Ditch, two transects will be installed (Figure 1). During installation of the boreholes, sediments will be screened for visual and olfactory indications of PAH. Sampling of the lower section transects will depend upon screening results. If upstream samples are clean these transects may not need to be sampled.

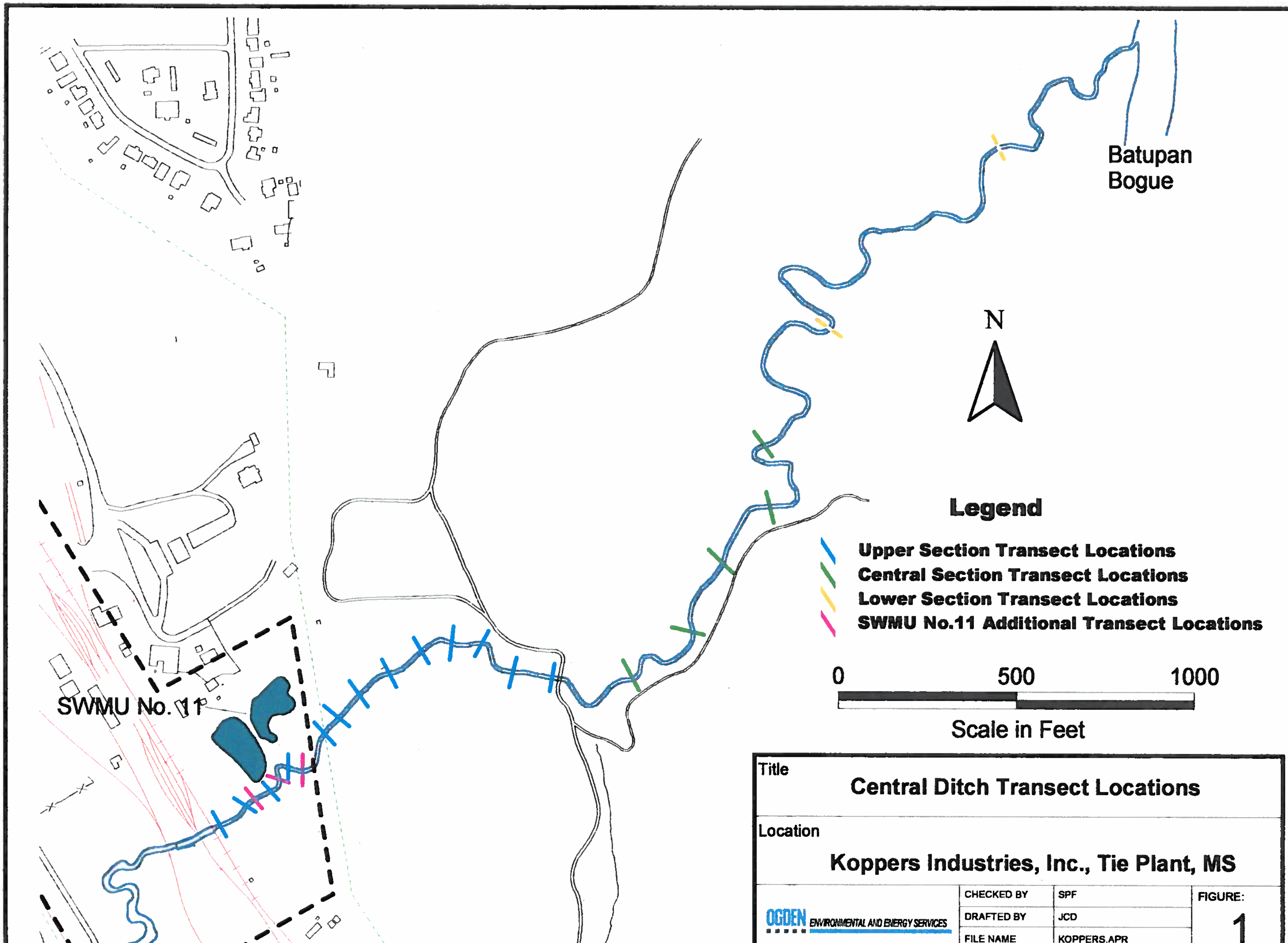
## 3.0 Sediment Sampling Locations

The following table summarizes the approximate number of proposed sediment transects and their relative location in the Central Ditch:

| Central Ditch Transect Locations | |
|---|---|
| **Location** | **Number of Transects** |
| Upper Section | 13 |
| Upper Section - Additional Characterization adjacent to SWMU No.11 | 3 |
| Central Section | 5 |
| Lower Section | 2 |

The upper section of the Central Ditch, which runs from the on-site railroad bridge to the first downstream crossing (a farm road), is approximately 1,200 feet long. Sediment sampling transects will be installed in this section every 100 feet, for a total of approximately thirteen transects. These transects will be logged and visually/olfactory screened for the presence of PAH. No analytical samples will be collected from on-site transects. At off-site sampling locations in this section, two analytical samples per transect will be collected from the shallowest sediments which show no evidence of the presence of PAH when they are encountered.

Additional transects in the upper section of the Central Ditch will be installed at 50 foot intervals adjacent to SWMU No.1 over a 200 foot distance. These transects, combined with transects being installed every 100 feet, will provide additional characterization in this section of the Central Ditch. The additional transects will be logged and visually/olfactory screened for the presence of PAH. A total of two sediment samples which represent sediments which show no evidence of the presence of PAH or sediments




| | | | | |
|---|---|---|---|---|
| Title | Central Ditch Transect Locations | | | |
| Location | Koppers Industries, Inc., Tie Plant, MS | | | |
| OGDEN ENVIRONMENTAL AND ENERGY SERVICES | CHECKED BY | SPF | FIGURE: | 1 |
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| | DATE | 08/28/98 | | |

which may represent a vertical PAH concentration gradient will be selected for analysis from the transects in the area of SWMU No. 11.

The central section runs from the farm road approximately 1,000 feet downstream. Transects will be installed in this section every 200 feet, for a total of approximately five transects. These transects will be logged and visually/olfactory screened for the presence of PAH. Two analytical samples per transect will be collected from the shallowest two consecutive 12-inch depth intervals which show no evidence of the presence of PAH when they are encountered.

The lower section runs approximately 1,100 feet from the central section to the Bautapan Bogue. A total of two transects will be installed in this section of the stream, if necessary, as shown on Figure 1. The need for these transects will be determined in the field based on sediment observations from upper and central sections.

At off-site transect locations in all sections of the Central Ditch, when screening indicates no evidence of the presence of PAH, a composite sample of that depth interval will be collected for laboratory analysis. If visual/olfactory screening indicates that sediment from several consecutive transects show no evidence of the presence of PAH, analysis of representative sediments will be performed only periodically downstream to confirm these observations.

## 3.1 Sediment Sampling Protocol

Stream transects will be installed as noted above at the locations shown on Figure 1. Each transect will consist of up to five sediment boreholes in the stream bottom. The number of boreholes installed at each transect will be determined in the field based on the width of the stream (the stream is generally 8-10 feet in width). A minimum of three boreholes will be installed at each transect to ensure complete sediment characterization. The boreholes will be oriented along a line perpendicular to the Central Ditch banks. The boreholes will be spaced equally across the transect from one bank to the other if there is no variability in sediment features within the transect. At transects where different sediment features (meanders, pools, sandbars) exist, the borings will be spaced to collect representative samples from different features. Sediment boreholes will be advanced until sediment showing no evidence of the presence of PAH (determined by visible/olfactory screening) or refusal is encountered or until the borehole is 5 feet deep.

Each borehole will be advanced in 6" increments using a stainless steel hand auger. The core from each borehole will be logged geologically and screened every 12" for visual and olfactory indication of creosote, which may indicate the presence of PAH. Variations in sediment grain size and visual and olfactory evidence of PAH or creosote will be noted on the logs. The logs at each transect will be combined to created a geologic cross-section at each transect location. The cross-sections will be used to create a detailed map of the Central Ditch sediments.

Sediment samples that are selected for laboratory analysis will be collected from the same depth interval in each sediment borehole within a transect. These samples will be combined to form one composite sample for the particular depth interval within a transect. Sediment samples will be composited in a stainless steel bowl with a stainless steel spoon. Sediment samples will be composited by quartering the composite volume and thoroughly mixing the samples.

### 3.2 Sample Handling and Analysis

All sampling equipment will be decontaminated between sampling locations per Ogden Standard Operating Procedure (SOP) FP-D-5. Generally, sampling equipment will be cleaned using soap and water, rinsed using tap water, rinsed with isopropyl alcohol, and finally rinsed with deionized water.

All sediment samples will be stored in a cooler at $4^{O}$ Celsius. Samples will be submitted to a laboratory using proper Chain-of-Custody procedures per Ogden SOPs FP-F-6 and FP-F-7. The sediment samples will be analyzed for PAH by EPA Method 8270 and for total organic carbon (TOC) by the Whatley-Black Method.

### 3.3 Geophysical Procedures

A dynamic cone penetrometer (DCP) will be used to measure the compressive strength of sediment in the upper and central sections of the Central Ditch. The DCP consists of a small diameter drill rod with a 1-inch diameter cone on the end of the rod. The cone-end on the rod is driven in one-foot intervals into the sediment using a 24-pound weight as a hammer. The blow counts are recorded in 6" intervals. After the rod is driven each one-foot interval, it is removed, the borehole is advanced using a hand auger to the last depth the DCP was driven. The process is then repeated. The DCP will be advanced to 5 feet below the sediment surface.

The compressive strength of stream sediments will be measured in transects in the upper and middle sections of the Central Ditch which contain visible evidence of PAH. One borehole per transect will be measured.

## 4.0 Reporting

Analytical results will be tabulated and present PAH results, TOC results and TOC adjusted values for total PAH. Based on the results of transect characterization and sampling, cross-sections and a base map will be created which map the presence of PAH in sediments in the Central Ditch.

# EQUIPMENT DECONTAMINATION

Approved/Date

Paul T. Pettit, Jr., P.E.
Program Manager

## 1.0 PURPOSE

The purpose of this procedure is to provide standard equipment decontamination methods for use during site activities at Ogden Program sites.

## 2.0 SCOPE

These procedures shall be employed where applicable during decontamination of field equipment used for sampling environmental media.

This procedure has been developed to serve as management-approved professional guidance for the Ogden Program. As professional guidance for specific activities, this procedure is not intended to obviate the need for professional judgment to accommodate unforeseen circumstances. Deviation from this procedure in planning or in the execution of planned activities must be approved by the Project Manager and Ogden Program Manager.

## 3.0 DEFINITIONS

None.

## 4.0 RESPONSIBILITIES

The Field Program Manager is responsible for ensuring that all field equipment is decontaminated according to this procedure.

The Project Manager is responsible for identifying instances of non-compliance with this procedure and ensuring that decontamination activities are in compliance with this procedure.

The Ogden Program Manager is responsible for ensuring that decontamination activities conducted during all projects are in compliance with this procedure.

## 5.0 PROCEDURES

Decontamination of ground-water monitoring well drilling and developing equipment, as well as ground-water, surface water, sediment, waste, wipe, asbestos, and unsaturated zone sampling equipment is necessary to prevent cross-contamination, and to maintain the highest integrity possible in collected samples. Planning a decontamination program requires consideration of the following:

- The location where the decontamination procedures will be conducted;
- The types of equipment requiring decontamination;
- The frequency of equipment decontamination;
- The cleaning technique and types of cleaning solutions;
- The method for containing the residual contaminants and wash water from the decontamination process; and
- The use of a quality control measure to determine the effectiveness of the decontamination procedure.

This subsection describes standards for decontamination. The techniques to be used, frequency of decontamination, cleaning solutions, and effectiveness are among the standards presented.

### 5.1 DECONTAMINATION AREA

An appropriate location for the decontamination area at a site shall be selected based on the ability to control access to the area, control residual material removed from

equipment, store clean equipment, and access to the area being investigated. The decontamination area shall be located at an adequate distance away and upwind from potential contaminant sources to avoid contamination of clean equipment. Once equipment is cleaned, it shall be stored sufficiently far enough away from the potential contamination sources and the decontamination area to ensure that the equipment remains clean.

### 5.2 Types of Equipment

Decontamination of drilling equipment includes drill bits, auger sections, drill-string tools, drill rods, split barrel samplers, tremie pipes, clamps, hand tools, and steel cable. Decontamination of monitoring well development and ground-water sampling equipment includes submersible pumps, bailers, interface probes, water level meters, bladder pumps, air lift pumps, peristaltic pumps, and lysimeters. Other sampling equipment that requires decontamination includes, but is not limited to, hand trowels, shovels, stainless steel spoons and bowls, soil sample liners, wipe sampling templates, COLIWASA samplers, and dippers. Equipment with a porous surface, such as rope, cloth hoses, and wooden blocks, cannot be thoroughly decontaminated and shall be properly disposed after one use.

### 5.3 Frequency of Equipment Decontamination

Down-hole drilling equipment and monitoring well development and purging equipment shall be decontaminated prior to initial use and between each borehole or well. However, down-hole drilling equipment may require more frequent cleaning to prevent cross-contamination between vertical zones within a single borehole. Where drilling through a shallow contaminated zone and installing a surface casing to seal-off the contaminated zone, the drilling tools shall be decontaminated prior to drilling deeper. Ground-water sampling shall be initiated by sampling in the location where the least contamination is suspected. All ground-water, surface water, and unsaturated zone sampling devices shall be decontaminated prior to initial use and between collection of each sample to prevent the possible introduction of contaminants into successive samples.

## 5.4 Cleaning Solutions and Techniques

Decontamination can be accomplished using a variety of techniques and fluids. The preferred method of decontamination of major equipment such as augers, drill string, pump drop-pipe, submersible pumps, etc., involves the use of steam cleaning. Steam cleaning is accomplished using a portable, high pressure steam cleaner equipped with a pressure hose and fittings. For this method, equipment shall be thoroughly steam washed and rinsed with water of known chemical quality to remove particulates and contaminants.

A rinse decontamination procedure is acceptable for equipment such as bailers, water level meters, re-used soil sample liners, and hand tools. The decontamination procedure shall consist of the following: 1) wash with a non-phosphate detergent (alconox, liquinox, or other suitable detergent) and potable water solution, 2) rinse in a bath with potable water, 3) spray with isopropyl alcohol (aqueous sampling devices for organic samples only), and 4) rinse with deionized or distilled water. If possible, equipment shall be disassembled prior to cleaning. A second wash should be added at the beginning of the process if very soiled equipment is present.

Submersible pumps require additional effort to properly decontaminate because internal surfaces become contaminated during usage. These pumps shall be decontaminated by washing and rinsing the outside surfaces using the procedure described for small equipment or by steam cleaning. The internal surfaces shall be decontaminated by recirculating fluids through the pump while it is operating. This recirculation can be done using several large diameter pipes (4-inch or greater) equipped with bottom caps. These pipes shall be filled with the decontamination fluids, the pump placed within the closed pipes, and the pump operated while recirculating the fluids. The decontamination sequence shall include 1) detergent and potable water wash, 2) potable water rinse, 3) isopropyl spray into the pump, and 4) potable water rinse. The decontamination fluids shall be changed after each decontamination cycle.

Solvents other than isopropyl alcohol may be used, depending upon the contaminants involved. For example, if polychlorinated biphenyls (PCBs) or chlorinated pesticides are contaminants of concern, hexane may be used as the decontamination solvent. However, if samples are also to be analyzed for volatile organics, hexane shall not be used. In addition, some decontamination solvents have health effects which must be considered. Decontamination solvents to be used during field activities will be specified in Project Work Plans or Quality Assurance Project Plans (QAPPs).

Equipment for measuring field parameters such as pH, temperature, specific conductivity, and turbidity shall be rinsed with deionized or distilled water after each measurement.

## 5.5 CONTAINMENT OF RESIDUAL CONTAMINANTS AND CLEANING SOLUTIONS

Unless required otherwise, site decontamination water will be disposed of on the ground surface at the sampling location provided the water will not discharge from the site.

When contaminated material and cleaning fluids must be contained from heavy equipment such as drill rigs and support vehicles, the area must be properly floored, preferably with a concrete pad which is sloped toward a sump pit. If a concrete pad is impractical, planking can be used to construct a solid flooring that is then covered by a nonporous surface and sloped toward a collection sump. If the decontamination area does not have a collection sump, plastic sheeting and blocks or other objects should be used to create a bermed area for collection of equipment decontamination water. Items such as auger flights that can be placed on stands, saw horses, or other similar equipment, should be situated on this equipment during decontamination to prevent contact with fluids generated by previous equipment decontamination. Clean equipment should also be stored in a separate location than the decontamination area to prevent recontamination. Decontamination fluids contained within the bermed area shall be collected and stored in secured containers as described below.

Catchment of fluids from the decontamination of lighter-weight drilling equipment and hand-held sampling devices shall be accomplished using wash buckets or tubs. The

decontamination fluids shall be collected and stored onsite until its disposition is determined based upon laboratory analytical results. Storage shall be in secured containers such as DOT-approved drums. Containers shall be labeled in accordance with FP-B-8.

### 5.6 EFFECTIVENESS OF DECONTAMINATION PROCEDURES

A decontamination program needs to incorporate quality control measures for determining the effectiveness of the cleaning methods. Quality control measures typically include collection of equipment rinsate samples or wipe testing. Equipment rinsates consist of analyte-free water which has been poured over or through the sample collection equipment after its final decontamination rinse. Wipe testing is performed by wiping a cloth over the surface of the equipment after cleaning. Further descriptions of these samples and their required frequency of collection is provided in the field procedure entitled Field QC Samples (Water, Soil). These quality control measures provide "after-the fact" information that may be useful to determine whether or not the cleaning methods were effective in removing the contaminants of concern.

## 6.0 RECORDS

Records shall be maintained as required by implementing procedures.

## 7.0 HEALTH AND SAFETY

Section 10 of the Ogden Health and Safety Management Plan, provides decontamination (decon) guidelines primarily for personnel. There is however, some information on equipment decon in this section also. It is the responsibility of the Onsite Health and Safety Coordinator (OHSC) to set up the site zones (i.e., exclusion, transition, and clean) and decon areas. Generally the decon area is located within the transition zone, upwind of intrusive activities, and serves as the area where both personnel and equipment are washed to minimize the spread of contamination into the clean zone. For equipment, a series of buckets within a visqueen-lined bermed area is set up for decon purposes. In

addition, separate spray bottles containing isopropyl alcohol and distilled water are available for final rinsing of equipment. Depending on the nature of hazards and the site location, decontamination of heavy equipment such as, augers, pump drop pipe, and vehicles may be accomplished using a variety of techniques. Guidelines for equipment selection, cleaning solutions and decontamination techniques are provided in Section 10.6 of the Ogden Health and Safety Management Plan.

Personnel responsible for equipment decon, must wear the PPE specified in the site-specific Health and Safety Plan (HSP). Generally this includes at a minimum: Tyvek coveralls, steel-toed boots with boot covers or steel-toed rubber boots, safety glasses, ANSI-Standard hard hats, and hearing protection (if heavy equipment is in operation). It should also be noted that air monitoring by the OHSC as required in Section 6 of the Ogden Health and Safety Management Plan may warrant an upgrade to the use of half-face respirators and cartridges in the decon area; therefore, this equipment must be available onsite. If safe alternatives are not achievable, site activities will be discontinued immediately.

In addition to the aforementioned precautions, the following safe work practices will be employed:

<u>Chemical Hazards Associated With Equipment Decontamination:</u>

1. Avoid skin contact with and/or incidental ingestion of decon solutions and water.
2. Utilize PPE as specified in the site-specific HSP to maximize splash protection.
3. Refer to MSDSs, safety personnel, and/or consult sampling personnel regarding appropriate safety measures (i.e., handling, PPE - skin, respiratory, etc.).
4. Take necessary precautions when handling detergents and reagents.

<u>Physical Hazards Associated With Equipment Decontamination:</u>

1. To avoid possible back strain, it is recommended that the decon area be raised 1-2 feet above ground level.

2. To avoid heat stress, over exertion, and exhaustion, it is a recommended Ogden health and safety policy that equipment decon be rotated among **all** Ogden site personnel.
3. Take necessary precautions when handling field sampling equipment.

## 8.0 REFERENCES

Ogden Environmental and Energy Services, Inc.. 1992. Ogden Health and Safety Management Plan

U.S. EPA Environmental Response Team. 1988. Response Engineering and Analytical Contract Standard Operating Procedures. U.S. EPA, Research Triangle Park, NC.

## 9.0 ATTACHMENTS

None.

# RECORD KEEPING, SAMPLE LABELLING, AND CHAIN-OF-CUSTODY

Approved/Date

Paul T. Pettit, Jr., P.E.
Program Manager

## 1.0 PURPOSE

The purpose of this procedure is to establish standard protocols for all Ogden field personnel for use in maintaining field and sampling activity records, writing sample logs, labelling samples, and ensuring that proper sample custody procedures are utilized.

## 2.0 SCOPE

This procedure shall apply to all sample collection conducted during Ogden program activities.

This procedure has been developed to serve as management-approved professional guidance for the Ogden Program. As professional guidance for specific activities, this procedure is not intended to obviate the need for professional judgement to accommodate unforeseen circumstances. Deviation from this procedure in planning or in the execution of planned activities must be approved by management personnel and documented.

## 3.0 DEFINITIONS

### 3.1 LOGBOOK

A bound field notebook with consecutively numbered, water-repellent pages that is clearly identified with the name of the affected activity, the person assigned responsibility for maintenance of the logbook, and the beginning and ending dates of the entries.

### 3.2 CHAIN-OF-CUSTODY

The process by which possession of a sample changes hands from the time of its collection in the field to its receipt by the analytical laboratory.

## 4.0 RESPONSIBILITIES

Ogden field personnel are responsible for following these procedures during conduct of sampling activities. Ogden project field personnel are responsible for recording pertinent data into the logbook to satisfy project requirements and for attesting to the accuracy of the entries by dated signature.

The Field Supervisor is responsible for ensuring that all field personnel follow these procedures.

The Project Manager is responsible for determining which team members shall record information in the field logbook and for checking sample logbooks and chain-of-custody forms to ensure compliance with these procedures.

The Laboratory Project Manager or Sample Control Department Manager is responsible for reporting any sample documentation or chain-of-custody problems to the Project Manager.

The QA Program Manager is responsible for evaluating Project Manager and project compliance with these procedures. The QA Program Manager, or designee, is responsible for reviewing logbook entries, sample labeling, and chain-of-custody records to ensure that all are adequate to meet project requirements.

## 5.0 PROCEDURES

Standards for documenting field activities, labeling the samples, and documenting sample custody are provided in this procedure. The standards presented in this section are to be

followed to ensure that samples collected are maintained for their intended purpose and that the conditions encountered during field activities are documented.

## 5.1 RECORD KEEPING

The field logbook serves as the primary record of field activities. Entries shall be made chronologically and in sufficient detail to allow the writer or a knowledgeable reviewer to reconstruct each day's events, as described in procedure number FP-F-5. All field descriptions and observations are entered into the logbook. Information entered in the logbook includes, but is not limited to the following:

- Names of personnel present;
- Trench well, or other sampling location identification number;
- Sample identification numbers;
- Sample collection date and time;
- Sample matrix and type (e.g., grab, composite, duplicate);
- Sampler's name;
- Well description, if applicable (e.g., water level, depth of well);
- Sample location and depth or height (includes sketch, if appropriate);
- Sample description (e.g., color, odor, suspended material, presence of immiscible layers);
- Sample field measurements including static water level, pH, temperature, specific conductance, and well yield characteristics (if applicable);
- Sample preservatives (if applicable);
- Type of sample equipment and methods used;
- Type, volume, and number of sample containers;
- Analyses to be performed on the sample;
- Method of sample shipment;
- Decontamination procedures;
- Purging methods, purge volume, pumping rate, and purging time period (if applicable);
- Weather conditions, including approximate ambient temperature and any significant rainfall events;

- Field observations of the sampling event and other notable occurrences and the time of occurrences; and
- Analytical laboratory to which samples will be shipped.

Errors in logbook entries shall be corrected by drawing a single line through the incorrect entry, initialing and dating the item, and entering an explanation for the correction.

Each entry or group of entries shall be signed and dated by the person making the entry, at the end of each day or when the logbook is returned to the Project Office, whichever is sooner.

In addition to the field logbook, individual log sheets may be generated for specific field sampling activities. These log sheets include, but are not limited to, boring logs and well sampling logs. Procedures for completing these log sheets are detailed in procedure FP-F-5, Logbooks.

## 5.2 Sample Labeling

A sample label shall be affixed to each individual sample container. Clear tape will then be placed over each label to prevent the labels from tearing or falling off and to prevent loss of information on the label. The following information shall be recorded with a waterproof marker on each label:

- Project name;
- Project number (if applicable);
- Sample identification number;
- Date and time of collection;
- Sampler's initials;
- Sample preservatives (if applicable); and
- Analysis to be performed on sample.

### 5.3 CUSTODY PROCEDURES

For samples intended for chemical analysis, sample custody procedures shall be followed through collection, transfer, analysis, and disposal to ensure that the integrity of the samples is maintained. Custody of samples shall be maintained in accordance with EPA chain-of-custody guidelines as prescribed in EPA *NEIC Policies and Procedures*, National Enforcement Investigations Center, Denver, Colorado, revised May 1986; EPA's *RCRA Ground Water Monitoring Technical Enforcement Guidance Document* (TEGD), *Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA* (EPA OSWER Directive 9355 3-01), Appendix 2 of the *Technical Guidance Manual for Solid Waste Water Quality Assessment Test (SWAT) Proposals and Reports*, and *Test Methods for Evaluating Solid Waste* (EPA SW-846). A description of sample custody procedures is provided below.

#### 5.3.1 Sample Collection Custody Procedures

According to EPA's *NEIC Policies and Procedures*, a sample is considered to be in custody if:

- It is in one's actual physical possession or view;
- It is in one's physical possession and has not been tampered with (i.e., it is under lock or official seal);
- It is retained in a secured area with restricted access; or
- It is placed in a container and secured with an official seal such that the sample cannot be reached without breaking the seal.

Custody seals shall be placed on shipping coolers if the cooler is to be removed from the sampler's custody. Custody seals will be placed in such a manner that they must be broken to open the containers or coolers. The custody seals shall be labeled with the following information:

- Sampler's initials; and

- Date and time that the sample/cooler was sealed.

These seals are designed to enable detection of sample tampering. An example of a custody seal is provided in Attachment 1.

Field personnel shall also log individual samples onto carbon copy chain-of-custody forms when a sample is collected, indicating sample identification number, matrix, date and time of collection, number of containers, analytical methods to be performed on the sample, and preservatives added (if any). The samplers will also sign the custody form signifying that they were the personnel who collected the samples. The chain-of-custody form shall accompany the samples from the field to the laboratory. When a cooler is ready for shipment to the analytical laboratory, the person delivering the samples for transport will sign and indicate the date and time on the accompanying chain-of-custody form. One copy of the chain-of-custody form will be retained by the sampler and the remaining copies of the chain-of-custody form shall be placed inside a zip-lock bag and taped to the inside of the cooler. Each cooler must be associated with a unique chain-of-custody form. Whenever a transfer of custody takes place, both parties shall sign and date the accompanying carbon copy chain-of-custody forms, and the individual relinquishing the samples shall retain a copy of each form. One exception is when the samples are shipped; the delivery service personnel will not sign or receive a copy. The laboratory shall attach a copy of the completed chain-of-custody forms to the reports containing the results of the analytical tests. An example of a chain-of-custody form is provided in Attachment 2.

### 5.3.2 Laboratory Custody Procedures

The following are custody procedures to be followed by an independent laboratory receiving samples for chemical analysis. A designated sample custodian shall take custody of all samples upon their arrival at the analytical laboratory. The custodian shall inspect all sample labels and custody forms to ensure that the information is consistent, and that each is properly completed. The custodian will also measure the temperature of

the samples in the coolers upon arrival. The custodian shall also note the condition of the samples including:

- If the samples show signs of damage or tampering;
- If the containers are broken or leaking;
- If headspace is present in sample vials; and
- If any sample holding times have been exceeded.

All of the above information shall be documented on a sample receipt sheet by the custodian. The custodian shall then assign a unique laboratory number to each sample and distribute the samples to secured storage areas maintained at 4°C. The unique laboratory number for each sample, the field sample ID, the client name, date and time received, analysis due date, and storage shall also be manually logged onto a sample receipt record and later entered into the laboratory's computerized data management system. The custodian shall also sign the shipping bill and maintain a copy.

Laboratory personnel will be responsible for the care and custody of samples from the time of their receipt at the laboratory through their exhaustion or disposal. Samples should be logged in and out on internal laboratory chain-of-custody forms each time they are removed from storage for extraction or analysis.

## 6.0 RECORDS

Following the completion of sampling activities, the sample logbook and chain-of-custody forms will be transmitted to the Project Manager for storage in project files.

## 7.0 REFERENCES

State of California Water Resources Control Board. 1988. Technical Guidance Manual for Solid Waste Water Quality Assessment Test (SWAT) Proposals and Reports.

USEPA. 1986. EPA NEIC Policies and Procedures, National Enforcement Investigations Center, Denver, Colorado.

USEPA. 1986. RCRA Ground-Water Monitoring Technical Enforcement Guidance Document (TEGD).

USEPA. 1987. Test Methods for Evaluating Solid Waste (SW-846).

USEPA. 1988. Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA (EPA USWER Directive 9355 3-01).

## 8.0 ATTACHMENTS

1. Chain-of-Custody Seal; and
2. Chain-of-Custody Form.

# ATTACHMENT 1

## CHAIN-OF-CUSTODY SEAL

**RECRA LabNet**, a division of Recra Environmental, Inc.

**SAMPLE L** 40993

# ATTACHMENT 2

# CHAIN-OF-CUSTODY FORM

# RECRA LABNET, a division of Recra Environmental, Inc.

*CHAIN OF CUSTODY RECORD*

| PROJECT NO | SITE NAME |
|---|---|
| | |

SAMPLERS (SIGNATURE)

| STATION NO | DATE | TIME | COMP | GRAB | STATION LOCATION | NO OF CONTAINERS | | | | | | | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | |
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| RELINQUISHED BY (SIGNATURE) | DATE/TIME | RECEIVED BY (SIGNATURE) | RELINQUISHED BY (SIGNATURE) | DATE/TIME | RECEIVED BY (SIGNATURE) |
|---|---|---|---|---|---|
| RELINQUISHED BY (SIGNATURE) | DATE/TIME | RECEIVED BY (SIGNATURE) | RELINQUISHED BY (SIGNATURE) | DATE/TIME | RECEIVED BY (SIGNATURE) |
| RELINQUISHED BY (SIGNATURE) | DATE/TIME | RECEIVED FOR LABORATORY BY (SIGNATURE) | DATE/TIME | REMARKS | |

Distribution: Original accompanies shipment copy to coordinator field files

# SAMPLE HANDLING, STORAGE, AND SHIPPING

Approved/Date

Paul T. Pettit, Jr., P.E.
Program Manager

## 1.0 PURPOSE

The objective of this procedure is to provide standard methods for use by Ogden field personnel in handling, storing, and transporting samples following their collection.

## 2.0 SCOPE

This procedure is applicable to all samples, and sample containers handled, stored, shipped, or otherwise transported during Ogden program project activities.

This procedure has been developed to serve as management-approved professional guidance for the Ogden Program. As professional guidance for specific activities, this procedure is not intended to obviate the need for professional judgement to accommodate unforeseen circumstances. Deviation from this procedure in planning or in the execution of planned activities must be approved by management personnel and documented.

## 3.0 DEFINITIONS

None.

## 4.0 RESPONSIBILITIES

The Field Supevisor is responsible for ensuring that all samples are shipped according to this procedure.

The Project Manager and the Laboratory Project Manager are responsible for identifying instances of non-compliance with this procedure and ensuring that future sample transport activities are in compliance with this procedure.

The QA Program Manager is responsible for ensuring that sample handling, storage, and transport activities conducted during all projects are in compliance with this procedure.

## 5.0 PROCEDURE

All appropriate U.S. Department of Transportation regulations (e.g., 49 CFR, Parts 100-199) shall be followed in shipment of air, soil and water samples collected during monitoring programs. Procedures include those listed in this subsection.

Immediately following collection, all samples will be labeled according to the procedures in the field procedure entitled Record Keeping, Sample Labeling, and Chain-of-Custody (FP-F-6). The lids of the containers shall not be sealed with duct tape, but may be covered with custody seals or placed directly into self sealing bags. The sample containers will be placed in an insulated cooler with frozen gel packs (such as "blue ice") or ice in double, sealed zip-lock bags. Samples should occupy the lower portion of the cooler, while the ice should occupy the upper portion. Prior to shipping, glass sample containers should be wrapped on the sides, tops, and bottoms with bubble wrap or other appropriate padding to prevent breakage during transport. Samples shall be shipped as soon as possible to allow the laboratory to meet holding times for analyses. Prior to shipment, the ice or cold packs in the coolers will be replaced so that samples will be maintained as close to 4°C as possible from the time of collection through transport of the samples to the analytical laboratory.

Another activity that may be performed to keep samples as close to 4°C as possible during sample storage and transport is to place dry ice in the cooler with the samples during sample collection. If dry ice should be removed prior to shipment, it should be replaced with ice in double, sealed ziplock bags or frozen gel packs. Dry ice should only be used with non-glass sample containers, since the dry ice may freeze the samples. Prior

to shipment, containers previously packed with dry ice should be placed in coolers with glass samples in containers to provide additional sample cooling effects.

When a cooler is ready for shipment to the laboratory, two copies of the chain-of-custody form shall be placed inside a zip-lock bag and taped to the inside of the cooler. The coolers will then be sealed with strapping tape and labeled "Fragile," "This-End-Up" or other appropriate notices. A letter stating the names and telephone numbers of Ogden and laboratory personnel at various locations who can be contacted in the event of problems with the sample shipment should also be taped to the outside of the cooler. Chain-of-custody seals will be placed on the coolers as discussed in the field procedure entitled Record Keeping, Sample Labeling, and Chain-of-Custody (FP-F-6).

Upon receipt of sample coolers at the laboratory, the sample custodian shall inspect the sample containers as discussed in the field procedure entitled Record Keeping, Sample Labeling, and Chain-of-Custody (FP-F-6). The samples shall then be either immediately extracted and/or analyzed, or stored in a refrigerated storage area until they are removed for extraction and/or analysis. Whenever the samples are not being extracted or analyzed, they shall be returned to refrigerated storage.

## 6.0 RECORDS

Records shall be maintained as required by implementing procedures.

## 7.0 REFERENCES

Ogden Program, Quality Assurance Management Plan.

## 8.0 ATTACHMENTS

None.

Solutions Taking Shape.

# Central Ditch Sediment Characterization Work Plan

Koppers Industries, Incorporated
Tie Plant, MS

Prepared for:

Beazer East, Incorporated
Pittsburgh, PA

Prepared by:

Ogden Environmental and Energy Services
Westford, MA

July 1998

# Central Ditch Sediment Characterization Work Plan

Koppers Industries Incorporated Facility
Tie Plant, Mississippi

July 1998

# Table of Contents

## 1.0 Overview

The Koppers Industries, Inc. (KII) site in Tie Plant, Mississippi is an active wood treating facility (the Site). The Site is a 171-acre facility that has been in operation since 1904. The wood treatment activities on-site incorporate creosote and pentachlorophenol based preservatives. An Interim Measures Work Plan (IM Work Plan) was approved by the Environmental Protection Agency (EPA) on January 25, 1996, as part of the scope of activities outlined in IM Work Plan, the Interim Measures Predesign Investigation Report and Conceptual Design, dated December 16, 1997 was submitted to the EPA. A Final Phase II RCRA Facility Investigation (RFI) Report was submitted to EPA) and MDEQ in January 1998. The RFI presented the results and conclusions of investigations conducted on-site from 1991 through 1997. The proposed work is being performed as an Interim Action.

An area known as the Central Ditch bisects the central portion of the Site from southwest to the northeast. The Central Ditch contains an unnamed stream that flows northeast off-site to the Batupan Bogue, approximately 0.4 miles east of the site. The RFI identified the presence of polycyclic aromatic hydrocarbons (PAH) in the Central Ditch sediments adjacent to, and immediately downstream of, the Site.

To further delineate the lateral and vertical extent of sediments containing PAHs, additional sediment sampling will be performed. Based on the vertical extent of sediments containing elevated PAH, several remedial strategies will be considered.

## 2.0 Introduction

The investigation of the Central Ditch will be divided into three areas: 1) the upper portion of the Central Ditch which includes that section east of the on-site railroad bridge to the first off-site crossing of the stream (a farm road approximately 600 feet off-site), 2) the central section of the Central Ditch which runs east from the farm road for approximately 1,000 feet, and 3) the lower section of the Central Ditch which runs from the central section to the Batupan Bogue.

Sediment samples previously collected in these portions of the Central Ditch indicate a sharp downward gradient in PAH concentrations with increasing downstream distance from the Site. However, previous sampling locations were located 350 feet apart in the upper portion of the Central Ditch and up to 1,200 feet apart in the central and lower sections of the Central Ditch. This investigation will provide additional sampling data in the upper, central and lower (if necessary) sections of the Central Ditch to determine more precisely the extent of sediments that might require remediation.

In each section of the Central Ditch, transects consisting of a series of boreholes will be installed to characterize the Central Ditch sediment. Analytical samples, sediment core

logging, geophysical information will be collected at transects in the upper and central sections of the Central Ditch. The geophysical information will be used to determine the compressive strength of sediments. These measurements will be collected to determine if the stream bottom will support heavy equipment activity associated with dredging.

Approximate sediment transect locations are illustrated in Figure 1. In the upper section the central ditch, transects will be installed every 100 feet from the railroad bridge to the farm road. In the upper section adjacent to the Former Wastewater Treatment System, Solid Waste Management Unit (SWMU) No. 11, approximately three additional transects will be installed. As the sampling team proceeds down the Central Ditch streambed, any creosote seeps will be noted and mapped. In the central section, transects will be installed every 200 feet for approximately 1,000 feet downstream of the farm road. In the lower section of the Central Ditch, two transects will be installed (Figure 1). During installation of the boreholes, sediments will be screened for visual and olfactory indications of PAH. Sampling of the lower section transects will depend upon screening results. If upstream samples are clean these transects may not need to be sampled.

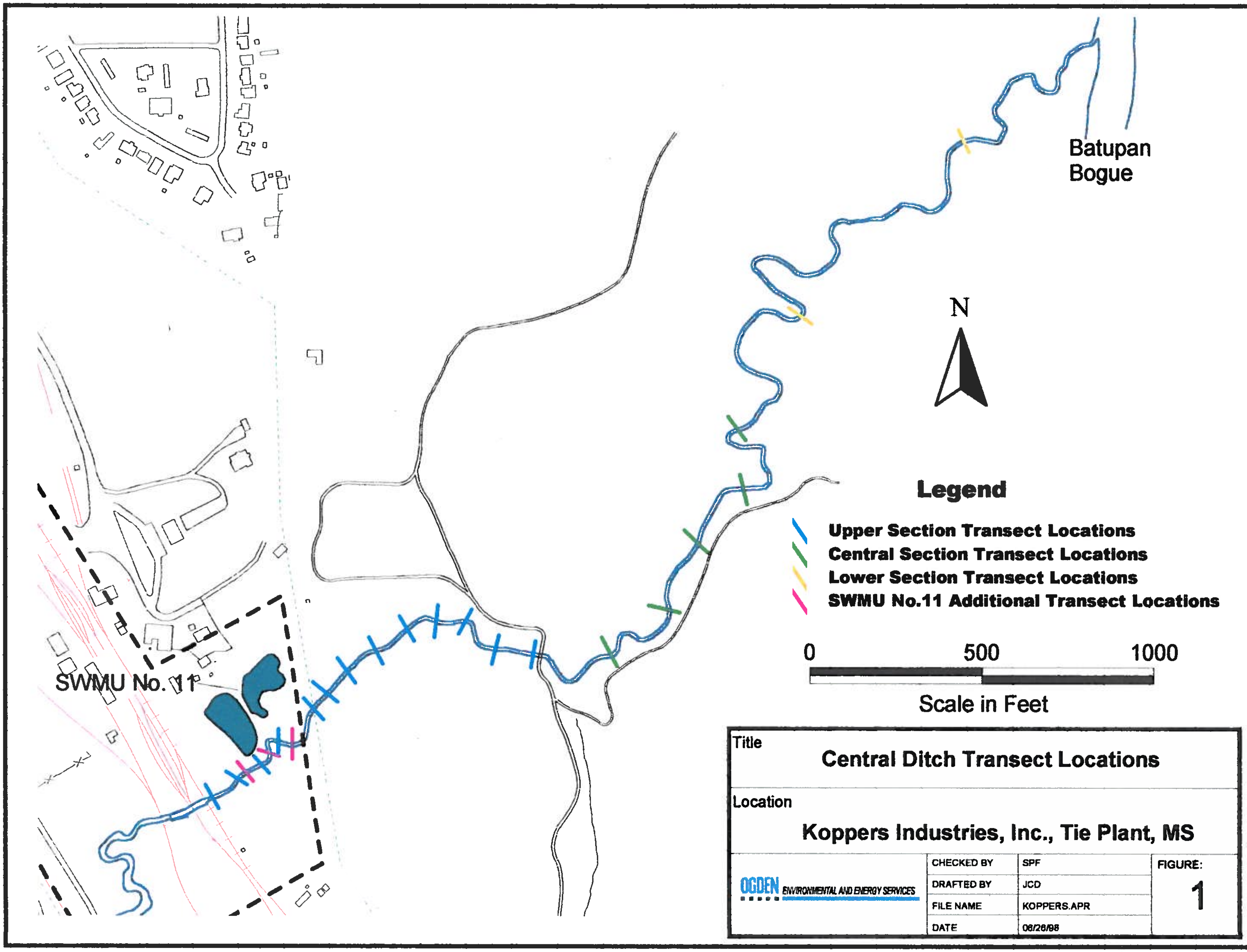
## 3.0 Sediment Sampling Locations

The following table summarizes the approximate number of proposed sediment transects and their relative location in the Central Ditch:

| Central Ditch Transect Locations | |
|---|---|
| **Location** | **Number of Transects** |
| Upper Section | 13 |
| Upper Section - Additional Characterization adjacent to SWMU No.11 | 3 |
| Central Section | 5 |
| Lower Section | 2 |

The upper section of the Central Ditch, which runs from the on-site railroad bridge to the first downstream crossing (a farm road), is approximately 1,200 feet long. Sediment sampling transects will be installed in this section every 100 feet, for a total of approximately thirteen transects. These transects will be logged and visually/olfactory screened for the presence of PAH. No analytical samples will be collected from on-site transects. At off-site sampling locations in this section, two analytical samples per transect will be collected from the shallowest sediments which show no evidence of the presence of PAH when they are encountered.

Additional transects in the upper section of the Central Ditch will be installed at 50 foot intervals adjacent to SWMU No.1 over a 200 foot distance. These transects, combined with transects being installed every 100 feet, will provide additional characterization in this section of the Central Ditch. The additional transects will be logged and visually/olfactory screened for the presence of PAH. A total of two sediment samples which represent sediments which show no evidence of the presence of PAH or sediments

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|---|---|---|---|
| Central Ditch Transect Locations | | | |
| Location | | | |
| Koppers Industries, Inc., Tie Plant, MS | | | |
| OGDEN ENVIRONMENTAL AND ENERGY SERVICES | CHECKED BY | SPF | FIGURE: |
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| | FILE NAME | KOPPERS.APR | |
| | DATE | 08/26/98 | |

which may represent a vertical PAH concentration gradient will be selected for analysis from the transects in the area of SWMU No. 11.

The central section runs from the farm road approximately 1,000 feet downstream. Transects will be installed in this section every 200 feet, for a total of approximately five transects. These transects will be logged and visually/olfactory screened for the presence of PAH. Two analytical samples per transect will be collected from the shallowest two consecutive 12-inch depth intervals which show no evidence of the presence of PAH when they are encountered. Figures 2 and 3 are conceptual cross-sections illustrating sediment sampling intervals at: a transect which contains visual evidence of PAH (Figure 2), and; a transect which does not have visual or olfactory evidence of PAH (Figure 3).

The sample from the upper sediment interval (A in Figures 2 and 3) will be submitted for analysis. The second (lower) sediment sample (B in Figures 2 and 3) will be held for analysis pending the results of the upper sediment sample interval.

The lower section runs approximately 1,100 feet from the central section to the Bautapan Bogue. A total of two transects will be installed in this section of the stream, if necessary, as shown on Figure 1. The need for these transects will be determined in the field based on sediment observations from upper and central sections.

At off-site transect locations in all sections of the Central Ditch, when screening indicates no evidence of the presence of PAH, a composite sample of that depth interval will be collected for laboratory analysis. If visual/olfactory screening indicates that sediment from several consecutive transects show no evidence of the presence of PAH, analysis of representative sediments will be performed only periodically downstream to confirm these observations.

### 3.1 Sediment Sampling Protocol

Stream transects will be installed as noted above at the locations shown on Figure 1. Each transect will consist of up to five sediment boreholes in the stream bottom. The number of boreholes installed at each transect will be determined in the field based on the width of the stream (the stream is generally 8-10 feet in width). A minimum of three boreholes will be installed at each transect to ensure complete sediment characterization. The boreholes will be oriented along a line perpendicular to the Central Ditch banks. The boreholes will be spaced equally across the transect from one bank to the other if there is no variability in sediment features within the transect. At transects where different sediment features (meanders, pools, sandbars) exist, the borings will be spaced to collect representative samples from different features. Sediment boreholes will be advanced until sediment showing no evidence of the presence of PAH (determined by visible/olfactory screening) or refusal is encountered or until the borehole is 5 feet deep.

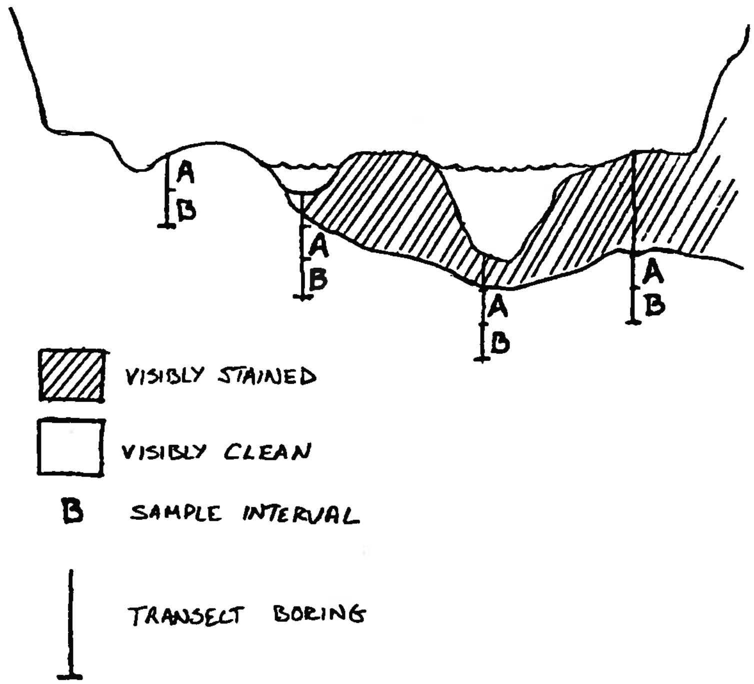


Figure 2. Sample intervals in transect containing visible evidence of PAH in sediments.

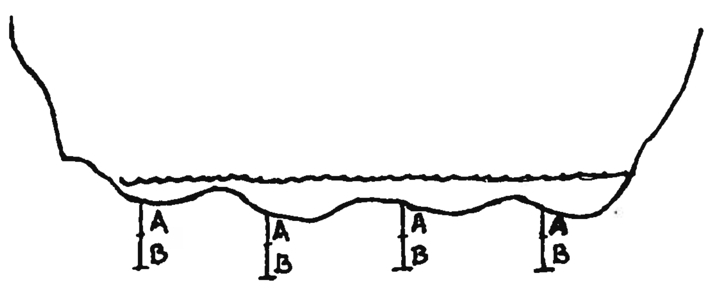


Figure 3. Sample intervals in transect containing no visible/olfactory evidence of PAH in sediments.

Each borehole will be advanced in 6" increments using a stainless steel hand auger. The core from each borehole will be logged geologically and screened every 12" for visual and olfactory indication of creosote, which may indicate the presence of PAH. Variations in sediment grain size and visual and olfactory evidence of PAH or creosote will be noted on the logs. The logs at each transect will be combined to created a geologic cross-section at each transect location. The cross-sections will be used to create a detailed map of the Central Ditch sediments.

Sediment samples that are selected for laboratory analysis will be collected from the same depth interval in each sediment borehole within a transect. These samples will be combined to form one composite sample for the particular depth interval within a transect. For example, the sample interval A in Figure 2 will be combined from each of the four transect borings to create one composite sample. Sediment samples will be composited in a stainless steel bowl with a stainless steel spoon. Sediment samples will be composited by quartering the composite volume and thoroughly mixing the samples.

### 3.2 Sample Handling and Analysis

All sampling equipment will be decontaminated between sampling locations per Ogden Standard Operating Procedure (SOP) FP-D-5. Generally, sampling equipment will be cleaned using soap and water, rinsed using tap water, rinsed with isopropyl alcohol, and finally rinsed with deionized water.

All sediment samples will be stored in a cooler at $4^{O}$ Celsius. Samples will be submitted to a laboratory using proper Chain-of-Custody procedures per Ogden SOPs FP-F-6 and FP-F-7. The sediment samples will be analyzed for PAH by EPA Method 8310 and for total organic carbon (TOC) by Method 9060.

### 3.3 Geophysical Procedures

A dynamic cone penetrometer (DCP) will be used to measure the compressive strength of sediment in the upper and central sections of the Central Ditch. The DCP consists of a small diameter drill rod with a 1-inch diameter cone on the end of the rod. The cone-end on the rod is driven in one-foot intervals into the sediment using a 24-pound weight as a hammer. The blow counts are recorded in 6" intervals. After the rod is driven each one-foot interval, it is removed, the borehole is advanced using a hand auger to the last depth the DCP was driven. The process is then repeated. The DCP will be advanced to 5 feet below the sediment surface.

The compressive strength of stream sediments will be measured in transects in the upper and middle sections of the Central Ditch which contain visible evidence of PAH. One borehole per transect will be measured.

## 4.0 Reporting

Analytical results will be tabulated and present PAH results, TOC results and TOC adjusted values for total PAH. Based on the results of transect characterization and sampling, cross-sections and a base map will be created which map the presence of PAH in sediments in the Central Ditch.

# EQUIPMENT DECONTAMINATION

Approved/Date

Paul T. Pettit, Jr., P.E.
Program Manager

## 1.0 PURPOSE

The purpose of this procedure is to provide standard equipment decontamination methods for use during site activities at Ogden Program sites.

## 2.0 SCOPE

These procedures shall be employed where applicable during decontamination of field equipment used for sampling environmental media.

This procedure has been developed to serve as management-approved professional guidance for the Ogden Program. As professional guidance for specific activities, this procedure is not intended to obviate the need for professional judgment to accommodate unforeseen circumstances. Deviation from this procedure in planning or in the execution of planned activities must be approved by the Project Manager and Ogden Program Manager.

## 3.0 DEFINITIONS

None.

## 4.0 RESPONSIBILITIES

The Field Program Manager is responsible for ensuring that all field equipment is decontaminated according to this procedure.

The Project Manager is responsible for identifying instances of non-compliance with this procedure and ensuring that decontamination activities are in compliance with this procedure.

The Ogden Program Manager is responsible for ensuring that decontamination activities conducted during all projects are in compliance with this procedure.

## 5.0 PROCEDURES

Decontamination of ground-water monitoring well drilling and developing equipment, as well as ground-water, surface water, sediment, waste, wipe, asbestos, and unsaturated zone sampling equipment is necessary to prevent cross-contamination, and to maintain the highest integrity possible in collected samples. Planning a decontamination program requires consideration of the following:

- The location where the decontamination procedures will be conducted;
- The types of equipment requiring decontamination;
- The frequency of equipment decontamination;
- The cleaning technique and types of cleaning solutions;
- The method for containing the residual contaminants and wash water from the decontamination process; and
- The use of a quality control measure to determine the effectiveness of the decontamination procedure.

This subsection describes standards for decontamination. The techniques to be used, frequency of decontamination, cleaning solutions, and effectiveness are among the standards presented.

### 5.1 Decontamination Area

An appropriate location for the decontamination area at a site shall be selected based on the ability to control access to the area, control residual material removed from

equipment, store clean equipment, and access to the area being investigated. The decontamination area shall be located at an adequate distance away and upwind from potential contaminant sources to avoid contamination of clean equipment. Once equipment is cleaned, it shall be stored sufficiently far enough away from the potential contamination sources and the decontamination area to ensure that the equipment remains clean.

## 5.2 TYPES OF EQUIPMENT

Decontamination of drilling equipment includes drill bits, auger sections, drill-string tools, drill rods, split barrel samplers, tremie pipes, clamps, hand tools, and steel cable. Decontamination of monitoring well development and ground-water sampling equipment includes submersible pumps, bailers, interface probes, water level meters, bladder pumps, air lift pumps, peristaltic pumps, and lysimeters. Other sampling equipment that requires decontamination includes, but is not limited to, hand trowels, shovels, stainless steel spoons and bowls, soil sample liners, wipe sampling templates, COLIWASA samplers, and dippers. Equipment with a porous surface, such as rope, cloth hoses, and wooden blocks, cannot be thoroughly decontaminated and shall be properly disposed after one use.

## 5.3 FREQUENCY OF EQUIPMENT DECONTAMINATION

Down-hole drilling equipment and monitoring well development and purging equipment shall be decontaminated prior to initial use and between each borehole or well. However, down-hole drilling equipment may require more frequent cleaning to prevent cross-contamination between vertical zones within a single borehole. Where drilling through a shallow contaminated zone and installing a surface casing to seal-off the contaminated zone, the drilling tools shall be decontaminated prior to drilling deeper. Ground-water sampling shall be initiated by sampling in the location where the least contamination is suspected. All ground-water, surface water, and unsaturated zone sampling devices shall be decontaminated prior to initial use and between collection of each sample to prevent the possible introduction of contaminants into successive samples.

## 5.4 Cleaning Solutions and Techniques

Decontamination can be accomplished using a variety of techniques and fluids. The preferred method of decontamination of major equipment such as augers, drill string, pump drop-pipe, submersible pumps, etc., involves the use of steam cleaning. Steam cleaning is accomplished using a portable, high pressure steam cleaner equipped with a pressure hose and fittings. For this method, equipment shall be thoroughly steam washed and rinsed with water of known chemical quality to remove particulates and contaminants.

A rinse decontamination procedure is acceptable for equipment such as bailers, water level meters, re-used soil sample liners, and hand tools. The decontamination procedure shall consist of the following: 1) wash with a non-phosphate detergent (alconox, liquinox, or other suitable detergent) and potable water solution, 2) rinse in a bath with potable water, 3) spray with isopropyl alcohol (aqueous sampling devices for organic samples only), and 4) rinse with deionized or distilled water. If possible, equipment shall be disassembled prior to cleaning. A second wash should be added at the beginning of the process if very soiled equipment is present.

Submersible pumps require additional effort to properly decontaminate because internal surfaces become contaminated during usage. These pumps shall be decontaminated by washing and rinsing the outside surfaces using the procedure described for small equipment or by steam cleaning. The internal surfaces shall be decontaminated by recirculating fluids through the pump while it is operating. This recirculation can be done using several large diameter pipes (4-inch or greater) equipped with bottom caps. These pipes shall be filled with the decontamination fluids, the pump placed within the closed pipes, and the pump operated while recirculating the fluids. The decontamination sequence shall include 1) detergent and potable water wash, 2) potable water rinse, 3) isopropyl spray into the pump, and 4) potable water rinse. The decontamination fluids shall be changed after each decontamination cycle.

Solvents other than isopropyl alcohol may be used, depending upon the contaminants involved. For example, if polychlorinated biphenyls (PCBs) or chlorinated pesticides are contaminants of concern, hexane may be used as the decontamination solvent. However, if samples are also to be analyzed for volatile organics; hexane shall not be used. In addition, some decontamination solvents have health effects which must be considered. Decontamination solvents to be used during field activities will be specified in Project Work Plans or Quality Assurance Project Plans (QAPPs).

Equipment for measuring field parameters such as pH, temperature, specific conductivity, and turbidity shall be rinsed with deionized or distilled water after each measurement.

## 5.5 CONTAINMENT OF RESIDUAL CONTAMINANTS AND CLEANING SOLUTIONS

Unless required otherwise, site decontamination water will be disposed of on the ground surface at the sampling location provided the water will not discharge from the site.

When contaminated material and cleaning fluids must be contained from heavy equipment such as drill rigs and support vehicles, the area must be properly floored, preferably with a concrete pad which is sloped toward a sump pit. If a concrete pad is impractical, planking can be used to construct a solid flooring that is then covered by a nonporous surface and sloped toward a collection sump. If the decontamination area does not have a collection sump, plastic sheeting and blocks or other objects should be used to create a bermed area for collection of equipment decontamination water. Items such as auger flights that can be placed on stands, saw horses, or other similar equipment, should be situated on this equipment during decontamination to prevent contact with fluids generated by previous equipment decontamination. Clean equipment should also be stored in a separate location than the decontamination area to prevent recontamination. Decontamination fluids contained within the bermed area shall be collected and stored in secured containers as described below.

Catchment of fluids from the decontamination of lighter-weight drilling equipment and hand-held sampling devices shall be accomplished using wash buckets or tubs. The

decontamination fluids shall be collected and stored onsite until its disposition is determined based upon laboratory analytical results. Storage shall be in secured containers such as DOT-approved drums. Containers shall be labeled in accordance with FP-B-8.

### 5.6 Effectiveness of Decontamination Procedures

A decontamination program needs to incorporate quality control measures for determining the effectiveness of the cleaning methods. Quality control measures typically include collection of equipment rinsate samples or wipe testing. Equipment rinsates consist of analyte-free water which has been poured over or through the sample collection equipment after its final decontamination rinse. Wipe testing is performed by wiping a cloth over the surface of the equipment after cleaning. Further descriptions of these samples and their required frequency of collection is provided in the field procedure entitled Field QC Samples (Water, Soil). These quality control measures provide "after-the fact" information that may be useful to determine whether or not the cleaning methods were effective in removing the contaminants of concern.

## 6.0 RECORDS

Records shall be maintained as required by implementing procedures.

## 7.0 HEALTH AND SAFETY

Section 10 of the Ogden Health and Safety Management Plan, provides decontamination (decon) guidelines primarily for personnel. There is however, some information on equipment decon in this section also. It is the responsibility of the Onsite Health and Safety Coordinator (OHSC) to set up the site zones (i.e., exclusion, transition, and clean) and decon areas. Generally the decon area is located within the transition zone, upwind of intrusive activities, and serves as the area where both personnel and equipment are washed to minimize the spread of contamination into the clean zone. For equipment, a series of buckets within a visqueen-lined bermed area is set up for decon purposes. In

addition, separate spray bottles containing isopropyl alcohol and distilled water are available for final rinsing of equipment. Depending on the nature of hazards and the site location, decontamination of heavy equipment such as, augers, pump drop pipe, and vehicles may be accomplished using a variety of techniques. Guidelines for equipment selection, cleaning solutions and decontamination techniques are provided in Section 10.6 of the Ogden Health and Safety Management Plan.

Personnel responsible for equipment decon, must wear the PPE specified in the site-specific Health and Safety Plan (HSP). Generally this includes at a minimum: Tyvek coveralls, steel-toed boots with boot covers or steel-toed rubber boots, safety glasses, ANSI-Standard hard hats, and hearing protection (if heavy equipment is in operation). It should also be noted that air monitoring by the OHSC as required in Section 6 of the Ogden Health and Safety Management Plan may warrant an upgrade to the use of half-face respirators and cartridges in the decon area; therefore, this equipment must be available onsite. If safe alternatives are not achievable, site activities will be discontinued immediately.

In addition to the aforementioned precautions, the following safe work practices will be employed:

<u>Chemical Hazards Associated With Equipment Decontamination:</u>

1. Avoid skin contact with and/or incidental ingestion of decon solutions and water.
2. Utilize PPE as specified in the site-specific HSP to maximize splash protection.
3. Refer to MSDSs, safety personnel, and/or consult sampling personnel regarding appropriate safety measures (i.e., handling, PPE - skin, respiratory, etc.).
4. Take necessary precautions when handling detergents and reagents.

<u>Physical Hazards Associated With Equipment Decontamination:</u>

1. To avoid possible back strain, it is recommended that the decon area be raised 1-2 feet above ground level.

2. To avoid heat stress, over exertion, and exhaustion, it is a recommended Ogden health and safety policy that equipment decon be rotated among **all** Ogden site personnel.
3. Take necessary precautions when handling field sampling equipment.

## 8.0 REFERENCES

Ogden Environmental and Energy Services, Inc.. 1992. Ogden Health and Safety Management Plan

U.S. EPA Environmental Response Team. 1988. Response Engineering and Analytical Contract Standard Operating Procedures. U.S. EPA, Research Triangle Park, NC.

## 9.0 ATTACHMENTS

None.

# RECORD KEEPING, SAMPLE LABELLING, AND CHAIN-OF-CUSTODY

Approved/Date

Paul T. Pettit, Jr., P.E.
Program Manager

## 1.0 PURPOSE

The purpose of this procedure is to establish standard protocols for all Ogden field personnel for use in maintaining field and sampling activity records, writing sample logs, labelling samples, and ensuring that proper sample custody procedures are utilized.

## 2.0 SCOPE

This procedure shall apply to all sample collection conducted during Ogden program activities.

This procedure has been developed to serve as management-approved professional guidance for the Ogden Program. As professional guidance for specific activities, this procedure is not intended to obviate the need for professional judgement to accommodate unforeseen circumstances. Deviation from this procedure in planning or in the execution of planned activities must be approved by management personnel and documented.

## 3.0 DEFINITIONS

### 3.1 LOGBOOK

A bound field notebook with consecutively numbered, water-repellent pages that is clearly identified with the name of the affected activity, the person assigned responsibility for maintenance of the logbook, and the beginning and ending dates of the entries.

### 3.2 CHAIN-OF-CUSTODY

The process by which possession of a sample changes hands from the time of its collection in the field to its receipt by the analytical laboratory.

## 4.0 RESPONSIBILITIES

Ogden field personnel are responsible for following these procedures during conduct of sampling activities. Ogden project field personnel are responsible for recording pertinent data into the logbook to satisfy project requirements and for attesting to the accuracy of the entries by dated signature.

The Field Supervisor is responsible for ensuring that all field personnel follow these procedures.

The Project Manager is responsible for determining which team members shall record information in the field logbook and for checking sample logbooks and chain-of-custody forms to ensure compliance with these procedures.

The Laboratory Project Manager or Sample Control Department Manager is responsible for reporting any sample documentation or chain-of-custody problems to the Project Manager.

The QA Program Manager is responsible for evaluating Project Manager and project compliance with these procedures. The QA Program Manager, or designee, is responsible for reviewing logbook entries, sample labeling, and chain-of-custody records to ensure that all are adequate to meet project requirements.

## 5.0 PROCEDURES

Standards for documenting field activities, labeling the samples, and documenting sample custody are provided in this procedure. The standards presented in this section are to be

followed to ensure that samples collected are maintained for their intended purpose and that the conditions encountered during field activities are documented.

## 5.1 Record Keeping

The field logbook serves as the primary record of field activities. Entries shall be made chronologically and in sufficient detail to allow the writer or a knowledgeable reviewer to reconstruct each day's events, as described in procedure number FP-F-5. All field descriptions and observations are entered into the logbook. Information entered in the logbook includes, but is not limited to the following:

- Names of personnel present;
- Trench well, or other sampling location identification number;
- Sample identification numbers;
- Sample collection date and time;
- Sample matrix and type (e.g., grab, composite, duplicate);
- Sampler's name;
- Well description, if applicable (e.g., water level, depth of well);
- Sample location and depth or height (includes sketch, if appropriate);
- Sample description (e.g., color, odor, suspended material, presence of immiscible layers);
- Sample field measurements including static water level, pH, temperature, specific conductance, and well yield characteristics (if applicable);
- Sample preservatives (if applicable);
- Type of sample equipment and methods used;
- Type, volume, and number of sample containers;
- Analyses to be performed on the sample;
- Method of sample shipment;
- Decontamination procedures;
- Purging methods, purge volume, pumping rate, and purging time period (if applicable);
- Weather conditions, including approximate ambient temperature and any significant rainfall events;

- Field observations of the sampling event and other notable occurrences and the time of occurrences; and
- Analytical laboratory to which samples will be shipped.

Errors in logbook entries shall be corrected by drawing a single line through the incorrect entry, initialing and dating the item, and entering an explanation for the correction.

Each entry or group of entries shall be signed and dated by the person making the entry, at the end of each day or when the logbook is returned to the Project Office, whichever is sooner.

In addition to the field logbook, individual log sheets may be generated for specific field sampling activities. These log sheets include, but are not limited to, boring logs and well sampling logs. Procedures for completing these log sheets are detailed in procedure FP-F-5, Logbooks.

### 5.2 Sample Labeling

A sample label shall be affixed to each individual sample container. Clear tape will then be placed over each label to prevent the labels from tearing or falling off and to prevent loss of information on the label. The following information shall be recorded with a waterproof marker on each label:

- Project name;
- Project number (if applicable);
- Sample identification number;
- Date and time of collection;
- Sampler's initials;
- Sample preservatives (if applicable); and
- Analysis to be performed on sample.

## 5.3 Custody Procedures

For samples intended for chemical analysis, sample custody procedures shall be followed through collection, transfer, analysis, and disposal to ensure that the integrity of the samples is maintained. Custody of samples shall be maintained in accordance with EPA chain-of-custody guidelines as prescribed in EPA *NEIC Policies and Procedures*, National Enforcement Investigations Center, Denver, Colorado, revised May 1986; EPA's *RCRA Ground Water Monitoring Technical Enforcement Guidance Document* (TEGD), *Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA* (EPA OSWER Directive 9355 3-01), Appendix 2 of the *Technical Guidance Manual for Solid Waste Water Quality Assessment Test (SWAT) Proposals and Reports*, and *Test Methods for Evaluating Solid Waste* (EPA SW-846). A description of sample custody procedures is provided below.

### 5.3.1 Sample Collection Custody Procedures

According to EPA's *NEIC Policies and Procedures*, a sample is considered to be in custody if:

- It is in one's actual physical possession or view;
- It is in one's physical possession and has not been tampered with (i.e., it is under lock or official seal);
- It is retained in a secured area with restricted access; or
- It is placed in a container and secured with an official seal such that the sample cannot be reached without breaking the seal.

Custody seals shall be placed on shipping coolers if the cooler is to be removed from the sampler's custody. Custody seals will be placed in such a manner that they must be broken to open the containers or coolers. The custody seals shall be labeled with the following information:

- Sampler's initials; and

- Date and time that the sample/cooler was sealed.

These seals are designed to enable detection of sample tampering. An example of a custody seal is provided in Attachment 1.

Field personnel shall also log individual samples onto carbon copy chain-of-custody forms when a sample is collected, indicating sample identification number, matrix, date and time of collection, number of containers, analytical methods to be performed on the sample, and preservatives added (if any). The samplers will also sign the custody form signifying that they were the personnel who collected the samples. The chain-of-custody form shall accompany the samples from the field to the laboratory. When a cooler is ready for shipment to the analytical laboratory, the person delivering the samples for transport will sign and indicate the date and time on the accompanying chain-of-custody form. One copy of the chain-of-custody form will be retained by the sampler and the remaining copies of the chain-of-custody form shall be placed inside a zip-lock bag and taped to the inside of the cooler. Each cooler must be associated with a unique chain-of-custody form. Whenever a transfer of custody takes place, both parties shall sign and date the accompanying carbon copy chain-of-custody forms, and the individual relinquishing the samples shall retain a copy of each form. One exception is when the samples are shipped; the delivery service personnel will not sign or receive a copy. The laboratory shall attach a copy of the completed chain-of-custody forms to the reports containing the results of the analytical tests. An example of a chain-of-custody form is provided in Attachment 2.

### 5.3.2 Laboratory Custody Procedures

The following are custody procedures to be followed by an independent laboratory receiving samples for chemical analysis. A designated sample custodian shall take custody of all samples upon their arrival at the analytical laboratory. The custodian shall inspect all sample labels and custody forms to ensure that the information is consistent, and that each is properly completed. The custodian will also measure the temperature of

the samples in the coolers upon arrival. The custodian shall also note the condition of the samples including:

- If the samples show signs of damage or tampering;
- If the containers are broken or leaking;
- If headspace is present in sample vials; and
- If any sample holding times have been exceeded.

All of the above information shall be documented on a sample receipt sheet by the custodian. The custodian shall then assign a unique laboratory number to each sample and distribute the samples to secured storage areas maintained at 4°C. The unique laboratory number for each sample, the field sample ID, the client name, date and time received, analysis due date, and storage shall also be manually logged onto a sample receipt record and later entered into the laboratory's computerized data management system. The custodian shall also sign the shipping bill and maintain a copy.

Laboratory personnel will be responsible for the care and custody of samples from the time of their receipt at the laboratory through their exhaustion or disposal. Samples should be logged in and out on internal laboratory chain-of-custody forms each time they are removed from storage for extraction or analysis.

## 6.0 RECORDS

Following the completion of sampling activities, the sample logbook and chain-of-custody forms will be transmitted to the Project Manager for storage in project files.

## 7.0 REFERENCES

State of California Water Resources Control Board. 1988. Technical Guidance Manual for Solid Waste Water Quality Assessment Test (SWAT) Proposals and Reports.

USEPA. 1986. EPA NEIC Policies and Procedures, National Enforcement Investigations Center, Denver, Colorado.

USEPA. 1986. RCRA Ground-Water Monitoring Technical Enforcement Guidance Document (TEGD).

USEPA. 1987. Test Methods for Evaluating Solid Waste (SW-846).

USEPA. 1988. Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA (EPA USWER Directive 9355 3-01).

## 8.0 ATTACHMENTS

1. Chain-of-Custody Seal; and
2. Chain-of-Custody Form.

# ATTACHMENT 1

# CHAIN-OF-CUSTODY SEAL

RECRA LabNet, a division of Recra Environmental, Inc.

SAMPLE L 40993

# ATTACHMENT 2
# CHAIN-OF-CUSTODY FORM

**RECRA LABNET,** a division of Recra Environmental, Inc.

*CHAIN OF CUSTODY RECORD*

| PROJECT NO | SITE NAME |
|---|---|
| SAMPLERS (SIGNATURE) | |

| STATION NO | DATE | TIME | COMP | GRAB | STATION LOCATION | NO OF CON TAINERS | | | | | | | REMARKS |
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| RELINQUISHED BY (SIGNATURE) | DATE/TIME | RECEIVED FOR LABORATORY BY (SIGNATURE) | DATE/TIME | REMARKS | |

Distribution: Original accompanies shipment copy to coordinator field files

## SAMPLE HANDLING, STORAGE, AND SHIPPING

Approved/Date

Paul T. Pettit, Jr., P.E.
Program Manager

### 1.0 PURPOSE

The objective of this procedure is to provide standard methods for use by Ogden field personnel in handling, storing, and transporting samples following their collection.

### 2.0 SCOPE

This procedure is applicable to all samples, and sample containers handled, stored, shipped, or otherwise transported during Ogden program project activities.

This procedure has been developed to serve as management-approved professional guidance for the Ogden Program. As professional guidance for specific activities, this procedure is not intended to obviate the need for professional judgement to accommodate unforeseen circumstances. Deviation from this procedure in planning or in the execution of planned activities must be approved by management personnel and documented.

### 3.0 DEFINITIONS

None.

### 4.0 RESPONSIBILITIES

The Field Supevisor is responsible for ensuring that all samples are shipped according to this procedure.

The Project Manager and the Laboratory Project Manager are responsible for identifying instances of non-compliance with this procedure and ensuring that future sample transport activities are in compliance with this procedure.

The QA Program Manager is responsible for ensuring that sample handling, storage, and transport activities conducted during all projects are in compliance with this procedure.

## 5.0 PROCEDURE

All appropriate U.S. Department of Transportation regulations (e.g., 49 CFR, Parts 100-199) shall be followed in shipment of air, soil and water samples collected during monitoring programs. Procedures include those listed in this subsection.

Immediately following collection, all samples will be labeled according to the procedures in the field procedure entitled Record Keeping, Sample Labeling, and Chain-of-Custody (FP-F-6). The lids of the containers shall not be sealed with duct tape, but may be covered with custody seals or placed directly into self sealing bags. The sample containers will be placed in an insulated cooler with frozen gel packs (such as "blue ice") or ice in double, sealed zip-lock bags. Samples should occupy the lower portion of the cooler, while the ice should occupy the upper portion. Prior to shipping, glass sample containers should be wrapped on the sides, tops, and bottoms with bubble wrap or other appropriate padding to prevent breakage during transport. Samples shall be shipped as soon as possible to allow the laboratory to meet holding times for analyses. Prior to shipment, the ice or cold packs in the coolers will be replaced so that samples will be maintained as close to 4°C as possible from the time of collection through transport of the samples to the analytical laboratory.

Another activity that may be performed to keep samples as close to 4°C as possible during sample storage and transport is to place dry ice in the cooler with the samples during sample collection. If dry ice should be removed prior to shipment, it should be replaced with ice in double, sealed ziplock bags or frozen gel packs. Dry ice should only be used with non-glass sample containers, since the dry ice may freeze the samples. Prior

to shipment, containers previously packed with dry ice should be placed in coolers with glass samples in containers to provide additional sample cooling effects.

When a cooler is ready for shipment to the laboratory, two copies of the chain-of-custody form shall be placed inside a zip-lock bag and taped to the inside of the cooler. The coolers will then be sealed with strapping tape and labeled "Fragile," "This-End-Up" or other appropriate notices. A letter stating the names and telephone numbers of Ogden and laboratory personnel at various locations who can be contacted in the event of problems with the sample shipment should also be taped to the outside of the cooler. Chain-of-custody seals will be placed on the coolers as discussed in the field procedure entitled Record Keeping, Sample Labeling, and Chain-of-Custody (FP-F-6).

Upon receipt of sample coolers at the laboratory, the sample custodian shall inspect the sample containers as discussed in the field procedure entitled Record Keeping, Sample Labeling, and Chain-of-Custody (FP-F-6). The samples shall then be either immediately extracted and/or analyzed, or stored in a refrigerated storage area until they are removed for extraction and/or analysis. Whenever the samples are not being extracted or analyzed, they shall be returned to refrigerated storage.

## 6.0 RECORDS

Records shall be maintained as required by implementing procedures.

## 7.0 REFERENCES

Ogden Program, Quality Assurance Management Plan.

## 8.0 ATTACHMENTS

None.