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REMEDIAL INVESTIGATION

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION II

DATE: MAY - 6 1997

39485

SUBJECT: Sampling Event Report for Higgins Disposal Superfund Site, Kingston, New Jersey

FROM: Michael A. Mercado, Environmental Scientist
Superfund Technical Support Team

TO: Sharon Jaffess, RPM
New Jersey Remediation Branch

THRU: Joseph Hudek, Team Leader
Superfund Technical Support Team

Attached is the Sampling Event Report for Higgins Disposal Superfund Site, Kingston, NJ done on November 7, 1996.

If you have any questions, please contact me at your earliest convenience at (908) 906-6808

Attachment

302006

REGION II FORM 1320-1 (9/85)

U.S. ENVIRONMENTAL PROTECTION AGENCY

ENVIRONMENTAL SERVICES DIVISION
REGION 2
NEW YORK, NEW YORK 10278

Final Sampling Report and Data Presentation

HIGGINS DISPOSAL SITE
Kingston, New Jersey

Soil Sampling Event
November 7, 1996

Prepared by:

Michael A. Mercado, Environmental Scientist
Hazardous Waste Support Branch (DESA/HWSB)

Approved by:

Robert Runyon, Chief
Hazardous Waste Support Branch (DESA/HWSB)

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1.0 BACKGROUND

Higgins Disposal site is located on an active equestrian facility located in Kingston, New Jersey. The site was in the final RI/FS phase when the New Jersey Department of Environmental Protection (NJDEP) informed the Environmental Protection Agency (EPA) that it was refusing to concur on the selected remedy for the site. The nonconcurrence was due to the previous sampling event where sampling point TS-1 was identified with elevated levels of arsenic and lead and the NJDEP felt the proposed remedy was not properly addressing the issue. The request for the sampling of arsenic and lead was to assess if the area was contaminated with levels above the NJDEP criteria for soils.

Sharon Jaffess EPA's Remedial Project Manager (RPM) for the site, requested that the Hazardous Waste Support Branch provide support in sampling the site. Thirteen soil samples were taken to determine if the levels of arsenic and lead concentration exceed the NJDEP's criteria. The State's cleanup criteria for arsenic is 20 ppm and for lead is 400 ppm when considering residential direct contact. The thirteen soil sample points were centered around sampling point TS-1, (see Figures 1&2).

2.0 SAMPLING PROCEDURES

Sampling procedures followed USEPA, Region II, SOP # SS1-96 and the QAPP for this sampling event, (see QAPP, appendix A). Thirteen soil samples were collected at a depth between zero and six inches from the surface. Samples were placed into dedicated stainless steel mixing bowls. The soil was then homogenized using the same stainless steel spoon used to take the sample. The samples were then placed into a pre-cleaned sample container. The sample containers were then sealed and placed in the shipping cooler with ice. Samples were then shipped to a contract laboratory via Federal Express.

3.0 DESCRIPTION OF EVENTS

The sampling team consisted of Michael A. Mercado and Carlos R. Villafañe, from the EPA's Division of Environmental Science and Assessment, Sharon Jaffess, the EPA's RPM and Kathleen Kunze of NJDEP. On November 7, 1996 at 10:00 a.m. the sampling team collected thirteen soil samples at Higgins Disposal Site. By 11:00 a.m. the sampling team had cleaned up and departed the site. The samples were relinquished to Jennifer Snow-Ashbrook of EPA region II, DESA. Jennifer Snow-Ashbrook delivered the samples to the Federal Express office for shipping at 3:45 p.m..

FIGURE 1
Site Map

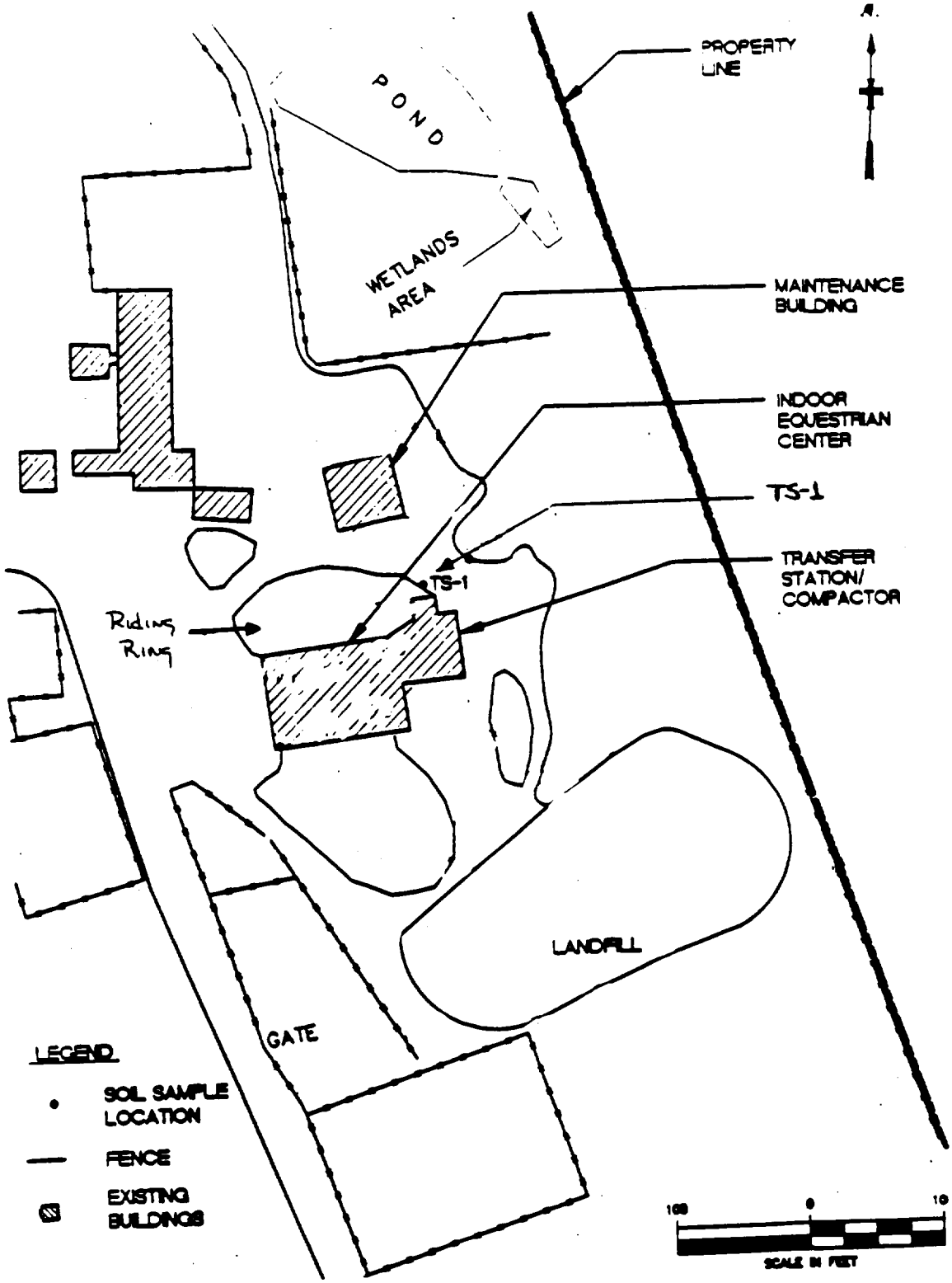

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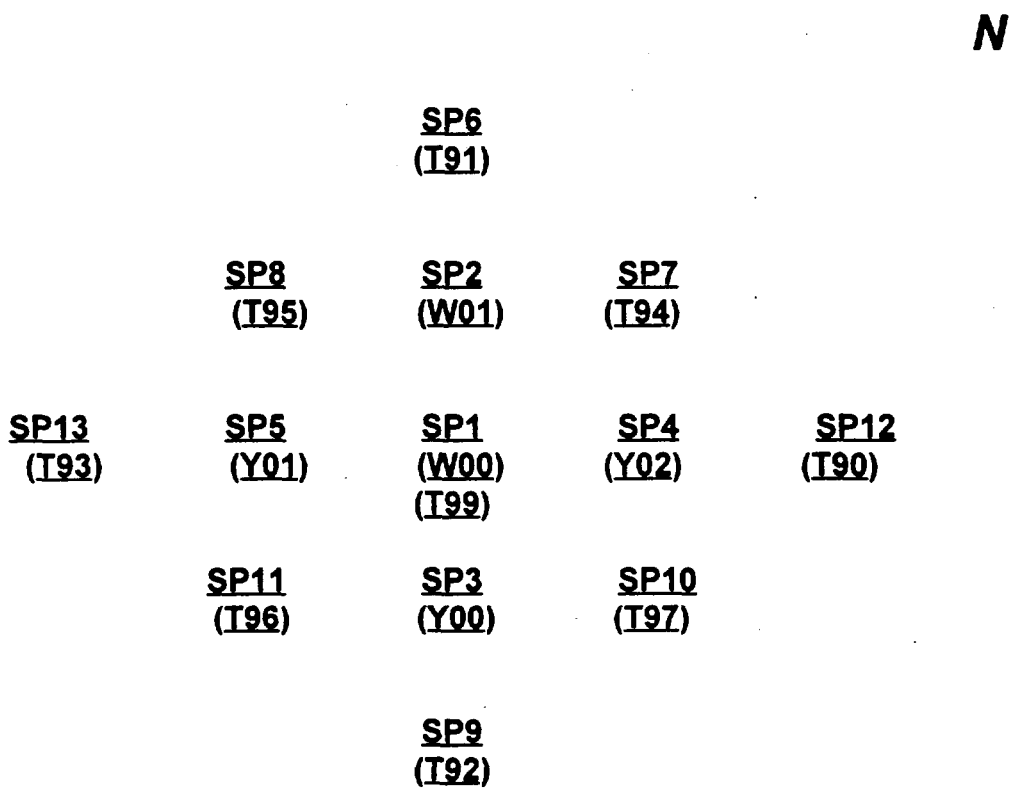
FIGURE 2
Sampling Point locations

Configuration of the sampling points at Higgins Disposal sampling event on November 7, 1996.

SP-1 is directly on top of TS-1. TS-1 is identified in Figure 1 on the previous page.

Each point will be five feet away from each other.



(SP=Sampling Points)
(Below the SP in () are the last three digits of the CLP Sample Numbers (i.e. W00=MBPW00).)

4.0 RESULTS

The results of the laboratory analysis of the soil samples show the highest concentrations of arsenic to be 3.9 ppm and lead to be 90.3 ppm at sample point SP-6. None of the soil samples exceeded the NJDEP.'s criteria for arsenic and lead. Below is a table of the sample points with the concentrations for arsenic (As) and lead (Pb).

Analytical Laboratory Results

Sample Points	CLP Sample Num.	Arsenic Level, ppm	Lead Level, ppm
EQUIP BLANK	MBPT98	0.5	00.4
SP-1	MBPT99(DUP.)	3.2	38.9
SP-1	MBPW00(DUP.)	2.8	29.6
SP-2	MBPW01	3.7	66.9
SP-3	MBPY00	3.4	66.7
SP-4	MBPY02	2.6	50.3
SP-5	MBPY01	2.7	55.9
SP-6	MBPT91	3.9	90.3
SP-7	MBPT94	2.9	67.3
SP-8	MBPT95	3.3	60.6
SP-9	MBPT92	3.1	45.5
SP-10	MBPT97	2.9	66.7
SP-11	MBPT96	2.5	63.7
SP-12	MBPT90	2.9	55.3
SP-13	MBPT93	2.6	69.2

Appendix A, Quality Assurance Project Plan

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QA Plan Short Form
Title Page

WORK/QUALITY ASSURANCE PROJECT PLAN

FOR SOIL SAMPLING

AT HIGGINS DISPOSAL SITE,

KINGSTON, NEW JERSEY

OCTOBER ~~14~~-16, 1996
November 7, 1996 akm

(Project Officer's Signature) _____

(Project Officer's Name) Michael A. Mercado, Environmental Scientist
Superfund Contract Support Team

(Project Quality Assurance Officer's Signature) _____

(Project Quality Assurance Officer's Name) Suzanne Tramontana, Environmental Engineer
Harardous Waste Support Section

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1. **Project Name:** Surface Soil Sampling at Higgins Disposal

2. **Project Requested By:** Sharon Jaffess of the U.S. Environmental Protection Agency - Region 2, Emergency And Remedial Response Division (ERRD)

3. **Date of Request:** 9/30/96

4. **Date of Project Initiation:** 10/14/96

5. **EPA Project Officer:** Michael Mercado

6. **EPA Quality Assurance Officer:** Suzanne Tramontana

7. **Project Description:** Thirteen soil samples will be collected at Higgins Disposal Site. The site address is 121 Laurel Ave., Kingston, Somerset County, New Jersey. The site is located on an active equestrian facility with a small, truck repair shop situated in the northern corner of the property. The site sampling map is included as attachment A. The soil samples will be analyzed for lead and arsenic. All sampling tasks will conform with the guidelines set forth in the current Region 2 CERCLA Quality Assurance Manual. The U.S. Environmental Protection Agency, Region II, SOP# SS1-96, Standard Operating Procedure for the Collection of Soil Samples, will be followed (attachment B). A copy of this Quality Assurance Project Plan will be on site and available for reference during the Soil sampling.

A. Objective and Scope Statement: The analysis of these thirteen soil samples will be used to determine if the levels of lead and arsenic concentration are exceeding the State limits. During the last sampling event the sampling point identified as TS-1, was found to contain elevated concentrations of lead and arsenic. Both were above the New Jersey Department of Environmental Protection criteria for soils. The State's clean-up standard for lead is 400 ppm and for Arsenic is 20 ppm when considering residential direct contact. The thirteen soil sample points will be centered around sampling point TS-1, attachment A.

B. Data Usage: Data will be sent to ERRD for incorporation into the project file. ERRD will be responsible for informing affected residents, the local health department and the New Jersey Department of Environmental Protection of pertinent results.

C. Monitoring Network Design and Rationale: Samples will be collected at a depth of zero to six inches from the surface. A total of 13 samples will be collected. See the attached sample location map for approximate sample locations (attachment A). The 13 sampling points will cover an area of

100^2ft. The 13 sampling points will be more than adequate amount to insuring that if lead or arsenic are present in the soil, that the contaminated area is delineated.

An environmental duplicate will be collected and a matrix spike sample will be designated at a minimum of 1 for every 20 samples in each medium sampled. Sampling procedures will be in accordance with those set forth by USEPA, Region II SOP # SS1-96 (attachment B).

D. Monitoring Parameters and their Frequency of Collection:

At each sampling location a grab soil sample will be taken between zero and six inches below ground surface. Each soil sample will be analyzed for Lead and Arsenic. There will be 13 samples, one environmental duplicate, one matrix spike and one equipment blank.

E. Parameter Table:

Parameter	No. of Samples[a]	Sample Matrix	Analytical Method	Sample Preservation	Holding Time
Arsenic & Lead	14	soil	CLP contract ILM04.0	cool to 4°C ~~HNO_3, pH≤2~~ ice	6 months
Arsenic & Lead	1	aqueous	CLP contract ILM04.0	cool to 4°C HNO_3, pH≤2	6 months

[a] Includes QA/QC samples.

8. Project Fiscal Information (Optional): Not included.

9. Schedule of Tasks and Products

Activity	Date
Review and Background Information	September 25, 1996.
Submit a QA plan	September 30, 1996
Book samples anticipated to be collected	October 1, 1996
Obtain Site Access	Prearranged by ERRD
Mobilize to Site	~~October 15~~ November 7, 1996
Complete Field Work	~~October 16~~ November 7, 1996

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Package and ship samples to laboratory	Package at the time of sampling and will be delivered by samplers not later than the next day
Prepare Sampling Trip Report	Within one week of the sampling event
Prepare and submit data presentation to ERRD	Within two weeks of receipt of validated analytical data from HWSB

10. Project Organization and Responsibility: The following is a list of key project personnel and their corresponding responsibilities:

Sharon Jaffess, Site Manager	-site remedial project manager
Michael A Mercado, Superfund Contract Support Team, Project Officer	-sampling operations
Michael A Mercado, Superfund Contract Support Team, Project Officer	-sampling QC
CLP	-laboratory analysis
CLP	-laboratory QC
HWSB	-data processing activities
HWSB	-data processing QC
HWSB	-data quality review
N/A	-performance auditing
N/A	-systems auditing
HWSB	-overall QA
Michael A Mercado, Superfund Contract Support Team	-overall sampling project
Michael A Mercado, Superfund Contract Support Team	-health and safety officer

11. Data Quality Requirements and Assessments: The data quality requirements for CLP are listed in the EPA Contract Laboratory Program Invitation for Bids (IFB).

12. **Sampling Procedures:** Sampling procedures will follow USEPA, Region II, SOP # SS1-96. Samples will be collected using a dedicated stainless steel hand held auger and/or spoons. The soil will be put into a dedicated stainless steel mixing bowl. The sample will be homogenized with the spoons and put into the pre-cleaned sample container also using the spoons. Once filled, the sample containers will be sealed and kept on ice at 4°C until they are delivered to the Laboratory. The decontamination procedure will consist of a tap water rinse and scrub to remove all soil particles. Then the equipment will be scrubbed with Alconox solution and rinsed again with tap water, then it will be rinsed with 10% nitric acid followed by another tap water rinse. Following this nitric acid/water rinse, there will be a final deionized water rinse and then the equipment will be allowed to air dry.

13. **Sample Custody Procedures:** The samples will be prepared in accordance with sampling SOP SS1-96 section 2.6(attachment B).

14. **Calibration Procedures and Preventative Maintenance:** N/A

15. **Documentation, Data Reduction, and Reporting:**

A. Documentation: Data sheets, field logs, traffic reports, photographs and chain of custody forms will be kept by the project manager of each individual site.

1. Field Logbooks: Field Logbooks will be maintain in accordance with sampling SOP SS1-96 section 2.6.1 (attachment B).

B. Data Reduction and Reporting: The laboratory performing the analysis will calculate and transfer data to EPA per CLP protocol.

16. **Data Validation:** The US EPA HWSB will evaluate data based on surrogate recoveries, detection limits, instrument calibration standards and the evolution of the chromatagrams and spectra for all CLP data using Evaluation of Metals Data for the CLP SOP HW-2 Revision 11, 1/92.

17. **Performance and Systems Audits:** As according to DESA-HWSB.

18. **Corrective Action:** Corrective Action will be performed as required by the project manager in the field and by the audit report.

19. **Reports:** A data presentation will be prepared by the project manager and submitted to ERRD's RPM in New York.

U.S. ENVIRONMENTAL PROTECTION AGENCY
REGION II

SOP # SS1-96

STANDARD OPERATING PROCEDURE FOR THE COLLECTION OF SOIL SAMPLES

Prepared for: Environmental Services Division
U. S. Environmental Protection Agency, Region II

Prepared by: _____
Jennifer Snow-Ashbrook, Environmental Scientist
Superfund Support Section

Reviewed by: _____
Joseph Hudek, Chief
Superfund Support Section

Approved by: _____
Kevin Kubik, Chief
Toxic and Hazardous Waste Section

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ATTACHMENT B

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List of Tables

1.0 Introduction

1.1 Purpose

The purpose of this Standard Operating Procedure (SOP) is to provide a standardized method for the routine collection of representative soil samples at hazardous waste sites. The procedures outlined in this SOP are in agreement with the Region II CERCLA Quality Assurance Manual (U.S. EPA, 1989).

1.2 Scope

This SOP provides procedures for the collection of surface and sub-surface soil samples. Procedures covered by this SOP include the collection of surface soil samples using shovels and/or hand trowels and the collection of sub-surface samples using coring devices and heavy machinery.

1.3 Definitions

BNAs - Base Neutral/Acid Extractable Compounds
CLP - Contract Laboratory Program
ESD - Environmental Services Division
GPS - Global Positioning System
HASP - Health and Safety Plan
OSC - On Scene Coordinator
OSCAR - Official Sample Control and Repository
OSHA - Occupational Safety and Health Administration
PPE - Personal Protective Equipment
QA - Quality Assurance
QAPP - Quality Assurance Project Plan
QC - Quality Control
RPM - Remedial Project Manager
RSCC - Regional Sample Control Center
TAL - Target Analyte List
TCLP - Toxic Compound Leaching Protocol
TOX - Total Organic Halogens
VOA - Volatile Organic Analysis

1.4 Health and Safety Warnings

Adverse weather conditions including cold, heat, and thunderstorms may be encountered during field sampling activities. Appropriate precautions will be taken to minimize any threats associated with such conditions.

Physical hazards (i.e., rough terrain) and biological hazards (i.e., poison ivy, insects, snakes) may also be

encountered during field sampling activities. Awareness of such hazards can help to reduce the risks which may be associated with them.

Appropriate personal protective equipment (PPE) will be used in accordance with the site health and safety plan in order to minimize exposure to harmful site contaminants and/or hazardous materials utilized during the sampling event. Only appropriately trained, field certified personnel will participate in sampling activities (see section 2.1, Qualifications). All field sampling personnel will read and sign the site Health and Safety Plan (HASP) prior to initiating sampling activities. All applicable U.S. EPA, OSHA, and site specific safety procedures will be followed during field sampling events.

If field decontamination of sampling equipment is required, appropriate protective equipment, including eye protection (i.e., safety goggles) and gloves which are impermeable to both site contaminants and decontamination solutions will be worn during the decontamination procedure.

Special precautions must be taken when power tools (such as power augers) or heavy equipment (such as backhoes or drilling rigs) are used to collect sub-surface samples. The hazards associated with these activities must be described in the site HASP, along with the methods which will be used to control them.

Public utility companies will be notified when drilling or excavation is planned. In New Jersey, this can be accomplished by placing a "One-Call" to Garden State Underground at 1-800-272-1000 at least one week prior to the proposed sampling event. Garden State Underground will in turn contact public utility companies. The location of the sampling event, approximate sample depth, and the date(s) of sampling must be provided. However, this system is not foolproof, and samplers should be aware of signs that underground utilities may be present, such as manholes, vent pipes, or warning signs. Drilling or excavation may not proceed until all utility lines have been marked. This should be verified by the field sampling team.

When subsurface sampling requires the construction of excavations such as test pits or trenches, the following requirements must be kept in mind: 1) Heavy

equipment should be equipped with a back up alarm, and must meet the detailed requirements outlined in 29 CFR 1926.602. 2) Field samplers will stay well away from excavation equipment. Samplers are never permitted beneath loads handled by lifting or digging equipment. 3) Field personnel must wear hard-hats when working near heavy equipment.

Field samplers should never enter a test pit unless it has been determined that this is absolutely necessary for the sampling effort. This situation is highly unlikely, and every effort should be made to avoid it. In the unlikely event that entry into a pit or trench is required, very specific OSHA requirements must be met. Detailing these requirements is beyond the scope of this SOP. If the entry of a test pit is required, 29 CFR 1926, Subpart P will be consulted and all applicable requirements will be met.

When the use of power tools is required to collect subsurface soil samples, the following requirements must be followed:

1) Electric power tools will be either double-insulated or grounded in accordance with OSHA requirements.

2) When using pneumatic tools, check that they are fastened securely to the hose to prevent them from becoming disconnected.

3) All hoses exceeding ½ inch in diameter must be equipped with a safety excess flow valve installed at the air supply to shut off air automatically in case the hose breaks.

4) Tools should be properly maintained in accordance with the manufacturer's instructions.

5) Loose clothing and jewelry, which can become caught in moving parts, should not be worn when operating power equipment.

6) Ground fault circuit interrupters must be provided for any electrical equipment used in the field.

For additional information regarding safety precautions applying to the use of hand and power tools, consult 29 CFR 1926, Subpart I.

1.5 Cautions

Caution must be taken to avoid invalidation of sample results due to improper sample collection or handling. The following is a list of problems which could result in sample invalidation:

- Sample cross-contamination;
- Use of improperly decontaminated sampling equipment;
- Failure to adequately homogenize samples (except samples collected for VOA and TOX analyses);
- Homogenization of samples collected for VOA or TOX analyses;
- Collecting an inadequate sample volume;
- Improper record keeping;
- Failure to maintain chain-of-custody;
- Improper sample preservation;
- Exceeding sample holding time requirements.

1.6 Inherently Governmental Functions

OMB circular A-76 defines inherently governmental functions as those activities which are "... so intimately related to the public interest as to mandate performance only by Federal employees." Such functions cannot be carried out by contractor personnel. Contractor personnel performing sampling tasks for EPA must always clearly identify themselves as contractors in order to avoid situations in which contractors are assumed to be government personnel. Contractors may not collect samples for enforcement or criminal investigation purposes.

2.0 Field Activities

2.1 Qualifications

Personnel participating in field sampling activities at hazardous waste sites must meet the following requirements. All sampling personnel must have completed 40-hour hazardous materials training and annual 8-hour refresher training, and must be enrolled in a medical monitoring program. Any personnel required to use an air-purifying respirator during sampling must have been fit-tested within one year prior to the date of the sampling event. At least one person participating in each field sampling event must be certified in first-aid and CPR.

2.2 Interferences

Care must be taken when sampling to avoid cross-contamination of samples. Cross-contamination occurs when contaminants are inadvertently transferred from one sample location to another. This can occur as the result of improper decontamination of sampling equipment or sloppy field practices. The use of dedicated sampling equipment will minimize the chances of sample cross-contamination.

Improper sample collection techniques can result in the collection of samples which are not representative. Proper homogenization of samples is required to collect representative samples. Homogenization procedures are discussed in more detail in item number 4 of Section 2.5.1, Surface Soil Sampling.

If gasoline powered equipment (i.e., power auger, generator, etc.) will be used during sampling, special caution should be used to avoid spillage of petroleum products in sampling areas or sample transport vehicles. If possible, petroleum products will be transported in a separate vehicle (or trailer) than sample containers and dedicated sampling equipment.

When sampling for organic contaminants, it is important to select the appropriate organic solvent for use during equipment decontamination in order to avoid false positive results. Decontaminated sampling equipment will be thoroughly rinsed with distilled/deionized water to reduce the potential for this type of interference. The appropriate organic solvent should be identified in the Field Sampling/QA Project Plan. If there is any uncertainty regarding the selection of a solvent for use during equipment decontamination, Regional QA personnel will be consulted.

2.3 Apparatus and Materials

- Approved Field Sampling Plan/Quality Assurance Program Plan (QAPP).
- Approved Site Health and Safety Plan, including directions from the site to the nearest medical facility, phone numbers of the local emergency contacts (i.e., police, fire, ambulance squad), and material safety data sheets for any hazardous materials used on-site (i.e., solvents, acids, calibration gases for air monitoring equipment).
- PPE as required by the site HASP.

- First Aid kit(s).
- Portable eyewash unit (if not available on-site).
- Air monitoring equipment as specified in the site HASP and/or QAPP; calibration gasses and equipment calibration logs.
- Appropriate clothing for anticipated weather conditions.
- Site maps.
- Stainless steel hand trowel(s).
- Spade(s) and/or shovel(s).
- Appropriate tools for subsurface soil sampling under site specific conditions, these may include:
  - Sampling trier, backhoe, auger;
  - Power auger (if needed), and associated equipment such as gas can(s), generator(s), extension cord(s), etc., depending on the type of auger used;
  - Bucket auger(s), continuous flight (screw) auger(s), split spoon(s), post hole auger(s), tube auger(s) or similar sampling device as specified in QAPP;
  - "T" handle(s) for auger (if needed);
  - Sledge hammer or well ring for split spoon sampler.
- Stainless steel bowl(s) for homogenizing samples.
- Stainless steel spoon(s), spatula(s), or scoop(s).
- Logbook(s).
- Appropriate sample bottles for required analyses.
- Sample preservation supplies for aqueous equipment blanks (HCl, NaOH, HNO_3, etc.).
- Plastic Bags.
- Cooler(s).
- Ice.
- Sample paper work (i.e., sample tags or labels, chain of custody, custody seals, field data sheets, request for analysis, etc.)
- Permanent marker.
- Measuring tape.
- Stakes or survey flags to mark sampling locations.
- Compass (if establishing a sampling grid).
- Decontamination supplies (decontamination procedures are discussed in Section 2.3.2).
  - Appropriate personal protective equipment,
  - Emergency eyewash solution,
  - Plastic sheeting,
  - Galvanized or stainless steel wash tub(s) or bucket(s),
  - Spray Bottles,
  - Scrub brush(es),

- Potable Water,
- Non-phosphate detergent,
- Distilled/Deionized Water,
- Nitric Acid solution* (10% for stainless steel, 1% for carbon steel),
- Organic solvent(s)*,
- Collection container(s) for liquid waste,
- Aluminum Foil.

* Nitric acid solution is only required if samples are to be analyzed for inorganics; organic solvent is only required if samples are to be analyzed for organic contaminants. (See Section 2.3.1 for decontamination procedures).

2.3.1 Sampling Equipment Decontamination

Sampling equipment will be decontaminated prior to use. Appropriate personal protective equipment, including eye protection (i.e., safety goggles) and gloves which are impermeable to both site contaminants and decontamination solutions, will be worn during equipment decontamination.

An attempt should be made to minimize the amount of decontamination waste generated in the field. If possible, waste generated on-site should be left on-site and handled along with other site-generated waste. Waste left on-site must be properly containerized and labeled. If this is not possible, enough sampling equipment and PPE should be brought to the field so that field decontamination of such equipment is not necessary. If it is absolutely necessary to re-use a piece of sampling equipment during a sampling event, that equipment will be decontaminated in the field between uses according to the following procedures:

1. A piece of plastic sheeting will be placed on the ground or other suitable flat surface.

2. Wash tubs or buckets will be placed on top of the plastic sheeting in order to collect liquid waste generated during the decontamination procedure.

3. Sampling equipment will be rinsed with potable water to dislodge adhering soil. A hard bristled scrubbing brush may be used to

aid in the physical removal of soil particles from the sampling apparatus.

4. Sampling equipment will be washed with a non-phosphate detergent solution.

5. Equipment will be rinsed with potable water.

6. Sampling equipment will be rinsed with a 10% nitric acid (HNO_3) solution. If a carbon steel sampler (rather than stainless steel sampler) is used, a 1% HNO_3 solution will be used to avoid leaching metals from the sampler. If samples will not be analyzed for inorganics, steps 6 and 7 can be skipped.

7. Equipment will be rinsed with potable water.

8. Sampling equipment will be rinsed with pesticide grade acetone, or methanol followed by pesticide grade hexane. If organic analysis has not been requested, steps 7 and 8 can be skipped.

9. Sampling equipment will be thoroughly rinsed with distilled/deionized (DI) water. A minimum of 5 times the volume used in the acid and/or solvent rinse will be used for the final DI water rinse.

10. Decontaminated equipment will be placed on a piece of clean plastic sheeting or other designated clean area to air dry. This step will be conducted in a dust-free environment.

11. Following air-drying, equipment will be wrapped in aluminum foil.

12. Liquid waste generated during equipment decontamination will be collected into an appropriately labeled receptacle, such as a laboratory disposal bucket (i.e., metal bucket with HDPE liner used to collect laboratory waste). When sampling at an active site, decontamination waste may often be left on-site in accordance with site specific procedures.

2.4 Preparation

Surface soil samples are generally collected using tools such as stainless steel hand trowels, shovels, spades, or spoons. Subsurface soil samples may be collected using a variety of sampling devices, including hand augers, power augers, split spoons, and backhoes. The specific sampling apparatus used for each sampling event will be specified in the Field Sampling Plan/Quality Assurance Project Plan.

2.4.1 Preparation for Sampling

1. Obtain historical information on the site and details regarding proposed sampling.

2. Obtain site maps, topographic maps, aerial photographs or other materials which may be needed to identify sampling locations.

3. Determine the extent of the sampling effort. Identify sampling equipment needs, sample container requirements, and other supplies needed to complete the proposed sampling.

4. Prepare a Quality Assurance Project Plan/Field Sampling Plan for the sampling event.

5. Review or prepare a site health and safety plan, including a hazard analysis of the proposed sampling activities.

6. Arrange for laboratory analysis of field samples. Submit an analytical request to RSCC, who will determine whether the ESD laboratory can accept the samples. If the samples cannot be analyzed by the ESD laboratory, RSCC will arrange for CLP analysis. Arrangements for sample analysis should be made as soon as possible after the sampling event is scheduled.

7. Contact property owners at locations where the sampling event will take place to assure that legal access to sampling locations has been granted. This may be done by the site RPM or OSC, or by the individual responsible for arranging field sampling.

8. Pre-clean and decontaminate field sampling equipment. Prepare as much sampling equipment as possible in order to minimize the generation of field decontamination waste.

9. If sample shipment will be required (i.e., if samples are being analyzed by a CLP lab or the site is located too far from Edison to deliver samples directly to the ESD lab), prepare procurement request(s) for overnight courier service (i.e., FedEx or similar).

10. Any air monitoring equipment required by the site health and safety plan will be calibrated and set up prior to sampling. Monitoring results should be recorded in a field log book and/or equipment calibration log(s).

11. If sub-surface samples are collected, a sheet of plastic will be placed on the ground next to the excavation or boring location. The hand auger, power auger, soil boring, or excavation will be advanced to the approximate sampling depth, periodically removing and depositing the soils removed from the hole on the plastic sheet. A stainless steel or polyethylene measuring tape should be used to measure the depth of the boring or excavation.

2.5 Sample Collection

2.5.1 Surface Soil Sampling

1. Surface debris (non-soil materials such as gravel, leaf litter, vegetation, etc.) will be removed from the soil surface prior to sample collection. In

some cases, it may be useful to scrape away surface debris using a shovel or spade.

2. Soils will be removed to the depth specified in the QAPP/Field Sampling Plan using a pre-cleaned stainless steel shovel, hand trowel, spoon, or scoop. If a shovel or similar device is used to scrape away surface debris at more than one sampling location, a thin layer of soil will be scraped away and discarded using a decontaminated sampling device prior to sample collection in order to avoid cross-contamination.

3. Soils to be analyzed for VOAs or TOX will be placed directly into appropriate sample containers without homogenizing the soils. Samples for these analyses should be placed in sample containers so that no head space remains in the container. Soils for analyses other than VOA or TOX will be placed in a stainless steel mixing bowl or pan and thoroughly homogenized as outlined below using a stainless steel hand trowel, spoon, or scoop and placed in appropriate sample containers. Sample container requirements for standard analyses are summarized in Table 1.. NOTE: Rocks and organic debris (i.e., vegetation) should be removed from the sample if they are not considered part of the sample matrix.

4. Samples should be homogenized using the quartering method, as outlined in the U.S. EPA Region II Quality Assurance Manual and ASTM Standard C702-87. All soil should be scraped from the sides, corners, and bottom of the pan into the middle for initial mixing. The sample will then be divided into four quarters and each quarter moved to the edge of the pan. Each quarter will be mixed individually, then scraped back to the center of the container and the entire sample mixed again.

5. If the QAPP calls for the collection of grab samples, soils will be placed into the appropriate sample containers for the requested analyses after homogenization (except for VOA and TOX samples, which will be collected prior to homogenization). Sample container requirements are outlined in Table 1. If the QAPP calls for the collection of composite samples, the soils from the first location or interval will be retained in the homogenization container. Soils from the subsequent location(s) will be added to the homogenization container and thoroughly homogenized as described in item number 4 of this section. The sample will be homogenized following the collection of soils from each location or interval making up the composite. Each aliquot making up the composite sample must be of equal volume. After soils from all locations making up the composite sample have been collected and homogenized, the soils will be transferred to appropriate sample containers for the required analyses. **NOTE:** Composite samples cannot be collected for VOA or TOX analysis.

6. During the course of the sampling event, QA/QC samples must be collected in accordance with the QAPP/Field Sampling Plan. Minimum QA/QC sample requirements are summarized below:

   - One blind duplicate sample will be collected for every twenty (20) field samples collected. This sample will be assigned a unique sample identification number.

   - Sufficient sample volume must be collected for laboratory QA samples, consisting of the matrix spike/matrix spike duplicate (MS/MSD) for organic analyses and matrix spike and analytical duplicate for inorganic analyses.

For most analyses, the standard sample volume provides sufficient material for laboratory QA/QC purposes. For VOA samples, 3-40 ml vials should be filled for laboratory QA/QC analyses. The sample(s) selected for laboratory QA/QC should be clearly identified on the field paperwork, otherwise, the laboratory will generally select a sample at random. Laboratory QA/QC samples should be designated at a rate of 1 per 20 field samples.

- Equipment (rinsate) blanks will be collected as described in the QAPP. Instructions for the collection of equipment blanks can be found in Section 3.0. Sample container and preservative requirements for aqueous equipment blank samples are summarized in Table 2.

- A distilled water blank may be required to demonstrate sample container cleanliness and that equipment decontamination was carried out using analyte-free water.

2.5.2 Sub-surface Soil Sampling: Augers

Augers can be used to collect subsurface soil samples from near the soil surface or from a greater depth. Depending on the depth of the sample and the characteristics of the soil, the use of a power auger or drill rig to advance the boring to the desired sample depth may be warranted. Procedures for collecting the sample once the desired depth has been reached are summarized below:

1. After the desired sampling depth has been reached, carefully remove the hand or power auger which was used to drill the boring from the hole. Remove any loose soil which has accumulated in the base of the boring with a bucket auger or similar device. Place this soil on

the plastic sheeting next to the hole.

2. After the loose soil has been removed from the hole, prepare a decontaminated auger or similar sampling device (as specified in the QAPP) to collect the sample. Attach the auger head to the appropriate number of extension rods to reach the base of the borehole and attach the "T" handle to the other end.

3. Insert the sampling device into the borehole, being careful not to dislodge soil from the sides of the boring.

4. Advance the auger to the appropriate depth by applying pressure while turning the T-handle in a clockwise direction. When the auger has been advanced to the desired depth, carefully remove the sampler from the hole. Collect the desired sample(s) as specified in Section 2.5.1.

5. Abandon the borehole by backfilling with the removed soil.

2.5.3 Sub-surface Soil Sampling: Split Spoon Sampler

A split spoon sampler is used to collect undisturbed soil cores 18 to 24 inches in length. These cores may be used to gather geological information or for chemical characterization. A series of consecutive cores may be collected, or a hand or power auger can be used to drill a hole to the desired depth before sampling. Split Spoon sampling procedures are outlined below:

1. Align both sides of the sampler, screw the bit onto the bottom, and the head piece onto the top.

2. Using a sledge hammer or well ring, drive the sampler into the soil. Avoid driving the sampler past the bottom of the head piece, or compression of the sample will result.

3. Withdraw the sampler and open it by unscrewing the bit and head and splitting the barrel. If a split sample is required, use a decontaminated stainless steel knife to split the core in half longitudinally.

4. If undisturbed cores are required, transfer the contents of the sampler to appropriate sample containers, label, and seal tightly. Collect soils for chemical characterization as outlined in Section 2.5.1.

2.5.4 Sub-surface Soil Sampling: Test Pit or Trench

1. Using a backhoe, a test pit or trench is excavated to the desired sample depth. Note that trenches exceeding five feet in depth must be sloped or protected by a shoring system as required by OSHA regulations if the pit will be entered.

2. If the sample is to be collected from the vertical face of the pit, use a shovel to remove a 1- to 2-inch layer of soil from the area to be sampled.

3. Using a decontaminated trowel or coring device, collect the sample at the desired depth. In many cases the sample can be collected directly from the backhoe bucket. Collect samples for chemical analysis as outlined in Section 2.5.1.

2.6 Sample, Data, and Record Management

1. The sampling location, time of sample collection, and any field observations should be recorded in a field logbook and/or on field data sheets. Section 2.6.1 discusses logbook record-keeping in more detail. The sampling location should be estimated on a site map or in a sketch in the field logbook. If more precise identification of sample locations is required, GPS may be used to record sample locations or sample locations may be surveyed.

2. Samples will be labeled with the appropriate ESD laboratory information or CLP sample labels and placed in a cooler with wet ice.

3. Samples which are shipped to a CLP laboratory for analysis will be prepared according to the following procedure:

   - The cooler(s) in which the samples will be shipped will be lined with a plastic bag and filled with vermiculite or other absorbent packing material.
   - Ice will be sealed in plastic bags and placed in the sample cooler(s). Enough ice should be included to maintain a temperature of 4°C during sample shipping.
   - Each sample container will be labeled with a CLP sample number, provided by RSCC. Sample labels should be covered with clear plastic tape to protect them during sample handling and shipping.
   - A custody seal will be placed on each sample container overlapping the container and lid and covered with clear plastic tape.
   - Each sample container will be placed in a plastic bag and the bag will be sealed.
   - Sample containers will be placed in the cooler in a manner to prevent breakage during shipment.
   - When sampling is completed for the day the laboratory copies of the CLP Traffic Report/Chain of Custody Form will be sealed in a plastic bag and taped to the underside of the cooler lid. This task should be completed just prior to sample shipping. The top two copies of this form will be removed and retained by field sampling personnel. The pink copy will be mailed to the Contract Laboratory Analytical Support Services office in Alexandria, VA within five (5) days of sampling, and the top copy will be submitted to RSCC along with the CLP sampling trip report.
   - If necessary, additional bags of ice will be placed in the sample cooler before shipping.
   - The cooler will be sealed with packing tape.
   - Custody seals will be placed on the cooler overlapping the cooler and the cooler lid, and clear tape will be placed over the seals.

- Samples will be shipped to the CLP laboratory via overnight courier within 24 hours of sample collection.

4. Samples which are to be analyzed by the ESD laboratory in Edison will be prepared as follows:

   - A field data sheet will be completed for each sample collected.
   - Each sample collected will be assigned a sample identification number corresponding with the field data sheet for that sample.
   - Each sample will be labeled with the sample identification number, site name, sampling location, sampling date and time, analyses requested, sample type(grab/composite)and sample preservative (if applicable).
   - Chain of Custody and Request for Analysis forms will be completed for each group of samples delivered.
   - When all sample paperwork is completed, samples will be signed in at the OSCAR station.
   - If samples are returned to the EPA facility later than 5:00 p.m. and custody of the samples cannot be relinquished, custody seals will be placed on the sample cooler, and the cooler will be stored in a secured area until the samples can be signed over to the OSCAR station.

2.6.1 Field Logbooks

A field logbook should be used to record activities which transpire during a sampling event. The field logbook may include some or all of the following information:

- Names of field sampler(s) and other individuals present during sampling.
- Field observations including soil characteristics, and evidence of contamination such as visible soil staining, stressed vegetation, etc.
- Weather conditions.
- Information regarding the calibration of air monitoring equipment.
- Results of any air monitoring conducted.
- Sample location identifications.
- Sketch map of sampling locations.

- Date and time of sample collection.
- Number and type of sample bottles used and sample identification numbers.
- Type of sample collected (grab or composite).
- Parameters requested for analysis.
- Details regarding QA/QC samples, including time and date of collection, sampler name(s), number and type of bottles and sample numbers, and preservatives used.

3.0 Field Quality Control

Quality control samples are required to verify that the sample collection and handling process has not affected the representativeness of the samples or the quality of the data produced during sample analysis. Quality control sample requirements may differ depending on whether samples are submitted to the ESD laboratory or to a CLP laboratory for analysis. All field quality control samples will be prepared exactly as regular investigation samples with regard to sample volume, containers, and preservation. The number and type of QA/QC samples required should be outlined in the QAPP/Field Sampling Plan.

At a minimum, one blind duplicate sample will be collected for each group of twenty (20) field samples collected. This sample will be assigned a unique sample identification number. The purpose of the blind field duplicate is to test the reproducibility of laboratory data.

The collection of equipment blanks, also referred to as rinsate blanks, may be required by the QAPP. Equipment blanks are used to demonstrate that sampling equipment has been properly cleaned and that no cross-contamination of samples has occurred resulting as the result of improper or incomplete decontamination of sampling equipment. If equipment blanks are required, each type of sampling equipment used will be evaluated. One rinsate blank will be collected during each day of sampling, or for each decontamination event, for each type of analysis requested. If all sampling equipment was decontaminated in advance of the sampling event, only one rinsate blank may be required. The equipment is collected by pouring a stream of demonstrated analyte free distilled/deionized water over a piece of sampling equipment and collecting the water in appropriate sample containers. For all analyses except VOAs, a combined equipment blank can be collected by pouring the analyte free water over each piece of equipment and

collecting the water into a single sample container. For VOA analysis, a separate set of sample containers must be used for each piece of sampling equipment. Sample container and preservative requirements for aqueous equipment blanks are provided in Table 2.

4.0 References

United States Environmental Protection Agency. 1989. Region II CERCLA Quality Assurance Manual. Final Copy, Revision 1, October 1989. Edison, New Jersey.

United States Environmental Protection Agency. 1991. Compendium of ERT Soil Sampling and Surface Geophysics Procedures, Office of Solid Waste and Emergency Response, Washington, D.C., January 1991 EPA/540/P-91/006, OSWER Directive 9360.4-02.

Table 1
Sample Volume/Container Requirements for Standard Soil Analyses

ANALYSIS	SAMPLE CONTAINER
CLP Requirements	
VOAs	1-120 ml glass vials OR 2-40 ml glass vials (with septa); 3-40 ml vials should be filled for 1/20 samples for lab QA/QC purposes (MS/MSD); double volume required for 1/20 field samples (field duplicate) with unique ID number assigned to sample and field duplicate.
BNAs, Pesticides/ PCBs	1-8 oz. OR 2-4 oz. glass jars with teflon lined lid(s); double volume required for 1/20 field samples (field duplicate) with unique ID number assigned to sample and field duplicate.
TAL Metals and/or Cyanide	1-8 oz. OR 2-4 oz. wide-mouth glass jars: double volume required for 1/20 field samples (field duplicate) with unique ID number assigned to sample and field duplicate.
ESD Laboratory Requirements	
VOAs	2-40 ml glass vials (with septa); 3-40 ml vials should be filled for 1/20 samples for lab QA/QC purposes (MS/MSD); double volume required for 1/20 field samples (field duplicate) with unique ID number assigned to sample and field duplicate.
BNAs, Pesticides/ PCBs, Herbicides	1-8 oz. wide-mouth glass jar with teflon lined lid per sample; double volume required for 1/20 field samples (field duplicate) with unique ID number assigned to sample and field duplicate.
Metals	1-8 ounce wide-mouth glass jar per sample; double volume required for 1/20 field samples (field duplicate) with unique sample ID number assigned to sample and field duplicate.

Note: Contact Laboratory and QA personnel to determine sample container requirements for analyses not included in this table.

Table 2
Sample Volume/Container Requirements for
Aqueous Equipment Blanks

ANALYSIS	SAMPLE CONTAINER	PRESERVATIVE
CLP Requirements		
VOAs	2-40 ml VOA vials with septa	HCl to pH < 2
BNAs, Pesticides/PCBs	4-1 liter amber glass bottles with teflon lined lids	Cool to 4° C
TAL Metals	1-1 liter high density polyethylene (HDPE) bottle	HNO_3 to pH < 2
Cyanide	1-1 liter HDPE bottle	NaOH to pH > 12
ESD Laboratory Requirements		
VOAs	3-40 ml VOA vials with septa	HCL to pH < 2
BNAs, Pesticides/ PCBs, Herbicides	1-1 liter amber glass bottle with teflon lined lid	Cool to 4°C
TAL Metals	1-1 liter HDPE bottle	HNO_3 to pH < 2
Cyanide	1-1 liter HDPE bottle	NaOH to pH > 12

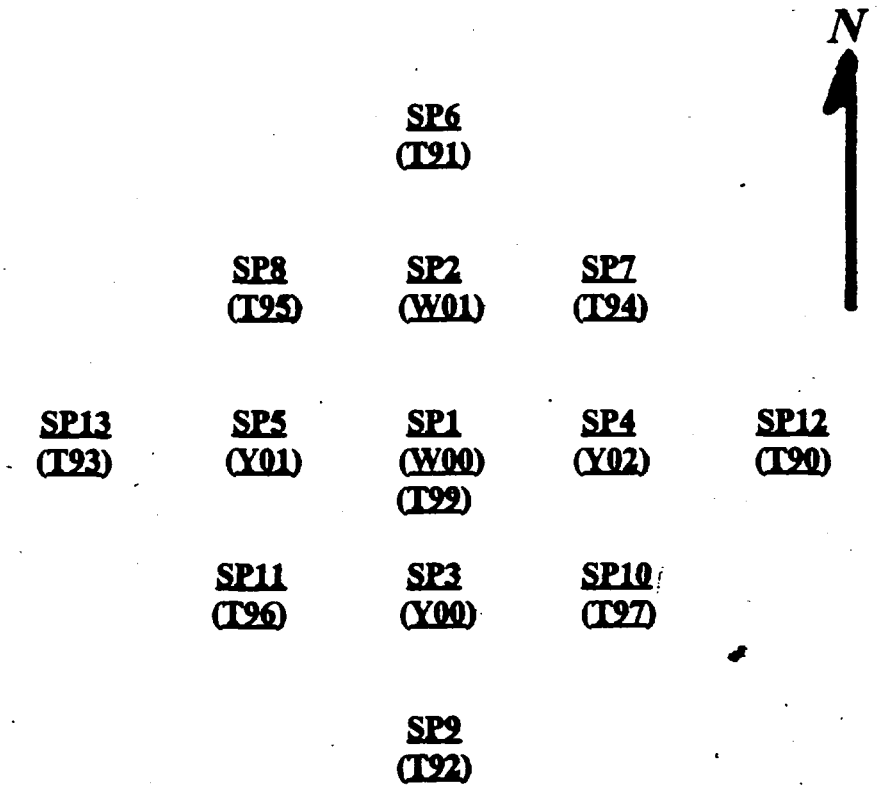
Note: One equipment blank should be collected for each type of analysis requested on each day that equipment is decontaminated. If all field sampling equipment is decontaminated ahead of time and will not be re-used during a sampling event, one equipment blank can be collected for the entire event.

If sampling equipment is not dedicated (i.e., it will be decontaminated and re-used), equipment blanks should be collected on each day that sampling equipment is decontaminated.

Configuration of the sampling points at Higgins Disposal sampling event on November 7, 1996.

SP-1 is directly on top of TS-1. TS-1 is identified in Figure 2-6 on the following page.

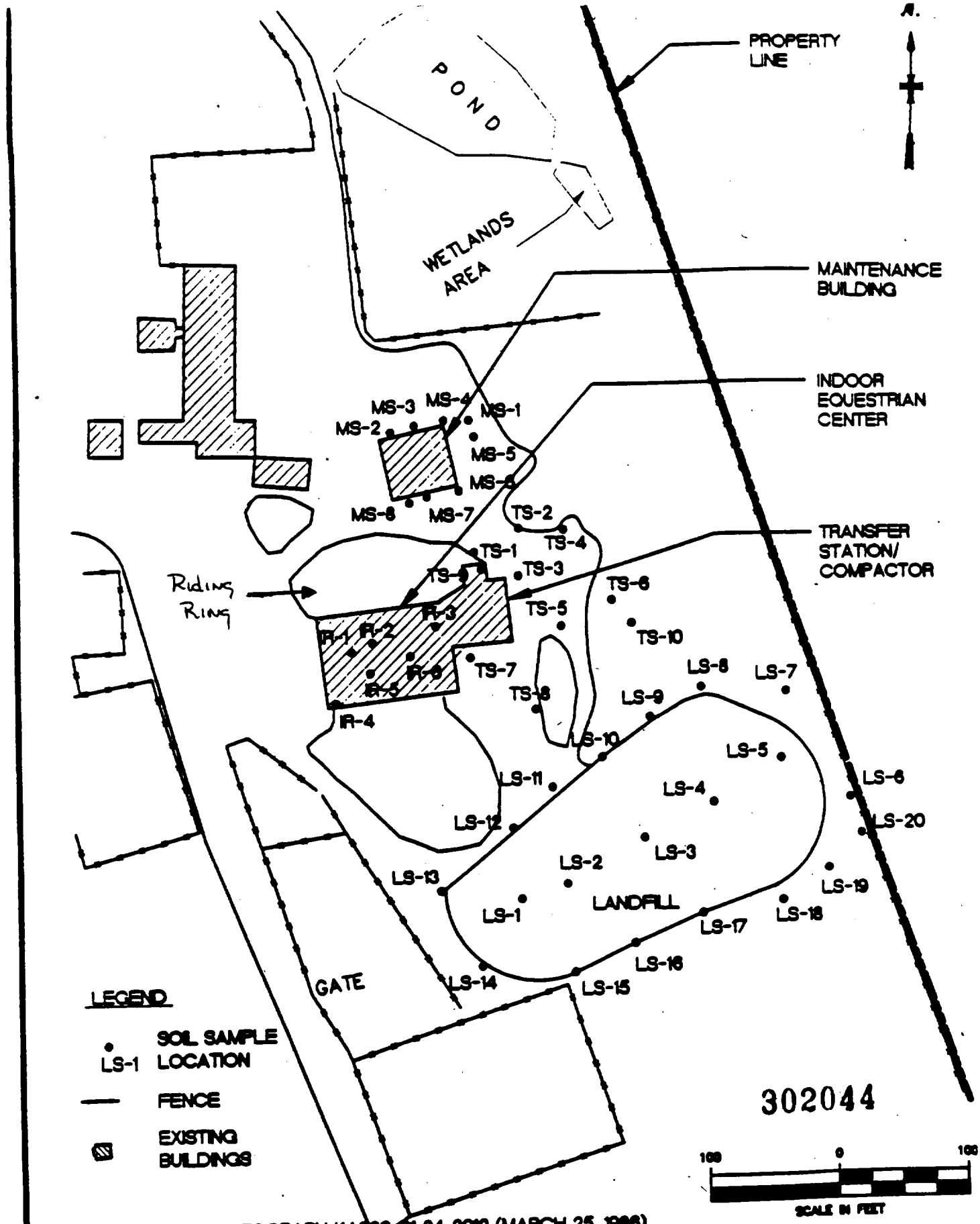
Each point will be five feet away from each other.



(SP=Sampling Points)
(Below the SP in () are the last three digits of the CLP Sample Numbers (i.e. W00=MBPW00).)

ATTACHMENT A

302043



MALCOLM PIRNIE

HIGGINS DISPOSAL SITE
KINGSTON, NEW JERSEY

SURFACE SOIL SAMPLING LOCATIONS

MALCOLM PIRNIE, INC

FIGURE 2-6

5683 : ADMIN V:\ACAD\PROJ\80012108\SURFACE SCALE: 1:100: 08/30, 1994 17:34

Appendix B, Laboratory Report

EPA United States Environmental Protection Agency Contract Laboratory Program

Inorganic Traffic Report & Chain of Custody Record
(For Inorganic CLP Analysis)

Case No. 25136

302046

1. Project Code	Account Code	2. Region No.	Sampling Co.	4. Date Shipped	Carrier
		II	EPA	11/7/96	FED EXPRESS

Regional Information

Sampler (Name): M. MERCADO

Airbill Number: 0599201551

Non-Superfund Program

Sampler Signature: [signature]

5. Ship To: Columbia Analytical Serv. 1317 S. 13th Ave Kelso, WA. 98626

ATTN: Jeff Christian

Site Name: Higgins Disposal

City, State: Kingston, NJ

Site Spill ID

3. Purpose*
Lead: SF, PRP, ST, FED
Early Action: CLEM, PA, REM, RI (✓), SI, ESI
Long-Term Action: FS, RD, RA, O&M, NPLD

6. Matrix (Enter in Column A)
1. Surface Water
2. Ground Water
3. Leachate
4. Field QC
5. Soil/Sediment
6. Oil (High only)
7. Waste (High only)
8. Other (specify in Column A)

7. Preservative (Enter in Column D)
1. HCl
2. HNO_3
3. NaOH
4. H_2SO_4
5. $K_2Cr_2O_7$
6. Ice only
7. Other (specify in Column D)
N. Not preserved

CLP Sample Numbers (from labels)	A Matrix (from Box 6) Other:	B Conc. Low Med High	C Sample Type: Comp./Grab	D Preservative (from Box 7) Other:	E - RAS Analysis: Diss. Metals	Total Metals	Cyanide	Low only: NO_2/NO_3	Fluoride	High only: pH	Conduct.	F Regional Specific Tracking Number or Tag Numbers	G Station Location Identifier	H Mo/Day/Year/Time Sample Collection	I Corresponding CLP Organic Sample No.	J Sampler Initials	K Field QC Qualifier (B = Blank, S = Spike, D = Duplicate, R = Rinsate, PE = Perform. Eval., — = Not a QC Sample)
MBPT95	5	L	G	6		✓							SP 8	11/7/96 1000		MM	
MBPT96	5	L	G	6		✓							SP 11	11/7/96 1000		MM	
MBPT97	5	L	G	6		✓							SP 10	11/7/96 1000		MM	
MBPT98	8	L	G	2,6		✓							EQ BLANK	11/7/96 1000		MM	B
MBPT99	5	L	G	6		✓							SP 14	11/7/96 1000		MM	

Shipment for Case Complete? (Y/N)	Page	Sample(s) to be Used for Laboratory QC	Additional Sampler Signatures	Chain of Custody Seal Number(s)
Y	2 of 2			

CHAIN OF CUSTODY RECORD

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Jennifer Snow-Abbleman	11/7/96 1545	FEDEX, AIRBILL # 0599201551			

Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks Is custody seal intact? Y/N/none

DISTRIBUTION: Green - Region Copy; White - Lab Copy for Return to Region; Pink - CLASS Copy; Yellow - Lab Copy for Return to CLASS

EPA Form 9110-1

SEE REVERSE FOR ADDITIONAL STANDARD INSTRUCTIONS
*SEE REVERSE FOR PURPOSE CODE DEFINITIONS

A21-012-13 REV.

364603

EPA — Inorganic Traffic Report & Chain of Custody Record

United States Environmental Protection Agency
Contract Laboratory Program

(For Inorganic CLP Analysis)

Case No. 25136

3020047

1. Project Code	Account Code	2. Region No.	Sampling Co.	Date Shipped	Carrier
		II	EPA	11/7/96	FED EXPRESS

Regional Information	Sampler (Name)	Airbill Number
	M. HERCADO	05992016561

Non-Superfund Program	Sampler Signature	5. Ship To
		Columbia Analytical Serv. 1317 S. 13th Ave Kelso, WA 98626 ATTN: Jeff Christian

Site Name	3. Purpose*	Early Action	Long-Term Action
Higgins Disposal	Lead: ☐ SF ☐ PRP ☐ ST ☐ FED	☐ CLEM ☐ PA ☐ REM ☑ RI ☐ SI ☐ ESI	☐ FS ☐ RD ☐ RA ☐ O&M ☐ NPL

City, State	Site Spill ID
Kingston, NJ	

6. Matrix (Enter In Column A)
1. Surface Water
2. Ground Water
3. Leachate
4. Field QC
5. Soil/Sediment
6. Oil (High only)
7. Waste (High only)
8. Other (specify in Column A)

7. Preservative (Enter In Column D)
1. HCl
2. HNO_3
3. NaOH
4. H_2SO_4
5. $K_2Cr_2O_7$
6. Ice only
7. Other (specify in Column D)
N. Not preserved

CLP Sample Numbers (from labels)	A Matrix (from Box 6) / Other	B Conc.: Low Med High	C Sample Type: Comp./ Grab	D Preservative (from Box 7) / Other	E RAS Analysis: Diss. Metals	Total Metals	Cyanide	Low only: NO_2/NO_3	Low only: Fluoride	High only: pH	High only: Conductivity	F Regional/Specific Tracking Number or Tag Numbers	G Station Location Identifier	H Mo/Day/Year/Time Sample Collection	I Corresponding CLP Organic Sample No.	J Sampler Initials	K Field QC Qualifier (B = Blank, S = Spike, D = Duplicate, R = Rinse, PE = Perform. Eval., I = Not a ISC Sample)
MBP200	5	L	G	6		X							SP15	11/7/96 15:40		MH	
MBP200 1	5	L	G	6		X							SP20	11/7/96 15:50		MH	
MBP400	5	L	G	6		X							SP35	11/7/96 16:00		MH	
MBP401	5	L	G	6		X							SP5	11/7/96 16:10		MH	
MBP402	5	L	G	6		X							SP4	11/7/96 16:20		MH	
MBPT90	5	L	G	6		X							SP[illegible]	11/7/96 [illegible]		MH	SD
MBPT91	5	L	G	6		X							SP[illegible]	[illegible]		MH	
MBPT92	5	L	G	6		X							SP[illegible]	[illegible]		MH	
MBPT93	5	L	G	6		X							SP[illegible]	[illegible]		MH	
MBPT94	5	L	G	6		X							SP[illegible]	[illegible]		MH	

Shipment for Case Complete? [illegible] | Page 1 of 2 | Sample(s) to be Used for Laboratory QC: MBPT90 | Additional Sampler Signature(s) | Chain of Custody Seal Number(s)

CHAIN OF CUSTODY RECORD

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
[signature]	11/7 1545	FedEx Airbill # 05992016561			
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: Is custody seal intact? Y/N/none	

DISTRIBUTION: Green - Region Copy; White - Lab Copy for Return to Region; Pink - CLASS Copy; Yellow - Lab Copy for Return to CLP

EPA Form 9110-1

SEE REVERSE FOR ADDITIONAL STANDARD INSTRUCTIONS
*SEE REVERSE FOR PURPOSE CODE DEFINITIONS

A21-012-13 REV.

RECORD OF COMMUNICATION

TO: Jennifer Snow-Ashbrook

FROM: Janet Trotter Region II ESAT, RSCC

DATE: 1/15/97

SUBJECT: QUALITY ASSURED DATA

==========

MESSAGE:

PLEASE SIGN BELOW IN ACKNOWLEDGEMENT OF RECEIPT OF THE FOLLOWING AND RETURN ONE COPY OF THIS RECORD OF COMMUNICATION TO THE RSCC - REGION II.

① Higgins Disp/Laurl Ave 25136 Columb Inorg 14S/1W

REPLY BY: _____

SIGNATURE: _____ DATE: _____

DATE RECEIVED BY RSCC: _____

cc: EPA Task Monitor
ESAT Manager
file

302048

RECORD OF COMMUNICATION

REGIONAL SAMPLE CONTROL CENTER

DATE: 12/18/96
SUBJECT: CLP Data Package for Quality Assurance Review
FROM: RSCC / ESAT
TO: Hanif Sheikh, Hazardous Waste Support Section

RECEIVED
JAN 1 - 1997

Attached is the following INORGANIC Data Package to be reviewed for Quality Assurance

SITE HIGGINS DISP/LAUREL AV
CASE# 25136
CONTRACTOR USEPA
#SAMPLES 14
MATRIX SOIL
PHASE RA
WATER
LAB COLUMB
FRACTION TAL ONLY

REGION II RSCC DATA TRANSFER LOG

Relinquished By		Received By	
Signature	Date/Time	Signature	Date/Time
John Balick	12/18/96	John Balick	12/12/96
C. M. Nolan	1/7/96	C M Allen	12/23/96
DCR	1/13/96	J Balick (DCR)	1/7/97
Hanif Sheikh	1/14/97	Hanif Sheikh	1/13/97
		DCR	1/14/97

(over for instructions) revised 7/96

302049

SAMPLE DELIVERY GROUP (SDG)
TRAFFIC REPORT (TR) COVER SHEET

Lab Name: Columbia Analytical Contract No.: 68-05-0135

Lab Code: COLUMB Case No.: 25136 SAS No.: _____

Full Sample Analysis Price in Contract:

First Sample in SDG: MBPT90 Sample Receipt Date: 110896
SDG No. (Lowest EPA Sample Number in first shipment of samples received under SDG) (MM/DD/YY)

Last Sample in SDG: MBPY02 Sample Receipt Date: 110896
(Highest EPA Sample Number in last shipment of samples received under SDG) (MM/DD/YY)

EPA Sample Numbers in the SDG (listed in alphanumeric order):

1	MBPT90	11	MBPW00
2	MBPT91	12	MBPW01
3	MBPT92	13	MBPY00
4	MBPT93	14	MBPY01
5	MBPT94	15	MBPY02
6	MBPT95	16	
7	MBPT96	17	
8	MBPT97	18	
9	MBPT98	19	
10	MBPT99	20	

Note: There are a maximum of 20 field samples in an SDG.

Attach Traffic Reports to this form in alphanumeric order (i.e., the order listed on this form).

Sample Custodian

110896
Date

25136
00162
302050

Computer file name: TR2

Title: Evaluation of Metals Data for the Contract Laboratory Program
Appendix A.2: Data Assessment Narrative

Date: Jan. 1992
Number: HW-2
Revision: 11

Case #	25136	Site:	HIGGINS DISPOSAL	Soil:	14
SDG #	MBPT90	Lab:	COLUMB	Water:	01
Contractor:	USEPA/RA	Reviewer:	C. M. Alaimo/ESAT	Other:	

A.2.1. Validation flags- The following flags have been applied in red by the data validator and must be considered by the data user.

J - This flag indicates the result qualified as estimated.

Red-Line - A red-line drawn through a sample result indicates unusable value. The red-lined data are known to contain significant errors based on documented information and must not be used by the data user.

Fully Usable Data- The results that do not carry "J" or "red-line" are fully usable.

Contractual Qualifiers- The legend of contractual qualifiers applied by the lab on Form I's is found on page B-20 of SOW ILM01.0

A.2.2. The data assessment is given below and on the attached sheets.
This package consists of fourteen soil and one equipment blank collected on 11/07/96 from the Higgins Disposal site for TAL metal analysis. Sample MBPT98 was identified as the field uipment blank and as per Mr. Mercado samples MBPT99/MBPW00 were a field duplicate pair. All alysis was performed within holding times. QC was performed on soil sample MBPT90.

CSF

Sample tags and trip report were not included in this package. In addition, the airbill was not signed.

MATRIX SPIKE RECOVERY

For Sb (33.7%), the % matrix spike recovery fell between 10-74% therefore all associated data were estimated.

J--->Sb in MBPT90-->97, MBPT99, MBPW00, MBPW01, MBPY00-->02.

FURNACE QC

In the furnace run for Se, several analytical spike recoveries were outside the acceptable limit, therefore the effected data was estimated.

J--->Se in MBPT94, MBPT96, MBPT97, MBPT99, MBPW00, MBPW01, MBPY00, MBPY01 & MBPY02.

FIELD BLANK CONTAMINATION

Although the field blank had Fe results greater than the CRDL no action was taken since all associated data were greater than 5x the contaminate value.

% TOTAL SOLIDS

The % total solid for sample MBPT91 (47.2%) was <50% but >10%, therefore all associated data not previously qualified were estimated.

J--->all metals not previously qualified in MBPT91.

302051

A.2.3. Contract-Problems/Non-Compliance

Upon examining Form VI, it was determined that the qualifier "*" for Pb was not applicable, therefore this notation should be removed from the Form I's.

MMB Reviewer: _____ Date: _____
Signature

Contractor Reviewer: _____ Date: 1/6/97
Signature

Verified by: _____ Date: _____
Signature

Title: Evaluation of Metals Data for the Contract Laboratory Program
Appendix A.3: Contract Non-Compliance (SMO Report)

Date: Jan. 1992
Number: Hi-2
Revision: 11

CONTRACT NON-COMPLIANCE
(SMO REPORT)

Regional Review of Uncontrolled Hazardous Waste
Site Contract Laboratory Data Package

CASE NO. 25136

The hardcopied (laboratory name)_____ Inorganic data package received at Region II has been reviewed and the quality assurance and performance data summarized. The data reviewed included:

SMO Sample No.:_____

Conc. & Matrix:_____

Contract No.(_____) requires that specific analytical work be done and that associated reports be provided by the contractor to the Regions, EMSL-LV, and SMO. The general criteria used to determine the performance were based on an examination of:

- Data Completeness
- Matrix Spike Results
- Calibration Standards Results
- Duplicate Analysis Results
- Blank Analysis Results
- MSA Results

Items of non-compliance with the above contract are described below.

Comments:_____

CmA
Reviewer's Initial

1/6/97
Date

DPO MAILING LIST FOR DATA REVIEWERS

1. USEPA Region I (ESD)
60 Westview Street
Lexington, MA 02173
Deb Szaro
(617) 861-4312
CT, ME, MA, NH, RI, VT
CAA, Resource Analysts, York,
ETL, Sunset, TMA

2. USEPA Region II ESD
Woodbridge Avenue
Edison, NJ 08837
Lisa Gatton Vidulich
(201) 321-6676
NJ, NY, PR, VI
Century, Chemtech, US Test, Nytest
ETC, Gollob, EMS, Coleman, ICM

3. USEPA Region III (CRL)
839 Bestgate Road
Annapolis, MD 21401
Chuck Sands
(301) 266-9180
DE, MD, PA, VA, WV, DC
Cosmos, Hittman, JTC, MACK, VERSAR,
ITAS, Weston, MOCES, RA Engineering,
Subject Tech, KEYPA

4. USEPA Region IV (ESD)
Analytical Support Branch
College Station Road
Athens, GA 30613
Tom Bennett, Jr.
(404) 546-3112
AL, FL, GA, KY, MS, NC, SC, TN
CompuChem, EPS, ESE, PRSAL
Triangle Labs

5. USEPA Region V (ESD)
536 South Clark Street
Tenth Floor, CRL
Chicago, IL 60605
Pat Churilla
(312) 353-9087
IL, IN, MI, MN, OH, WI
NLE, TAI/ENO

6. USEPA Region VI (ESD)
Monterey Park Plaza, Bldg. C
6608 Hornwood Drive
Houston, TX 77074
David Stockton
(713) 983-2125
AR, LA, NM, TX, OK
ANACON, RADIAN, SPECS, ES, Gardens
Research, Inc., SPL Inc., SWRI,
Allied, KEYTX, ERA

7. USEPA Region VII Laboratory
25 Funston Road
Kansas City, KS 66115
Debra Morey
(913) 236-3881
IO, KS, NE, MO
Wilson, Kansas City Scientific
Enterprises, Eagle Picher

8. USEPA Region VIII Laboratory
Box 25366
Denver Federal Center
Lakewood, CO 80225
Bob Hoffman
(303) 236-7371
CO, ND, SD, UT, WY, MT
ACCU, CDM RL, RMAL, Data Chem, Core

9. USEPA Region IX (ESD)
QA Management Section
215 Fremont Street
San Francisco, CA 94105
Kent Kitchingman
(415) 974-8724
AZ, CA, HI, NV, American Samoa,
Guam Trust Territories of Pacific
Islands, Wake Island
ALI, CAL Weston, S-Cubed, IT_CA,
Vegas

10. USEPA Region X Laboratory
P.O. Box 549
Manchester, WA 98353
Gerald Muth
(206) 442-0370
AK, ID, OR, WA
Laucks Testing Labs, Century Testing
Labs (For VOA Only), Weyerhaeuser Co.,
Columbia Testing, Silver Valley

11. Carla Dempsey - (OS-230)
USEPA
401 "M" Street S.W.
Washington, DC 20460
FTS 382-7746

12. Edward Kantor
USEPA
EMSL-LV
944 E. Harmon Avenue
Box 93478
Las Vegas, NV 89119

302054

Region II

INORGANIC REGIONAL DATA ASSESSMENT

CASE NO.: 25736 **SITE:** Higgins Disposal

LABORATORY: Columbia **NO. OF SAMPLES/MATRIX:** WATER, 1 SOIL 14

SDG#: MBPT90 **REVIEWER (IF NOT ESD):**

SOW#: ILM04.0 **REVIEWER'S NAME:** C.M.Al—

DPO: ACTION FYI **COMPLETION DATE:** 1/6/92

DATA ASSESSMENT SUMMARY

	ICP	AA	MERCURY	CYANIDE
Holding Times	O	O	O	N/A
Calibration				
Blanks				
ICS			N/A	N/A
LCS			N/A	N/A
Duplicate Analysis				
Matrix Spike				
MSA			N/A	N/A
Serial Dilution			N/A	N/A
Sample Verification				
Other QC				
Overall Assessment	↓		↓	X

O = Data has no problems/or qualified due to minor problems.
M = Data qualified due to major problems.
Z = Data unacceptable.
X = Problems, but do not affect data.

ACTION ITEMS:
AREAS OF CONCERN:
NOTABLE PERFORMANCE:

302055

CLP DATA ASSESSMENT SUMMARY FORM

TYPE OF REVIEW: INORGANIC **DATE:** 1/6/92 **CASE #:** 25136

SITE: Higgins Disposal **LAB NAME:** Colab

REVIEWER'S INITIALS: CMA **NUMBER OF SAMPLES:** WATER, 1 SOIL 14

ANALYTES REJECTED DUE TO EXCEEDING REVIEW CRITERIA:*

	Holding Time	CRDL	Prep Blank	Field Blank	Inter-Sources	Spike Recovery	Detection Limit	LCS	Serial Dilution	MSA	Total Analytes	Rejections
ICP											270	
Flame AA												
Furnace AA											60	
Mercury											15	
Cyanide												
Total											345	0

ANALYTES FLAGGED AS ESTIMATED (J) DUE TO EXCEEDING CRITERIA FOR:*

	Holding Time	CRDL Standards	Prep Blank	Field Blank	Preservation	Spike Recovery	Dup Lab	Dup Field	Detection Limit	LCS	Serial Dilution	MSA 345	Total Analytes	Rejections
ICP						18						18	270	36
Flame AA														
Furnace AA		9				4						3/1*	60	16/1*
Mercury						1						1	15	2
Cyanide														
Total		9				23						22/1*	345	54/1*

Note: Asterisk (*) indicates additional exceedances of review criteria.

U.S. EPA – CLP

6
FIELD DUPLICATES

EPA SAMPLE NO.
MBFT99 MBPW00

Lab Name: Columbia Analytical Svcs Contract: 68-D7-0137

Lab Code: COLUMB Case No.: 25136 SAS No.: SDG No.: MBFT90

Matrix (soil/water): SOIL Level (low/med): LOW

% Solids Sample: 77.6 % Solids Duplicate: 76.3

Concentration Units (ug/L or mg/kg dry weight): ug/kg

Analyte	Action Limit	Sample (S) Concentration	C	Field Duplicate (D) Concentration	C	RPD	DIFF	Q	M
Aluminum	100%	39964.0000		40057.5000		0.2			P
Antimony		13.1920	U	13.3524	U	—	—		P
Arsenic	20	12.4160		10.6820			1.7340		F
Barium	40C	180.4200	B	185.7905	B		5.3705		P
Beryllium	10	1.8624	B	1.4497	B		0.4127		P
Cadmium		2.9876	U	3.0139	U	—	—		P
Calcium	10000	19826.8000		20829.9000			1003.1000		P
Chromium	100%	73.7200		71.3405		3.3			P
Cobalt	100	23.6650	B	25.1790	B		1.5140		P
Copper	100%	134.6360		133.1451		1.1			F
Iron	100%	56648.0000		54554.5000		3.8			P
Lead	100%	150.9320		112.9240		28.8			P
Magnesium	10000	6479.6000		5493.6000			986.0		P
Manganese	100%	624.6800		579.8500		7.4			P
Mercury	100%	4.9664		7.1722		36.3			CV
Nickel	80	37.6360	B	43.1095	B		5.4735		P
Potassium	10000	3162.2000	B	3036.3350 ~~2.6983~~	B		76.8650		P
Selenium	10	1.7072	B	2.0985 ~~1.8312~~	B		0.3911		F
Silver	20	2.7936	B	1.8312	B		0.9624		P
Sodium	10000	1598.5600	B	1594.6700	B		3.8900		P
Thallium	20	0.5828	B	0.6104	B		0.0276		F
Vanadium	100	119.5240		118.6467			0.8773		P
Zinc	100%	229.3030		211.7325		8.0			P
Cyanide									NR

FORM VI – IN

2 of 2 CMA

302057

U.S. EPA – CLP

Lab 6
~~FIELD~~ DUPLICATES

EPA SAMPLE NO.
MBPT90

Lab Name: Columbia Analytical Svcs Contract: 68-D5-0131

Lab Code: COLUMB Case No.: 25136 SAS No.: SDG No.: MBPT90

Matrix (soil/water): SOIL Level (low/med): low

% Solids Sample: 58.6 % Solids Duplicate: 70.5

Concentration Units (ug/L or mg/kg dry weight): ug/L

Analyte	Action Limit	Sample (S) Concentration	C	Field Duplicate (D) Concentration	C	RPD	DIFF	Q	M
Aluminum	100%	35283.7944		37419.1150		2.3			P
Antimony		13.2999	U	13.2999	U	—	—		P
Arsenic	20	8.6001	B	7.1000	B		0.5001		F
Barium	400	183.4250	B	184.6849	B		1.2599		P
Beryllium	10	0.3049	B	1.0199	B		0.7150		P
Cadmium		3.0000	U	3.0000	U	—	—		P
Calcium	10000	17243.9100		16638.8899			605.0201		P
Chromium	100%	61.1049		66.8351		9.0			P
Cobalt	50	25.0650	B	28.2751	B		3.2101		P
Copper	100%	192.4699		150.2149		24.9			F
Iron	100%	44308.2985		50226.4673		12.4			P
Lead	100%	162.0000		147.9999		9.0			P
Magnesium	10000	7326.4301		6757.7450			568.6851		P
Manganese	100%	635.9849		727.7549		13.5			P
Mercury	0.4	0.2745		0.1739	B		0.1006		CV
Nickel	80	33.3349	B	33.3348	B		0.0001		P
Potassium	10000	1868.2500	B	1552.0650	B		316.1850		P
Selenium		1.4999	U	1.4999	U	—	—		F
Silver		1.6001	U	1.6001	U	—	—		P
Sodium	10000	1406.6350	B	1262.8649	B		143.7701		P
Thallium		0.4999	U	0.4999	U	—	—		F
Vanadium	100	138.1149		123.4049			14.7100		P
Zinc	100%	155.9949		163.6701			4.8		P
Cyanide									NR

FORM VI – IN

OK/cmh

302056

SAC & MDPT 10

Evaluation of Metals Data for the Contract Laboratory Program (CLP)

based on

SOW. 3/90

(SOP Revision XI)

PREPARED BY: _____ DATE: 1-30-92
Hanif Sheikh, Quality Assurance Chemist
Toxic and Hazardous Waste Section

APPROVED BY: _____ DATE: 1-30-92
Kevin Kubik, Chief
Toxic and Hazardous Waste Section

APPROVED BY: _____ DATE: 1/30/92
Robert Runyon, Chief
Monitoring Management Branch

302059

2.1.5 Data Review Log: It is recommended that each data reviewer should maintain a log of the reviews completed to include: a. date of start of case review

b. date of completion of case review
c. site
d. case number
e. contract laboratory
f. number of samples
g. matrix
h. hours worked
i. reviewer's initials

2.1.6 Telephone Record Log - the data reviewer should enter the bare facts of inquiry, before initiating any phone conversation with CLP laboratory. After the case review has been completed, mail white copy of Telephone Record Log to the laboratory and pink copy to SMO. File yellow copy in the Telephone Record Log folder, and attach a xerox copy of the Telephone Record Log to the completed Data Assessment Narrative (Appendix A.2).

2.1.7 Forwarded Paperwork

2.1.7.1 Upon completion of review, the following are to be forwarded to the Regional Sample Control Center (RSCC) located in the Surveillance and Monitoring Branch:
a. data package
b. completed data assessment checklist (Appendix A.1,original)
c. SMO Contract Compliance Screening (CCS)
d. Record of Communication (copy)
e. CLP Reanalysis Request/Approval Record (original + 3 copies)
f. Appendix A.6 (original).

2.1.7.2 Forward 2 copies of completed Data Assessment Narrative (Appendix A.2) along with 2 copies of the Inorganic Data Assessment Form (Appendix A.6) and Telephone Record Log , if any,: one each for appropriate Regional TPO, and the other one to EPA EMSL office in Las Vegas. The addresses of TPOs and EPA office in Las Vegas are given in Appendix A-4.

2.1.8 Filed Paperwork - Upon completion of review, the following are to be filed within MMB files:
a. Two copies of completed Data Assessment Narrative (Appendix A.2) each carrying Appendix A.6.
b. Telephone Record Log (copy)
c. SMO Report (copy Appendix A-3)
d. CLP Reanalysis Request/Approval Record (copy)

itle: Evaluation of Metals Data for the Contract Laboratory Program
Appendix A.1: Data Assessment - Contract Compliance (Total Review)

Date: Jan. 1992
Number: HW-2
Revision: 11

	YES	NO	N/A
A.1.1 Contract Compliance Screening Report (CCS) - Present?	[✓]	—	—
ACTION: If no, contact RSCC.			
A.1.2 Record of Communication (from RSCC) - Present?	[✓]	—	—
ACTION: If no, request from RSCC.			
A.1.3 Trip Report - Present and complete?	[ ]	✓	—
ACTION: If no, contact RSCC for trip report.			
A.1.4 Sample Traffic Report - Present?	[ ]	✓	—
Legible?	[ ]	—	—
ACTION: If no, request from Regional Sample Control Center (RSCC).			
A.1.5 Cover Page - Present?	[✓]	—	—
Is cover page properly filled in and signed by the lab manager or the manager's designee?	[✓]	—	—
ACTION: If no, prepare Telephone Record Log, and contact laboratory.			
Do numbers of samples correspond to numbers on Record of Communication?	[✓]	—	—
Do sample numbers on cover page agree with sample numbers on:			
(a) Traffic Report Sheet?	[ ]	—	✓
(b) Form I's?	[✓]	—	—
ACTION: If no for any of the above, contact RSCC for clarification.			

Title: Evaluation of Metals Data for the Contract Laboratory Program
Appendix A.1: Data Assessment - Contract Compliance (Total Review)

Date: Jan. 1992
Number: HW-2
Revision: 11

		YES	NO	N/A
A.1.7	**Raw Data**			
A.1.7.1	Digestion Log* for flame AA/ICP (Form XIII) present?	[✓]	—	—
	Digestion Log for furnace AA Form XIII present?	[✓]	—	—
	Distillation Log for mercury Form XIII present?	[✓]	—	—
	Distillation Log for cyanides Form XIII present?	[ ]	—	✓
	Are pH values (pH<2 for all metals, pH>12 for cyanide) present?	[✓]	—	—
	*Weights, dilutions and volumes used to obtain values.			
	Percent solids calculation present for soils/sediments?	[✓]	—	—
	Are preparation dates present on sample preparation logs/bench sheets?	[✓]	—	—
A.1.7.2	Measurement read out record present? ICP	[✓]	—	—
	Flame AA	[ ]	—	✓
	Furnace AA	[✓]	—	—
	Mercury	[✓]	—	—
	Cyanides	[ ]	—	✓
A.1.7.3	Are all raw data to support all sample analyses and QC operations present?	[✓]	—	—
	Legible?	[✓]	—	—
	Properly Labeled?	[✓]	—	—

ACTION: If no for any of the above questions in sections A.1.7.1 through A.1.7.3, write Telephone Record Log and contact laboratory for resubmittals.

		YES	NO	N/A
	Are the correct concentration qualifiers used with final data?	[✓]	—	—
	ACTION: If no for any of the above, prepare Telephone Record Log, and contact laboratory for corrected data.			
A.1.9.3	Are EPA sample # s and corresponding laboratory sample ID # s the same as on the Cover Page, Form I's and in the raw data?	[✓]	—	—
	Was a brief physical description of samples given on Form I's?	[✓]	—	—
	Was the dilution of any sample diluted beyond the requirements of the contract noted on Form I or Form XIV?	—	[✓]	—
	ACTION: If no for any of the above, note under Contract-Problem/Non-Compliance of the "Data Assessment Narrative".			
A.1.10	Calibration			
A.1.10.1	Is record of at least 2 point calibration present for ICP analysis?	[✓]	—	—
	Is record of 5 point calibration present for Hg analysis?	[✓]	—	—
	Is record of 4 point calibration present for:			
	Flame AA?	[—]	—	✓
	Furnace AA?	[✓]	—	—
	Cyanides?	[—]	—	✓
	Is one calibration standard at the CRDL level for all AA (except Hg) and cyanides analyses?	[✓]	—	—
	ACTION: If no for any of the above, write in the Contract Problem/Non-Compliance section of the "Data Assessment Narrative".			

	YES	NO	N/A
ACTION: Flag as estimated (J) all positive data (not flagged with a "U") analyzed between a calibration standard with %R between 75-89% (65-79% for Hg; 70-84% for CN) or 111-125% (121-135% for Hg; 116-130% for CN) recovery and nearest good calibration standard. Qualify results <IDL as estimated (UJ) if the ICV or CCV %R is 75-89% (CN, 70-84% ; HG, 65-79%). Reject (red-line) as unacceptable data if recovery of the ICV or CCV is outside the range 75-125% (CN, 70-130%; Hg, 65-135%). Qualify five samples on either side of verification standard out of control limits.			
A.1.11.3 Was continuing calibration performed every 10 samples or every 2 hours?	[✓]	—	—
Was ICV for cyanides distilled?	[ ]	—	✓
ACTION: If no for any of the above, write in the Contract-Problem/Non-Compliance section of the "Data Assessment Narrative".			
A.1.12 **Form II B (CRDL Standards for AA and ICP)** -			
A.1.12.1 Was a CRDL standard (CRA) analyzed after initial calibration for all AA metals (~~except Hg~~)?	[✓]	—	—
Was a mid-range calib. verification standard distilled and analyzed for cyanide analysis?	[ ]	—	✓
Was a 2xCRDL (or 2xIDL when IDL>CRDL) analyzed (CRI) for each ICP run? (Note: CRI for Al, Ba, Ca, Fe, Mg, Na, or K is not required.)	[✓]	—	—
ACTION: If no for any of the above, flag as estimated all data falling within the affected ranges. The affected ranges are: AA Analysis - **True Value ± CRDL; ICP Analysis - **True Value ± 2CRDL; CN Analysis - **True Value ± 0.5 x True Value.			

**True value of CRA, CRI or mid-range standard. Substitute IDL for CRDL when IDL > CRDL. Compute the concentration of the missing mid-range standard from the calibration rang

		YES	NO	N/A
	ACTION: If no, prepare Telephone Record Log, contact laboratory and write in the Contract-Problems/ Non-Compliance section of the "Data Assessment Narrative".			
A.1.13.2	Circle on each Form III all calibration blank values that are above CRDL (or 2 x IDL when IDL > CRDL).			
	Are all calibration blanks (when IDL<CRDL) less than or equal to the Contract Required Detection Limits (CRDLs)?	[✓]	—	—
	Are all calibration blanks less than two times Instrument Detection Limit (when IDL>CRDL)?	[✓]	—	—
	ACTION: If no for any of the above, flag as estimated (J) positive sample results when raw sample value is less than or equal to calibration blank value analyzed between calibration blank with value over CRDL (or 2xIDL) and nearest good calibration blank. Flag five samples on either side of the calibration blank outside the control limits.			
A.1.14	FORM III (Preparation Blank) - (Note: The preparation blank for mercury is the same as the calibration blank.)			
A.1.14.1	Was one prep. blank analyzed for: each Sample Delivery Group (SDG)?	[✓]	—	—
	each batch of digested samples?	[✓]	—	—
	each matrix type?	[✓]	—	—
	both AA and ICP when both are used for the same analyte?	[ ]	—	✓
	ACTION: If no for any of the above, flag as estimated (J) all the associated positive data <10 x IDLs for which prep. blank was not analyzed.			
	NOTE: If only one blank was analyzed for more than 20 samples, then first 20 samples analyzed do not have to be flagged as estimated (J).			

		YES	NO	N/A
	ACTION: If no, flag as estimated (J) those positive results for which ICS recovery is between 121-150%; flag all sample results as estimated if ICS recovery falls within 50-79%; reject (red-line) those sample results for which ICS recovery is less than 50%; if ICS recovery is above 150%, reject positive results only (not flagged with a "U").			
A.1.16	Form V A (Spiked Sample Recovery - Pre-Digestion/Pre-Distillation)- (Note: Not required for Ca, Mg, K, and Na (both matrices), Al, and Fe (soil only.)			
A.1.16.1	Present and complete for: each SDG?	[✓]	___	___
	each matrix type?	[✓]	___	___
	each conc. range (i.e. low, med., high)?	[✓]	___	___
	For both AA and ICP when both are used for the same analyte?	[___]	___	___
	ACTION: If no for any of the above, flag as estimated (J) all the positive data less than four times the spiking levels specified in SOW for which spiked sample was not analyzed.			
	NOTE: If one spiked sample was analyzed for more than 20 samples, then first 20 samples analyzed do not have to be flagged as estimated (J).			
A.1.16.2	Was field blank used for spiked sample?	___	[✓]	___
	ACTION: If yes, flag all positive data less than 4 x spike added as estimated (J) for which field blank was used as spiked sample.			
A.1.16.3	Circle on each Form VA all spike recoveries that are outside control limits (75% to 125%).			
	Are all recoveries within control limits?	[___]	✓	___
	If no, is sample concentration greater than or equal to four times spike concentration?	[___]	✓	

Title: Evaluation of Metals Data for the Contract Laboratory Program
Appendix A.1: Data Assessment - Contract Compliance (Total Review)

Date: Jan. 1992
Number: HW-2
Revision: 11

		YES	NO	N/A
	ACTION: If less than 10%, reject all associated data; if between 10-74%, flag all associated data as estimated; if between 126-200%, flag as estimated all associated data was not flagged with a "U"; if greater than 200%, reject all associated data not flagged with a "U".			
A.1.17	Form VI (Lab Duplicates)			
A.1.17.1	Present and complete for: each SDG?	[✓]	___	___
	each matrix type?	[✓]	___	___
	each concentration range (i.e. low, med., high)?	[✓]	___	___
	both AA and ICP when both are used for the same analyte?	[___]	___	✓
	ACTION: If no for any the above, flag as estimated (J) all the data ≥CRDL* for which duplicate sample was not analyzed.			
	Note: 1. If one duplicate sample was analyzed for more than 20 samples, then first 20 samples do not have to be flagged as estimated.			
	2. If percent solids for soil sample and its duplicate differ by more than 1%, prepare a Form VI for each duplicate pair, report concentrations in ug/L on wet weight basis and calculate RPD or Difference for each analyte.			
A.1.17.2	Was field blank used for duplicate analysis?	___	[✓]	___
	ACTION: If yes, flag all data ≥CRDL* as estimated (J) for which field blank was used as duplicate.			
A.1.17.3	Are all values within control limits (RPD 20% or difference ≤ ±CRDL)?	[___]	✓	___
	If no, are all results outside the control limits flagged with an * on Form I's and VI?	[✓]	___	___
	ACTION: If no, write in the Contract - Problems/Non-Compliance section of "Data Assessment Narrative".			

* Substitute IDL for CRDL when IDL > CRDL.

		YES	NO	N/A
	ACTION: If yes, flag the associated data as estimated.			
A.1.18	Field Duplicates			
A.1.18.1	Were field duplicates analyzed?	[✓]	—	—
	ACTION: If yes, prepare a Form VI for each aqueous field duplicate pair. Prepare a Form VI for each soil duplicate pair, if percent solids for sample and its duplicate differ by more than 1%; report concentrations of soils in ug/l on wet weight basis and calculate RPDs or Difference for each analyte.			
	NOTE: 1. Do not calculate RPD when both values are less than IDL. 2. Flag all associated data only for field duplicate pair.			
A.1.18.2	Aqueous			
	Circle all values on self prepared Form VI for field duplicates that are: RPD > 50%, or Difference > CRDL*			
	Is any RPD greater than 50% where sample and duplicate are both greater than or equal to 5 times *CRDL?	—	[✓]	—
	Is any **difference between sample and duplicate greater than *CRDL where sample and/or duplicate is less than 5 times *CRDL?	—	[✓]	—
	ACTION: If yes, flag the associated data as estimated.			

* Substitute IDL for CRDL when IDL > CRDL.
** Use absolute values of sample and duplicate to calculate the difference.

	YES	NO	N/A
A.1.19.2 Aqueous LCS			
Circle on each Form VII the LCS percent recoveries outside control limits (80 - 120%) except for aqueous Ag and Sb.			
Is any LCS recovery: less than 50%?	___	[ ]	✓
between 50% and 79%?	___	[ ]	✓
between 121% and 150%?	___	[ ]	✓
greater than 150%?	___	[ ]	✓

ACTION: Less than 50%, reject (red-line) all data; between 50% and 79%, flag all associated data as estimated (J); between 121% and 150%, flag all positive (not flagged with a "U") results as estimated; greater than 150%, reject all positive results.

A.1.19.3 Solid LCS

NOTE: 1. If "Found" value of LCS is rejectable due to duplicate injections or analytical spike recovery criteria, regardless of LCS recovery, flag the associated data as estimated (J).
2. If IDL of an analyte is equal to or greater than true value of LCS, disregard the "Action" below even though LCS is out of control limits.

Is LCS "Found" value higher than the control limits on Form VII?	___	[✓]	___

ACTION: If yes, qualify all associated positive data as estimated.

Is LCS "Found" value lower than the Control limits on Form VII?	___	[✓]	___

ACTION: If yes, qualify all associated data as estimated.

YES NO N/A

ACTION: Flag as estimated (J) all the associated sample data ≥ 10xIDLs (or ≥ CRDL when 10xIDL ≤ CRDL) for which percent difference is greater than 10% but less than 100%. Reject (red-line) all the associated sample results equal to or greater than 10xIDLs (or ≥ CRDL when 10xIDL ≤ CRDL) for which PD is greater than or equal to 100%.

Note: Flag or reject on Form I's only the sample results whose associated raw data are ≥ 10xIDL (or ≥ CRDL when 10xIDL≤ CRDL)

A.1.21 Furnace Atomic Absorbtion (AA) QC Analysis

A.1.21.1 Are duplicate injections present in furnace raw data (except during full Method of Standard Addition) for each sample analyzed by GFAA? [✓] ___ ___

ACTION: If no, reject the data on Form I's for which duplicate injections were not performed.

A.1.21.2 Do the duplicate injection readings agree within 20% Relative Standard Deviation (RSD) or Coefficient of Variation (CV) for concentration greater than CRDL? [✓] ___ ___

Was a dilution analyzed for sample with analytical spike recovery less than 40%? [✓] ___ ___

ACTION: If no for any of the above, flag all the associated data as estimated.

A.1.21.3 Is *analytical spike recovery outside the control limits (85-115%) for any sample? ✓ [___] ___

ACTION: If yes, flag as estimated the affected sample results if the recovery is between 10-84%; if the recovery is between 115-200%, flag the associated positive sample results as estimated; reject the associated sample results if the recovery is less than 10%; reject positive sample results if the recovery is greater than 200%.

* Analytical spike is not required on the pre-digestion spiked sample.

		YES	NO	N/A
A.1.23	Dissolved/Total or Inorganic/Total Analytes -			
A.1.23.1	Were any analyses performed for dissolved as well as total analytes on the same sample(s).	___	[✓]	___
	Were any analyses performed for inorganic as well as total (organic + inorganic) analytes on the same sample(s)?	___	[✓]	___
	NOTE: 1. If yes, prepare a list comparing differences between all dissolved (or inorganic) and total analytes. Compute the differences as a percent of the total analyte only when dissolved concentration is greater than CRDL as well as total concentration. 2. Apply the following questions only if inorganic (or dissolved) results are (i) above CRDL, and (ii) greater than total constituents. 3. At least one preparation blank, ICS, and LCS should be analyzed in each analytical run.			
A.1.23.2	Is the concentration of any dissolved (or inorganic) analyte greater than its total concentration by more than 10%?	___	[___]	✓
A.1.23.3	Is the concentration of any dissolved (or inorganic) analyte greater than its total concentration by more than 50%?	___	[___]	✓
	ACTION: If more than 10%, flag both dissolved (or inorganic) and total values as estimated (J); if more than 50%, reject (red-line) the data for both values.			
A.1.24	Form I (Field Blank) -			
	QNote: Designate "Field Blank" as such on Form I.)			
A.1.24.1	Circle all field blank values on Form I that are greater than CRDL (or 2 x IDL when IDL > CRDL).			
	Is field blank concentration less than CRDL (or 2 x IDL when IDL > CRDL) for all parameters of associated aqueous and soil samples?	[___]	✓	___

		YES	NO	N/A
	Action: If no, flag as estimated all values less than five times IDL of the instrument whose IDL exceeds CRDL.			
A.1.25.3	**Form XI (Linear Ranges)**			
A.1.25.3.1	Was any sample result higher than high linear range of ICP.	—	[✓]	—
	Was any sample result higher than the highest calibration standard for non-ICP parameters?	—	[✓]	—
	If yes for any of the above, was the sample diluted to obtain the result on Form I?	[ ]	—	✓
	ACTION: If no, flag the result reported on Form I as estimated(J).			
A.1.26	**Percent Solids of Sediments**			
A.1.26.1	Are percent solids in sediment(s): < 50%?	✓	[ ]	—
	< 10%?	—	[✓]	—
	ACTION: If yes, qualify as estimated all the results of a sample that has per cent solids between 10%-50% (i.e. moisture content between 50%-90%). Reject all the results of a sample that has per cent solids less than 10% (i.e. moisture content greater than 90%).			
	NOTE: Reject or flag(J) only the sample results that were not previously rejected or flaged due to other QC criteria.			

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COVER PAGE - INORGANIC ANALYSES DATA PACKAGE

Lab Name: COLUMBIA ANALYTICAL SVCS. Contract: 68-D5-0135

Lab Code: COLUMB Case No.: 25136 SAS No.: SDG No.: MBPT90

SOW No.: ILM04.0

EPA Sample No.	Lab Sample ID.
MBPT90	K960720801
MBPT90D	K960720801
MBPT90S	K960720801
MBPT91	K960720802
MBPT92	K960720803
MBPT93	K960720804
MBPT94	K960720805
MBPT95	K960720806
MBPT96	K960720807
MBPT97	K960720808
MBPT98	K960720809
MBPT99	K960720810
MBPW00	K960720811
MBPW01	K960720812
MBPY00	K960720813
MBPY01	K960720814
MBPY02	K960720815

Were ICP interelement corrections applied? Yes/No YES

Were ICP background corrections applied? Yes/No YES

If yes-were raw data generated before application of background corrections? Yes/No NO

Comments:

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: Eileen M Arnold Name: Eileen M. Arnold

Date: 12/10/96 Title: Project Chemist 25136

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EPA SAMPLE NO.

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INORGANIC ANALYSIS DATA SHEET

MBPT90

Lab Name: COLUMBIA ANALYTICAL SVCS. Contract: 68-D5-0135

Lab Code: COLUMB Case No.: 25136 SAS No.: SDG No.: MBPT90

Matrix (soil/water): SOIL Lab Sample ID: K960720801

Level (low/med): LOW Date Received: 11/08/96

% Solids: 58.6

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	13100			P
7440-36-0	Antimony	4.5	U	N	P
7440-38-2	Arsenic	2.9	B		F
7440-39-3	Barium	62.6	B		P
7440-41-7	Beryllium	0.32	B		P
7440-43-9	Cadmium	1.0	U		P
7440-70-2	Calcium	5890			P
7440-47-3	Chromium	20.9			P
7440-48-4	Cobalt	8.6	B		P
7440-50-8	Copper	65.7		*	P
7439-89-6	Iron	15100			P
7439-92-1	Lead	55.3			F
7439-95-4	Magnesium	2500			P
7439-96-5	Manganese	217			P
7439-97-6	Mercury	0.23			CV
7440-02-0	Nickel	11.4	B		P
7440-09-7	Potassium	638	B		P
7782-49-2	Selenium	0.51	U		F
7440-22-4	Silver	0.55	U		P
7440-23-5	Sodium	480	B		P
7440-28-0	Thallium	0.17	U		F
7440-62-2	Vanadium	47.1			P
7440-66-6	Zinc	53.2			P
	Cyanide				

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: BROWN Clarity After: Artifacts:

Comments:

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EPA SAMPLE NO.

1

INORGANIC ANALYSIS DATA SHEET

MBPT91

Lab Name: COLUMBIA ANALYTICAL SVCS. Contract: 68-D5-0135

Lab Code: COLUMB Case No.: 25136 SAS No.: SDG No.: MBPT90

Matrix (soil/water): SOIL Lab Sample ID: K960720802

Level (low/med): LOW Date Received: 11/08/96

% Solids: 47.2

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	13300			P
7440-36-0	Antimony	5.6	U	N	P
7440-38-2	Arsenic	3.9	B		F
7440-39-3	Barium	186			P
7440-41-7	Beryllium	0.31	B		P
7440-43-9	Cadmium	1.3	U		P
7440-70-2	Calcium	9100			P
7440-47-3	Chromium	22.7			P
7440-48-4	Cobalt	5.9	B		P
7440-50-8	Copper	194		*	P
7439-89-6	Iron	15500			P
7439-92-1	Lead	90.3			F
7439-95-4	Magnesium	2930			P
7439-96-5	Manganese	182			P
7439-97-6	Mercury	0.49			CV
7440-02-0	Nickel	13.6	B		P
7440-09-7	Potassium	763	B		P
7782-49-2	Selenium	0.64	U		F
7440-22-4	Silver	0.68	U		P
7440-23-5	Sodium	914	B		P
7440-28-0	Thallium	0.21	U		F
7440-62-2	Vanadium	40.7			P
7440-66-6	Zinc	81.3			P
	Cyanide				

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: BROWN Clarity After: Artifacts:

Comments:

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INORGANIC ANALYSIS DATA SHEET

MBPT92

Lab Name: COLUMBIA ANALYTICAL SVCS. Contract: 68-D5-0135

Lab Code: COLUMB Case No.: 25136 SAS No.: SDG No.: MBPT90

Matrix (soil/water): SOIL Lab Sample ID: K960720803

Level (low/med): LOW Date Received: 11/08/96

% Solids: 82.7

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	10000			P
7440-36-0	Antimony	3.6	B	N	P
7440-38-2	Arsenic	3.1			F
7440-39-3	Barium	34.0	B		P
7440-41-7	Beryllium	0.23	B		P
7440-43-9	Cadmium	0.73	U		P
7440-70-2	Calcium	3410			P
7440-47-3	Chromium	15.8			P
7440-48-4	Cobalt	7.4	B		P
7440-50-8	Copper	29.1		*	P
7439-89-6	Iron	15000			P
7439-92-1	Lead	45.5		*	F
7439-95-4	Magnesium	1510			P
7439-96-5	Manganese	218			P
7439-97-6	Mercury	0.83			CV
7440-02-0	Nickel	8.2	B		P
7440-09-7	Potassium	459	B		P
7782-49-2	Selenium	0.36	U		F
7440-22-4	Silver	0.39	U		P
7440-23-5	Sodium	298	B		P
7440-28-0	Thallium	0.12	U		F
7440-62-2	Vanadium	33.1			P
7440-66-6	Zinc	251			P
	Cyanide				

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: BROWN Clarity After: Artifacts:

Comments:

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EPA SAMPLE NO.

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INORGANIC ANALYSIS DATA SHEET

MBPT93

Lab Name: COLUMBIA ANALYTICAL SVCS. Contract: 68-D5-0135

Lab Code: COLUMB Case No.: 25136 SAS No.: SDG No.: MBPT90

Matrix (soil/water): SOIL Lab Sample ID: K960720804

Level (low/med): LOW Date Received: 11/08/96

% Solids: 73.7

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	10900			P
7440-36-0	Antimony	3.6	U	N	P
7440-38-2	Arsenic	2.6	B		F
7440-39-3	Barium	46.5	B		P
7440-41-7	Beryllium	0.36	B		P
7440-43-9	Cadmium	1.1	B		P
7440-70-2	Calcium	5080			P
7440-47-3	Chromium	24.1			P
7440-48-4	Cobalt	8.8	B		P
7440-50-8	Copper	40.4		*	P
7439-89-6	Iron	15500			P
7439-92-1	Lead	69.2		*	F
7439-95-4	Magnesium	2570			P
7439-96-5	Manganese	251			P
7439-97-6	Mercury	0.32			CV
7440-02-0	Nickel	12.4			P
7440-09-7	Potassium	708	B		P
7782-49-2	Selenium	0.41	U		F
7440-22-4	Silver	0.43	U		P
7440-23-5	Sodium	416	B		P
7440-28-0	Thallium	0.14	U		F
7440-62-2	Vanadium	39.4			P
7440-66-6	Zinc	86.4			P
	Cyanide				

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: BROWN Clarity After: Artifacts:

Comments:

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EPA SAMPLE NO.

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INORGANIC ANALYSIS DATA SHEET

MBPT94

Lab Name: COLUMBIA ANALYTICAL SVCS. Contract: 68-D5-0135

Lab Code: COLUMB Case No.: 25136 SAS No.: SDG No.: MBPT90

Matrix (soil/water): SOIL Lab Sample ID: K960720805

Level (low/med): LOW Date Received: 11/08/96

% Solids: 72.8

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	18100			P
7440-36-0	Antimony	3.7	U	N	P
7440-38-2	Arsenic	2.9			F
7440-39-3	Barium	58.0			P
7440-41-7	Beryllium	0.25	B		P
7440-43-9	Cadmium	0.82	U		P
7440-70-2	Calcium	5400			P
7440-47-3	Chromium	64.1			P
7440-48-4	Cobalt	15.7			P
7440-50-8	Copper	70.1		*	P
7439-89-6	Iron	24800			P
7439-92-1	Lead	67.3			F
7439-95-4	Magnesium	3230			P
7439-96-5	Manganese	365			P
7439-97-6	Mercury	0.17			CV
7440-02-0	Nickel	26.1			P
7440-09-7	Potassium	928	B		P
7782-49-2	Selenium	0.41	U	W	F
7440-22-4	Silver	0.44	U		P
7440-23-5	Sodium	516	B		P
7440-28-0	Thallium	0.14	U		F
7440-62-2	Vanadium	81.1			P
7440-66-6	Zinc	142			P
	Cyanide				

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: BROWN Clarity After: Artifacts:

Comments: Fr 3

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EPA SAMPLE NO.

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INORGANIC ANALYSIS DATA SHEET

MBPT95

Lab Name: COLUMBIA ANALYTICAL SVCS. Contract: 68-D5-0135

Lab Code: COLUMB Case No.: 25136 SAS No.: SDG No.: MBPT90

Matrix (soil/water): SOIL Lab Sample ID: K960720806

Level (low/med): LOW Date Received: 11/08/96

% Solids: 81.2

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	13200			P
7440-36-0	Antimony	3.3	U	N	P
7440-38-2	Arsenic	3.3			F
7440-39-3	Barium	39.5	B		P
7440-41-7	Beryllium	0.42	B		P
7440-43-9	Cadmium	0.74	U		P
7440-70-2	Calcium	3870			P
7440-47-3	Chromium	37.2			P
7440-48-4	Cobalt	8.2	B		P
7440-50-8	Copper	38.1		*	P
7439-89-6	Iron	23300			P
7439-92-1	Lead	60.6			F
7439-95-4	Magnesium	2510			P
7439-96-5	Manganese	198			P
7439-97-6	Mercury	0.24			CV
7440-02-0	Nickel	11.4			P
7440-09-7	Potassium	602	B		P
7782-49-2	Selenium	0.37	U		F
7440-22-4	Silver	0.39	U		P
7440-23-5	Sodium	401	B		P
7440-28-0	Thallium	0.12	U		F
7440-62-2	Vanadium	47.4			P
7440-66-6	Zinc	56.9			P
	Cyanide				

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: BROWN Clarity After: Artifacts:

Comments:

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INORGANIC ANALYSIS DATA SHEET

MBPT96

Lab Name: COLUMBIA ANALYTICAL SVCS. Contract: 68-D5-0135

Lab Code: COLUMB Case No.: 25136 SAS No.: SDG No.: MBPT90

Matrix (soil/water): SOIL Lab Sample ID: K960720807

Level (low/med): LOW Date Received: 11/08/96

% Solids: 82.5

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	9600			P
7440-36-0	Antimony	3.2	U	N	P
7440-38-2	Arsenic	2.5			F
7440-39-3	Barium	40.5	B		P
7440-41-7	Beryllium	0.21	B		P
7440-43-9	Cadmium	0.73	U		P
7440-70-2	Calcium	4500			P
7440-47-3	Chromium	19.8			P
7440-48-4	Cobalt	8.0	B		P
7440-50-8	Copper	37.7		*	P
7439-89-6	Iron	13900			P
7439-92-1	Lead	63.6			F
7439-95-4	Magnesium	2260			P
7439-96-5	Manganese	239			P
7439-97-6	Mercury	0.17			CV
7440-02-0	Nickel	11.4			P
7440-09-7	Potassium	552	B		P
7782-49-2	Selenium	0.36	U	W	F
7440-22-4	Silver	0.39	U		P
7440-23-5	Sodium	454	B		P
7440-28-0	Thallium	0.12	U		F
7440-62-2	Vanadium	35.7			P
7440-66-6	Zinc	80.1			P
	Cyanide				

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: BROWN Clarity After: Artifacts:

Comments:

25136

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INORGANIC ANALYSIS DATA SHEET

MBPT97

Lab Name: COLUMBIA ANALYTICAL SVCS. Contract: 68-D5-0135

Lab Code: COLUMB Case No.: 25136 SAS No.: SDG No.: MBPT90

Matrix (soil/water): SOIL Lab Sample ID: K960720808

Level (low/med): LOW Date Received: 11/08/96

% Solids: 68.7

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	16600			P
7440-36-0	Antimony	3.9	U	N J	P
7440-38-2	Arsenic	2.9			F
7440-39-3	Barium	54.5	B		P
7440-41-7	Beryllium	0.43	B		P
7440-43-9	Cadmium	0.87	U		P
7440-70-2	Calcium	5780			P
7440-47-3	Chromium	33.1			P
7440-48-4	Cobalt	11.1	B		P
7440-50-8	Copper	47.9		*	P
7439-89-6	Iron	19900			P
7439-92-1	Lead	66.7		J	F
7439-95-4	Magnesium	2810			P
7439-96-5	Manganese	332			P
7439-97-6	Mercury	0.17			CV
7440-02-0	Nickel	14.2			P
7440-09-7	Potassium	845	B		P
7782-49-2	Selenium	0.44	U	W J	F
7440-22-4	Silver	0.47	U		P
7440-23-5	Sodium	643	B		P
7440-28-0	Thallium	0.17	B		F
7440-62-2	Vanadium	56.6			P
7440-66-6	Zinc	105			P
	Cyanide				

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: BROWN Clarity After: Artifacts:

Comments:

25136

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MBPT98

Lab Name: COLUMBIA ANALYTICAL SVCS. Contract: 68-D5-0135

Lab Code: COLUMB Case No.: 25136 SAS No.: SDG No.: MBPT90

Matrix (soil/water): WATER Lab Sample ID: K960720809

Level (low/med): LOW Date Received: 11/08/96

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	169	B		P
7440-36-0	Antimony	13.3	U		P
7440-38-2	Arsenic	0.50	U		F
7440-39-3	Barium	4.0	B		P
7440-41-7	Beryllium	0.40	U		P
7440-43-9	Cadmium	3.0	U		P
7440-70-2	Calcium	43.9	B		P
7440-47-3	Chromium	2.7	U		P
7440-48-4	Cobalt	3.8	U		P
7440-50-8	Copper	7.0	B		P
7439-89-6	Iron	119			P
7439-92-1	Lead	0.40	B		F
7439-95-4	Magnesium	156	B		P
7439-96-5	Manganese	1.8	B		P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	12.7	U		P
7440-09-7	Potassium	386	U		P
7782-49-2	Selenium	1.5	U		F
7440-22-4	Silver	1.6	U		P
7440-23-5	Sodium	92.0	B		P
7440-28-0	Thallium	0.50	U		F
7440-62-2	Vanadium	1.6	B		P
7440-66-6	Zinc	10.1	B		P
	Cyanide				

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

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INORGANIC ANALYSIS DATA SHEET

MBPT99

Lab Name: COLUMBIA ANALYTICAL SVCS. Contract: 68-D5-0135

Lab Code: COLUMB Case No.: 25136 SAS No.: SDG No.: MBPT90

Matrix (soil/water): SOIL Lab Sample ID: K960720810

Level (low/med): LOW Date Received: 11/08/96

% Solids: 77.6

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	10300			P
7440-36-0	Antimony	3.4	U	N J	P
7440-38-2	Arsenic	3.2			F
7440-39-3	Barium	46.5	B		P
7440-41-7	Beryllium	0.48	B		P
7440-43-9	Cadmium	0.77	U		P
7440-70-2	Calcium	5110			P
7440-47-3	Chromium	19.0			P
7440-48-4	Cobalt	6.1	B		P
7440-50-8	Copper	34.7		*	P
7439-89-6	Iron	14600			P
7439-92-1	Lead	38.9		J	F
7439-95-4	Magnesium	1670			P
7439-96-5	Manganese	161			P
7439-97-6	Mercury	3.2			CV
7440-02-0	Nickel	9.7	B		P
7440-09-7	Potassium	815	B		P
7782-49-2	Selenium	0.44	B	W J	F
7440-22-4	Silver	0.72	B		P
7440-23-5	Sodium	412	B		P
7440-28-0	Thallium	0.15	B		F
7440-62-2	Vanadium	30.8			P
7440-66-6	Zinc	59.1			P
	Cyanide				

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: BROWN Clarity After: Artifacts:

Comments: Pb J*

25136

U.S. EPA - CLP

EPA SAMPLE NO.

1

INORGANIC ANALYSIS DATA SHEET

MBPW00

Lab Name: COLUMBIA ANALYTICAL SVCS. Contract: 68-D5-0135

Lab Code: COLUMB Case No.: 25136 SAS No.: SDG No.: MBPT90

Matrix (soil/water): SOIL Lab Sample ID: K960720811

Level (low/med): LOW Date Received: 11/08/96

% Solids: 76.3

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	10500			P
7440-36-0	Antimony	3.5	U	N	P
7440-38-2	Arsenic	2.8			F
7440-39-3	Barium	48.7	B		P
7440-41-7	Beryllium	0.38	B		P
7440-43-9	Cadmium	0.79	U		P
7440-70-2	Calcium	5460			P
7440-47-3	Chromium	18.7			P
7440-48-4	Cobalt	6.6	B		P
7440-50-8	Copper	34.9		*	P
7439-89-6	Iron	14300			P
7439-92-1	Lead	29.6			F
7439-95-4	Magnesium	1440			P
7439-96-5	Manganese	152			P
7439-97-6	Mercury	4.7			CV
7440-02-0	Nickel	11.3			P
7440-09-7	Potassium	809	B		P
7782-49-2	Selenium	0.55	B	W	F
7440-22-4	Silver	0.48	B		P
7440-23-5	Sodium	418	B		P
7440-28-0	Thallium	0.16	B		F
7440-62-2	Vanadium	31.1			P
7440-66-6	Zinc	55.5			P
	Cyanide				

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: BROWN Clarity After: Artifacts:

Comments:

U.S. EPA - CLP

EPA SAMPLE NO.

1

INORGANIC ANALYSIS DATA SHEET

MBPW01

Lab Name: COLUMBIA ANALYTICAL SVCS. Contract: 68-D5-0135

Lab Code: COLUMB Case No.: 25136 SAS No.: SDG No.: MBPT90

Matrix (soil/water): SOIL Lab Sample ID: K960720812

Level (low/med): LOW Date Received: 11/08/96

% Solids: 65.5

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	12600			P
7440-36-0	Antimony	4.1	U	N J	P
7440-38-2	Arsenic	3.7			F
7440-39-3	Barium	62.7			P
7440-41-7	Beryllium	0.42	B		P
7440-43-9	Cadmium	0.92	U		P
7440-70-2	Calcium	7930			P
7440-47-3	Chromium	22.5			P
7440-48-4	Cobalt	8.4	B		P
7440-50-8	Copper	50.8		*	P
7439-89-6	Iron	18400			P
7439-92-1	Lead	66.9		J	F
7439-95-4	Magnesium	2520			P
7439-96-5	Manganese	277			P
7439-97-6	Mercury	1.9			CV
7440-02-0	Nickel	16.4			P
7440-09-7	Potassium	937	B		P
7782-49-2	Selenium	0.46	U	W J	F
7440-22-4	Silver	0.49	U		P
7440-23-5	Sodium	629	B		P
7440-28-0	Thallium	0.18	B		F
7440-62-2	Vanadium	40.0			P
7440-66-6	Zinc	140			P
	Cyanide				

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: BROWN Clarity After: Artifacts:

Comments:

U.S. EPA - CLP

EPA SAMPLE NO.

1

INORGANIC ANALYSIS DATA SHEET

MBPY00

Lab Name: COLUMBIA ANALYTICAL SVCS. Contract: 68-D5-0135

Lab Code: COLUMB Case No.: 25136 SAS No.: SDG No.: MBPT90

Matrix (soil/water): SOIL Lab Sample ID: K960720813

Level (low/med): LOW Date Received: 11/08/96

% Solids: 78.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	14600			P
7440-36-0	Antimony	3.4	U	N	P
7440-38-2	Arsenic	3.4			F
7440-39-3	Barium	44.3	B		P
7440-41-7	Beryllium	0.27	B		P
7440-43-9	Cadmium	0.77	U		P
7440-70-2	Calcium	5250			P
7440-47-3	Chromium	27.7			P
7440-48-4	Cobalt	11.2	B		P
7440-50-8	Copper	51.5		*	P
7439-89-6	Iron	38900			P
7439-92-1	Lead	66.7			F
7439-95-4	Magnesium	2600			P
7439-96-5	Manganese	320			P
7439-97-6	Mercury	0.34			CV
7440-02-0	Nickel	19.2			P
7440-09-7	Potassium	707	B		P
7782-49-2	Selenium	0.38	U	W	F
7440-22-4	Silver	0.41	U		P
7440-23-5	Sodium	522	B		P
7440-28-0	Thallium	0.15	B		F
7440-62-2	Vanadium	48.8			P
7440-66-6	Zinc	74.2			P
	Cyanide				

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: BROWN Clarity After: Artifacts:

Comments:

25136

U.S. EPA - CLP

EPA SAMPLE NO.

1

INORGANIC ANALYSIS DATA SHEET

MBPY01

Lab Name: COLUMBIA ANALYTICAL SVCS. Contract: 68-D5-0135

Lab Code: COLUMB Case No.: 25136 SAS No.: SDG No.: MBPT90

Matrix (soil/water): SOIL Lab Sample ID: K960720814

Level (low/med): LOW Date Received: 11/08/96

% Solids: 80.2

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	14900			P
7440-36-0	Antimony	3.3	U	N	P
7440-38-2	Arsenic	2.7			F
7440-39-3	Barium	44.5	B		P
7440-41-7	Beryllium	0.26	B		P
7440-43-9	Cadmium	0.75	U		P
7440-70-2	Calcium	4970			P
7440-47-3	Chromium	27.1			P
7440-48-4	Cobalt	11.3	B		P
7440-50-8	Copper	43.5		*	P
7439-89-6	Iron	19700			P
7439-92-1	Lead	55.9			F
7439-95-4	Magnesium	2680			P
7439-96-5	Manganese	259			P
7439-97-6	Mercury	0.19			CV
7440-02-0	Nickel	14.3			P
7440-09-7	Potassium	774	B		P
7782-49-2	Selenium	0.37	U	W	F
7440-22-4	Silver	0.40	U		P
7440-23-5	Sodium	464	B		P
7440-28-0	Thallium	0.12	B	W	F
7440-62-2	Vanadium	49.7			P
7440-66-6	Zinc	59.3			P
	Cyanide				

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: BROWN Clarity After: Artifacts:

Comments:

25136

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.: MBPY02

Lab Name: COLUMBIA ANALYTICAL SVCS. Contract: 68-D5-0135

Lab Code: COLUMB Case No.: 25136 SAS No.: SDG No.: MBPT90

Matrix (soil/water): SOIL Lab Sample ID: K960720815

Level (low/med): LOW Date Received: 11/08/96

% Solids: 79.9

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	10800			P
7440-36-0	Antimony	3.3	U	N	P
7440-38-2	Arsenic	2.6			F
7440-39-3	Barium	41.4	B		P
7440-41-7	Beryllium	0.31	B		P
7440-43-9	Cadmium	0.75	U		P
7440-70-2	Calcium	5210			P
7440-47-3	Chromium	24.9			P
7440-48-4	Cobalt	9.1	B		P
7440-50-8	Copper	40.1		*	P
7439-89-6	Iron	16700			P
7439-92-1	Lead	50.3		*	F
7439-95-4	Magnesium	2840			P
7439-96-5	Manganese	256			P
7439-97-6	Mercury	0.72			CV
7440-02-0	Nickel	13.3			P
7440-09-7	Potassium	624	B		P
7782-49-2	Selenium	0.38	U	W	F
7440-22-4	Silver	0.40	U		P
7440-23-5	Sodium	390	B		P
7440-28-0	Thallium	0.13	B		F
7440-62-2	Vanadium	40.6			P
7440-66-6	Zinc	54.8			P
	Cyanide				

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: BROWN Clarity After: Artifacts:

Comments:

2513