



TETRA TECH EM INC.

July 11, 2008

Lynn Nakashima
Project Manager
Department of Toxic Substances Control
700 Heinz Avenue
Berkeley, CA 94710

**Subject: Memorandum for a Time-Critical Removal Action at Two Campfire Locations in the Western Transition Area
University of California, Berkeley, Richmond Field Station, Richmond, California**

Dear Ms Nakashima:

This memorandum has been prepared on behalf of the Regents of the University of California in accordance with the California Environmental Protection Agency, Department of Toxic Substance Control (DTSC), Site Investigation and Remediation Order, Docket No. ISE-RAO 06/07-004, dated September 15, 2006. This memorandum documents the University of California Berkeley's (UC Berkeley) decision to undertake a time-critical removal action (TCRA), which is planned to occur in spring of 2008, in the Western Transition Area (WTA), at the UC Berkeley, Richmond Field Station (RFS), Richmond, California.

This memorandum has been modified to incorporate discussions with DTSC during our meetings on May 16 and July 10, 2008. Per DTSC's request, UC Berkeley has removed all references to cleanup levels for metals at the two campfire locations and modified the cleanup goal for polychlorinated biphenyls to a visual goal of removing ash and debris. Confirmation samples will be collected after the material is removed. Also, the truck route specifying that trucks leaving RFS will travel west on Meade Street, then take the Regatta on-ramp to Interstate 580 to Interstate 80 has been added to the proposed actions.

If you have any questions or comments regarding this submittal, please call me at (415) 222-8283.

Sincerely,

Jason Brodersen, P.G.
Project Manager

Enclosure: Memorandum for a Time-Critical Removal Action at Two Campfire Locations in the Western Transition Area, dated July 11, 2008

**Memorandum for a
Time-Critical Removal Action
at Two Campfire Locations in the
Western Transition Area**

University of California, Berkeley
Richmond Field Station, Richmond, California

Prepared for
Office of Environment, Health and Safety
University of California, Berkeley
317 University Hall #1150
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July 11, 2008

Prepared by



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1 Campfire Locations in the Western Transition Area

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1 Chemical- and Location-Specific Applicable or Relevant And Appropriate Requirements

2 Action-Specific Applicable or Relevant and Appropriate Requirements

ACRONYMS AND ABBREVIATIONS

§	Section
40 CFR	Title 40 <i>Code of Federal Regulations</i>
ARAR	Applicable or relevant and appropriate requirement
bgs	Below ground surface
Ca-HSC	<i>California Health and Safety Code</i>
CCR	<i>California Code of Regulations</i>
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CHHSL	California Human Health Screening Levels
CSV	Cherokee Simeon Ventures
DTSC	Department of Toxic Substances Control
EPA	U.S. Environmental Protection Agency
IDW	Investigation-derived waste
mg/kg	Milligram per kilogram
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
PCB	Polychlorinated biphenyl
RCRA	Resource Conservation and Recovery Act
RFS	Richmond Field Station
TCRA	Time-critical removal action
Tetra Tech	Tetra Tech EM Inc.
tit.	Title
TSCA	Toxic Substances Control Act
UC	University of California
USC	United States Code
WTA	Western Transition Area

MEMORANDUM

Ms. Barbara Cook, P.E.
Branch Chief
Site Mitigation Branch
California Department of Toxic Substances Control
700 Heinz Avenue
Berkeley, CA 94710

July 11, 2008

Subject: Memorandum for a Time-Critical Removal Action at Two Campfire Locations in the Western Transition Area, University of California, Richmond Field Station, Richmond, California

I. PURPOSE

This memorandum was prepared in accordance with the California Environmental Protection Agency, Department of Toxic Substances Control (DTSC), Site Investigation and Remediation Order, Docket No. ISE-RAO 06/07-004, dated September 15, 2006 (DTSC 2006). The purpose of this memorandum is to document the University of California (UC) Berkeley's decision to undertake a time-critical removal action (TCRA) for the elevated concentrations of polychlorinated biphenyls (PCB) in two adjacent campfire locations where surficial ash and debris were identified in the Western Transition Area (WTA) at the Richmond Field Station (RFS) in Richmond, California. Figure 1 provides a map of the WTA and shows the two campfire locations (WTAA-001 and WTAA-002). At the campfire locations, PCBs are present at elevated concentrations that may pose an unacceptable risk to workers removing invasive and noxious weeds. Total PCB concentrations exceed the requirements contained in U.S. EPA's performance-based disposal requirements (40 CFR 761.61(b)) for PCB remediation waste.

This TCRA is consistent with Chapter 6.8 of the *California Health and Safety Code* (Ca-HSC), and with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (Title [tit.] 42 *United States Code* [USC] Section [§] 9601 et seq.). This removal action is scheduled to begin in September of 2008, and be completed in 1 day.

The proposed TCRA will involve:

1. Removing surficial ash and debris in the two adjacent campfire locations
2. Excavating surface soils containing PCBs in order to protect weed abatement workers; the area to be excavated will be to an anticipated maximum depth of 2 feet below ground surface (bgs) or a visual confirmation of the removal of all ash and debris

3. Collecting eight discrete confirmation samples: one sample from the bottom of each excavation and three samples from each of the excavation sidewalls. Sidewall locations will be finalized in the field based on the size and shape of the excavations
4. Disposing of the excavated ash, debris, soil, and investigation-derived waste (IDW) at a Class I landfill

Under this TCRA, an estimated 4 cubic yards of contaminated soil will be excavated to a depth of 2 feet bgs or a visual confirmation of the removal of all foreign matter and disposed of at an appropriately-permitted off-site facility. The TCRA is consistent with the factors set forth in the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), Title 40 *Code of Federal Regulations* (40 CFR) § 300.415; and (2) Ca-HSC § 25356.1, based on the finding of actual or potential exposure of nearby populations, animals, or food chains to hazardous substances or pollutants or contaminants.

II. SITE CONDITIONS AND BACKGROUND

A. SITE DESCRIPTION

1. Physical Location

The RFS is owned by The Regents of the University of California and is located at 1301 South 46th Street in Richmond, California, in western Contra Costa County. The RFS is situated south and west of Highway 580, approximately 5 miles northwest of UC Berkeley's central campus (see Figure 1).

The RFS property is 152 acres, consisting of 100 acres of uplands, with the remainder of the property consisting of tidal marsh or bay lands (offshore areas). The climate is characterized as Mediterranean. The average annual precipitation in the area is 22 inches. The precipitation occurs mostly in the winter, with the most rain typically falling in January. Residences, public areas, and facilities exist within a 1-mile radius of the RFS. The upland portion of the RFS property is adjacent to vulnerable or sensitive animal populations and habitats and natural resources, including a tidal salt marsh and coastal terrace prairie. Several large industrial sites border the RFS property to the north, west, and east. Bio-Rad Laboratories is located to the west of the RFS. The adjacent property to the east of RFS is the location of former chemical production operations previously owned by several entities, including Stauffer and Zeneca, and is currently owned by Cherokee Simeon Ventures (CSV). The former Liquid Gold Corporation site is located east of the former Zeneca site. Hoffman Marsh and Point Isabel are also located slightly farther to the east, approximately 1.5 miles from RFS. The City of Richmond has a population of approximately 100,000 and surrounds the property to the north, west, and east. The Marina Bay neighborhood of Richmond is the closest residential community to the site, located approximately 250 feet to the west across Meeker Slough.

The WTA is in the southwestern portion of the RFS (see Figure 1). The WTA is bounded to the north by the Upland Area and to the south by Western Stege Marsh. The East Bay Regional Park District Trail (Bay Trail) is located south of Western Stege Marsh. Further south and bordering RFS are tidal mudflats fronting the Richmond Inner Harbor and the central San Francisco Bay. Meeker Slough and the Marina Bay housing development are located west of WTA. Marina Bay is a mixed-use residential and commercial development of approximately 350 acres with 2,100 residential units. The two campfire locations (WTAA-001 and WTAA-002) are in the WTA, approximately 100 feet east of Meeker Slough, but outside the tidal zone.

2. Site Characteristics

The WTA can be described with the following characteristics:

- Comprised of mostly non-native ruderal habitat representing a transition zone between the upland areas and Western Stege Marsh
- Consists of about 5 feet of fill material placed onto a former tidal mudflat beginning in the 1960s (Tetra Tech 2007)
- Bay marsh and mudflats bordering the WTA provide habitat for a variety of flora and fauna including the California clapper rail

UC Berkeley plans to remove invasive and noxious weeds at the WTA as part of the Invasive/Exotic Vegetation Management Program (BBL 2004). Other than the planned noxious weed abatement, no other activities are planned at the WTA. Land use at the WTA is unlikely to change in the future based on the reasonably foreseeable future land use of the RFS as commercial/educational and open space (DTSC Order Docket No. I/SE-RAO 06-07-004 Section 5.1.2 [DTSC 2006]).

3. Removal Site Evaluation

During sampling activities at the WTA on January 17, 2008, to characterize surface soil prior to noxious weed abatement, two locations (WTAA-001 and WTAA-002) which appeared to be the result of previous, unauthorized campfires were identified. The two adjacent locations contain surficial ash and debris such as empty bottles and cans. The campfire areas are shown on Figure 1. Results of soil samples from these campfire locations show elevated concentrations of PCBs to which workers removing invasive and noxious weeds may be exposed (Tetra Tech 2008).

The two locations planned for excavation are within the WTA, which is surrounded by a fence restricting access. No other areas containing ash or debris were identified within the WTA during the comprehensive sampling conducted on January 17, 2008.

4. Release or Threatened Release

Workers removing invasive and noxious weeds at the WTA may be exposed to elevated levels of PCBs at the two campfire locations. Weed removal activities may include removing plants and associated roots by hand and may expose workers to soils between 0 to 6 inches bgs. Potential routes of exposure to weed abatement workers include dermal contact, incidental ingestion, and inhalation of dust.

B. OTHER ACTIONS TO DATE

1. Previous Actions

In January 2008, surface samples were collected from three decision units (WTA-DU1-001, WTA-DU2-001, and WTA-DU3-001) within the WTA using a multi-incremental sampling method (Tetra Tech 2008). One multi-increment soil sample was also collected from each of the two campfire locations (WTAA-001 and WTAA-002). The multi-increment soil sample consisted of 10 subsamples, or increment locations, collected from 0 to 12 inches bgs, which is the total depth of ash piles. No other sampling or remedial activities have occurred at the two campfire locations.

2. Current Actions

No investigations, remediation activities, or weed abatement are currently being conducted at the two campfire locations; and workers are advised not to access the two campfire areas. No activities are to be conducted in the marked areas until the removal action has been completed.

C. STATE AND LOCAL AUTHORITIES' ROLES

1. State and Local Actions to Date

UC Berkeley representatives will submit this Memorandum to DTSC for approval of the proposed TCRA.

2. Potential for Continued State and Local Response

DTSC has provided general assistance during remediation activities at RFS and will likely continue to do so during the TCRA. UC Berkeley's RFS remediation project funds likely will continue to be the exclusive source of funding for the TCRA.

III. THREATS TO PUBLIC HEALTH OR WELFARE OR THE ENVIRONMENT, AND STATUTORY AND REGULATORY AUTHORITIES

In accordance with the 1990 NCP, the following factors shall be considered in determining the appropriateness of a removal action (40 CFR § 300.415[b][2]):

- Actual or potential exposure to hazardous substances or pollutants or contaminants by nearby populations, animals, or food chains
- Actual or potential contamination of drinking water supplies or sensitive ecosystems
- Hazardous substances or pollutants or contaminants in drums, barrels, tanks, or other bulk storage containers, that may pose a threat of release
- High levels of hazardous substances or pollutants or contaminants in soils largely at or near the surface that may migrate
- Weather conditions that may cause hazardous substances or pollutants or contaminants to migrate or be released
- Threat of fire or explosion
- Other situations or factors that may pose threats to public health or welfare or the environment

As part of its investigation of the site, UC Berkeley determined that PCB concentrations at WTAA-001 pose a potential threat to workers conducting weed abatement. This TCRA is consistent with Ca-HSC § 25356.1 and CERCLA § 104(a) and is appropriate to reduce these threats. The potential threats are discussed below.

A. THREATS TO PUBLIC HEALTH OR WELFARE

The following threats apply to conditions at the two campfire locations in the WTA:

- Actual or potential exposure to hazardous substances or pollutants or contaminants by nearby populations, animals, or food chains

PCBs—hazardous substances as defined in 40 CFR § 302.4—are present at elevated concentrations, which trigger this self directed cleanup. Soils near the ground surface are a potential threat because they contain PCBs at concentrations that may pose an unacceptable risk to noxious weed abatement workers. Potential exposure pathways include dermal contact, incidental ingestion, and inhalation of dust. Removal of invasive and noxious weeds at the WTA is a component of the Invasive/Exotic Management Program implemented by RFS to satisfy the requirement of the U.S. Fish and Wildlife Services Biological Opinion to the Nationwide Permit 38 issued by the U.S. Army Corps of Engineers in 2003 (Tetra Tech 2007). A removal action in accordance with the requirements of the DTSC Site Investigation and Remediation Order, Docket No. ISE-RAO 06/07-004 (DTSC 2006) is appropriate to reduce the potential threat to noxious weed abatement workers.

B. THREATS TO THE ENVIRONMENT

This TCRA is intended to address the imminent threat to human health and may also reduce any potential threats to the environment.

IV. ENDANGERMENT DETERMINATION

The detected concentration of total PCBs in the surface soil sample (WTAA-001) from the first campfire is 80.4 mg/kg, which poses a potential health threat to weed abatement workers.

Actual or threatened releases of PCBs in soils from the two campfire locations, if not addressed by implementing the response action selected in this memorandum, may present a potential substantial endangerment to environmental or human health.

V. PROPOSED ACTIONS AND ESTIMATED COSTS

A. PROPOSED ACTION

The objectives of this TCRA are as follows:

- Limit the potential exposure of noxious weed abatement workers to PCBs in the soil.
- Excavate soil containing elevated concentrations of PCBs at the two campfire locations in the WTA using only hand tools.
- Remove ash and debris in the two campfire locations in the WTA.

1. Proposed Action Description

The following removal action activities are proposed to meet the TCRA objectives:

- Hand excavate the ash, debris, and soil containing PCBs to an approximate depth of 2 feet bgs or a visual confirmation of the removal of all foreign matter.
- Collect soil samples at the bottoms and sidewalls of the excavations. Four discrete samples will be collected 0 to 6 inches below the bottoms and sidewalls of each excavation location. The exact sample locations will be determined with DTSC in the field based on the size and shape of the excavations. The confirmation samples will be analyzed for PCBs using EPA methods. Sample results will be discussed with DTSC to determine what follow-up actions are necessary, if any. Sampling data will be incorporated into the RFS database for evaluation in the future remedial investigation study.

- Dust control will be implemented if needed the day of the excavation; however due to the small exvaction size and the use of hand excavation, dust is not anticipated to be a concern.
- Temporarily store excavated materials for waste profiling for the landfill. The containers containing the excavated soil will be carried to a secure location by Building 120 and covered to prevent potential runoff.
- Dispose excavated soil at an approved Class I landfill.

The TCRA likely will result in removal of a total of 4 cubic yards of soil containing elevated concentrations of PCBs. Trucks removing the covered containers containing excavated waste will leave RFS, travel west on Meade Street, then take the Regatta on-ramp to Interstate 580 to Interstate 80 to dispose of the containers at an appropriately-permitted off-site facility.

2. Contribution to Remedial Performance

Removal of ash and debris and excavation of soil containing elevated concentrations of PCBs will limit potential exposure of workers removing invasive and noxious weeds at the two campfire locations in the WTA. The TCRA will address the imminent threat to human health will likely reduce potential threat to the environment due to exposeure of PCB-contaminated soils.

3. Description of Alternative Technologies

Excavation and off-site disposal is the only alternative evaluated in this TCRA. The campfire locations are small, contained areas. Excavation and off-site disposal are easily implemented in these small areas and provide the greatest short- and long-term effectiveness. The paragraphs below explain how this alternative meets selection criteria (effectiveness, implementability, and cost) used to evaluate alternative technologies.

The TCRA will effectively protect human and environmental health from PCBs in soil by removing and disposing of contaminated soil at a permitted off-site disposal facility, while complying with the chemical- and action-specific applicable or relevant and appropriate requirements (ARAR) identified below in Section V.A.4. The work will include control measures for fugitive dust emissions if deemed necessary to promote compliance with the ARARs specific to waste characterization and disposal actions.

The proposed removal action provides effective short- and long-term reduction of exposure to PCBs by removing contaminated soils. In the short-term, exposure to workers involved in the removal action would be minimized through the proper use of engineering controls, basic hygiene, and personal protective equipment.

This alternative does not present any technical or administrative constraints on implementability, and has been successfully implemented at other areas of RFS to provide protection of human health.

This TCRA is estimated to cost \$6,200 for excavation and off-site disposal.

4. Applicable or Relevant and Appropriate Requirements

The NCP, § 300.415(j), requires that removal actions must attain ARARs to the extent practicable, considering the exigencies of the situation.

Applicable requirements are defined as cleanup standards, standards of control, and other substantive environmental protection requirements, criteria, or limitations promulgated under federal environmental or state environmental, or facility siting laws that specifically address a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance.

Relevant and appropriate requirements are defined as cleanup standards, standards of control, and other substantive requirements, criteria, or limitations promulgated under federal environmental, or state environmental, or facility siting laws that, while not “applicable” to a hazardous substance, pollutant, or contaminant, remedial action, location, or other circumstance, address problems or situations sufficiently similar to those encountered at the site and are well-suited to the particular site.

There are three types of ARARs. The first type includes “chemical-specific” requirements. These ARARs set limits on concentrations of specific hazardous substances, contaminants, and pollutants in the environment. Examples of this type of ARAR are ambient water quality criteria and drinking water standards. The second type of ARAR includes location-specific requirements for activities based on site characteristics, including activities in wetlands, floodplains, and historic sites. The third type of ARAR includes action-specific requirements, which are technology-based restrictions that are triggered by the type of action under consideration. Examples of action-specific ARARs are regulations for waste treatment, storage, and disposal under the Resource Conservation and Recovery Act (RCRA).

ARARs must be identified on a site-specific basis from information about specific chemicals at the site, specific features of the site location, and actions that are being considered as removal actions.

The following potential federal chemical-, location-, and action-specific ARARs were identified for the removal action at the two campfire locations.

Chemical-Specific ARARs

- Requirements under RCRA for identification of hazardous waste (Title 42 USC, Chapter 82, §§6901–6991[i], and *California Code of Regulations* [Cal. Code Regs.] tit. 22, §§66261.21, 66261.22[a][1], 66261.23, 66261.24[a][1], and 66261.100)
- California Code of Regulations (CCR) tit. 27, §§ 20210, 20220, and 20230 (defining designated waste, nonhazardous waste, and inert waste).
- CCR tit. 22, §§66261.22(a)(3) and (4), 66261.24(a)(2)-(a)(8), 66261.101, 66261.3(a)(2)(C), or 66261.3(a)(2)(F) (defining non-RCRA hazardous waste)
- Code of Federal Regulations (CFR) 40 CFR 761.61(b) (performance-based disposal requirements of PCB remediation waste)

Location-Specific ARARs

- Requirements under Endangered Species Act, Section 7, 16 U.S.C. 1531 *et seq.* (effects of remediation on the endangered California clapper rail)
- Requirements under U.S. Fish and Wildlife Service Biological Opinion Letter No. 1-1-03-F-0228 (regulation of acceptable remediation within California clapper rail habitat)

Action-Specific ARARs

- CCR tit. 22, §§ 66261.10 and 66261.11 (determination of hazardous waste)
- Cal. Health and Safety Code, § 25123.3 (non-RCRA hazardous waste accumulation and storage requirements)
- Bay Area Air Quality Management District Regulation 6-302 (prohibits emissions from any source for a period of more than 3 minutes in an hour equal to or greater than 20 percent opacity)
- California Environmental Quality Act (CEQA) – CCR Title 11 Section 15000-15387 *et seq.* mandates environmental impact review of certain actions taken by California governmental agencies or by private parties who are regulated by California agencies unless a categorical or statutory exemption applies. The TCRA will be reviewed by DTSC in accordance with CEQA.
- Health and Safety for On-Site Workers – Construction Activities – CCR Title 8 Section 5192 and 40 CFR 1910.120. Workers involved in hazardous substances operations associated with cleanup of sites must perform these operations in accordance with the health and safety requirements of Cal/OSHA.

The proposed TCRA will comply with the ARARs identified above to the maximum extent practicable. Tables 1 and 2 present in detail the chemical-, location-, and action-specific ARARs.

5. Project Schedule

The TCRA for the removal of soil from the two campfire locations is expected to begin in September 2008 to help avoid any disturbance of clapper rails. The hand excavation of contaminated soil is expected to require 1 day. Soil will be placed in 1 cubic yard covered containers and transported to a secure location outside of the WTA near Building 120. Confirmation and waste profiling samples will be collected and submitted to an off-site laboratory for analysis for waste profiling for the landfill. Upon receipt of sample results below cleanup criteria, the removal action will be complete, and the waste will be transported and disposed of in a Class I landfill.

B. ESTIMATED COSTS

UC Berkeley has made a present-worth estimate of the removal action costs. The estimated costs include the direct and indirect capital costs of the proposed removal action. Post-removal site control costs are not anticipated for this TCRA. The items discussed below are considered to be capital costs.

Direct Capital Costs

Excavation costs
Equipment and material costs
Transport and disposal costs
Construction Oversight and Air Monitoring
Analytical costs

Indirect Capital Costs

Start-up and shutdown costs

The estimated total present worth cost for the proposed TCRA is \$6,200 based on the following assumptions:

- Backfilling will not be required as a part of the removal action
- One 11-hour day will be sufficient to complete the excavation and sampling (7am to 6 pm)
- The health and safety plan for RFS has been prepared (Tetra Tech 2006)
- All work will be done under safety Level D
- Waste disposal will be \$64 per ton (Waste Management, Inc. 2007)

- Waste disposal transportation costs will be \$60 per cubic yard (Waste Management, Inc. 2007)
- Labor costs will be \$121 per hour for excavation. Labor costs include one project manager at \$72.75 per hour, one technician at \$48.25 per hour, PPE for both workers, one gear truck, and hand tools (21st Century Environmental Inc.)
- Laboratory analytical costs will be \$2,686 (includes equipment for shipping and 1-to-3-day turnaround time)

VI. EXPECTED CHANGE IN THE SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN

The two locations have been cordoned off and no weed abatement activities will be conducted at or adjacent to the campfire areas. If action should be delayed or not taken and site controls are not maintained, then future weed abatement workers may be exposed to soil PCB concentrations that may pose a health risk. A delay in action would not be protective of human health because weed abatement workers are expected to work at the WTA as part of Invasive/Exotic Management Program implemented by RFS.

VII. PUBLIC INVOLVEMENT

UC Berkeley will publish a Public Notice regarding the public comment period for the Administrative Record within 60 days of the start of the TCRA. UC Berkeley will work with DTSC to ensure the Administrative Record is current prior to submitting the Public Notice.

VIII. OUTSTANDING POLICY ISSUES

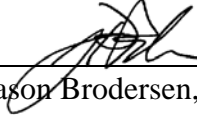
No outstanding policy issues exist for this TCRA.

IX. RECOMMENDATION

This memorandum identifies and analyzes the TCRA necessary to address excavation of soil contaminated with PCBs in the two campfire locations in the WTA.

This TCRA is recommended because it meets the criteria of effectiveness, implementability, and cost, as described in Section V. The proposed alternative provides short- and long-term effectiveness in protecting human receptors from PCBs in soil by removing contaminated soil and disposing of the soil at an off-site disposal facility. This alternative does not involve any technical or administrative constraints on implementation. The estimated total cost of this proposed alternative is \$6,200.

This decision document supports the removal action for PCBs in soil at the two campfire locations in the WTA at the RFS in Richmond, California. The removal action was developed in accordance with Ca-HSC § 25356.1 and is consistent with CERCLA. This decision is based on the Administrative Record for the site.



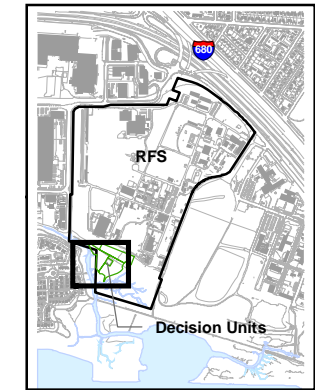
Jason Brodersen, P.G., Project Manager

July 11, 2008
Date

X. REFERENCES

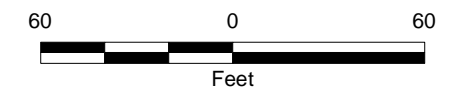
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FIGURE



- Campfire Sampling Locations
- ▭ Decision Unit Boundary (Approximate)

Note:
Image date March 2005, courtesy of BBL Inc.



Richmond Field Station
University of California, Berkeley

FIGURE 1

CAMPFIRE LOCATIONS IN WESTERN TRANSITION AREA

Final Memorandum for a TCRA at
Western Transition Area

TABLES

TABLE 1: CHEMICAL- AND LOCATION-SPECIFIC APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

Memorandum for a Time-Critical Removal Action at Two Campfire Locations in the Western Transition Area, Richmond Field Station

Requirement	Prerequisite	Citation	ARAR Determination	Comments
Chemical-Specific Federal Requirements: Resource Conservation and Recovery Act (Title 42 USC, Chapter 82, §§6901–6991[i])				
Defines Resource Conservation and Recovery Act hazardous waste. A solid waste is characterized as toxic based on the TCLP, if the waste exceeds the TCLP maximum concentrations.	Waste	CCR tit. 22, §§ 66261.21, 66261.22(a)(1), 66261.23, 66261.24(a)(1), and 66261.100	Applicable	These requirements are applicable for determining whether waste is hazardous.
Chemical-Specific State Requirements				
Definition of “non-RCRA hazardous waste.”	Waste	CCR tit. 22, §§ 66261.22(a)(3) and (4), 66261.24(a)(2)–(a)(8), 66261.101, 66261.3(a)(2)(C), or 66261.3(a)(2)(F)	Applicable	Applicable for determining whether a waste is a non-RCRA hazardous waste.
Definitions of designated waste, nonhazardous waste, and inert waste.	Waste	CCR tit. 22, §§ 20210, 20220, and 20230	Applicable	Potential ARARs for classifying waste.
Performance-based disposal requirements of PCB remediation waste.	Waste	40 CFR 761.61(b)	Applicable	Cleanup and disposal options for PCB remediation waste.
Health and safety requirements pertaining to accumulation or storage of “non-RCRA waste.”	Waste	Cal. Health and Safety Code, § 25123.3	Applicable	Health and safety requirements to be met during accumulation and storage of non-RCRA waste.
Location-Specific Requirements				
Requirements under Endangered Species Act, Section 7, 16 U.S.C. 1531 et seq. (effects of remediation on the endangered California clapper rail)	Potential impact	U.S.C. 1531, Section 7 et seq	Applicable	Removal activities will not impact or harass endangered California clapper rail.
Requirements under U.S. Fish and Wildlife Service (regulation of acceptable remediation within California clapper rail habitat)	Potential impact	Biological Opinion Letter No. 1-1-03-F-0228	Applicable	Removal activities will not impact or harass endangered California clapper rail.

Notes:

- § Section
- §§ Sections
- ARAR Applicable or relevant and appropriate requirement
- CCR *California Code of Regulations*
- CFR *Code of Federal Regulations*
- RCRA Resource Conservation and Recovery Act
- TCLP Toxicity characteristic leaching procedure
- tit. Title
- USC *United States Code*

TABLE 2: ACTION-SPECIFIC APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

Memorandum for a Time-Critical Removal Action at Two Campfire Locations in the Western Transition Area, Richmond Field Station

Action	Requirement	Prerequisite	Citation	ARAR Determination	Comments
Resource Conservation and Recovery Act (Title 42 USC, Chapter 82, §§6901-6991[ij])					
On-site generation	Person who generates waste shall determine if that waste is a hazardous waste	Generator of waste	CCR tit. 22, §§ 66262.10(a) and 66262.11	Applicable	The requirements in Cal. Code Regs. tit. 22, Division 4.5, Chapter 14, are applicable for any operation where waste is generated.
California Environmental Quality Act (CCR Title 11, §§15000-15387)					
Environmental impact reviews	Review of certain actions taken by agencies or private parties who are regulated by California agencies.	Potential impact	CCR tit. 11, §§ 15000 – 15387 et seq.	Relevant and appropriate	The TCRA will be reviewed by DTSC in accordance with CEQA.
Health and Safety Requirements (CCR Title 8, §5192 and 40 CFR 1910.120)					
Construction Activities	Workers involved in hazardous substances operations associated with cleanup of sites must perform the operations in accordance with requirements of Cal/OSHA.	Hazardous substance operations or activities.	CCR tit.8, §5192 and 40 CFR §1910.120	Applicable	All on-site activities must be conducted consistent with Cal/OSHA requirements.
Clean Air Act (Title 42 USC §7401 et seq.)					
Excavation	Sets forth opacity limitations	Soil excavation	BAAQMD Regulation 6, Rule 302	Applicable	These requirements are applicable for excavation activities
U.S. Fish and Wildlife Biological Opinion #1-1-03-F-0228					
Project Schedule	Requires that all remediation activities within 200 feet of clapper rail habitat occur between September 1 and January 31.	Campfire areas within 200 feet of clapper rail habitat	Biological Opinion #1-1-03-F-0228, letter #1-1-02-I-2866	Applicable	The project is scheduled to occur in spring of 2008; the removal action is non-remedial.
Endangered Species Act (Section 7, 16 U.S.C. 1531 et seq.)					
Impact on California clapper rail	That no clapper rail be taken as a part of the removal activities as defined by section 9(a)(1) of the Act.	Near California clapper rail habitat	Section 9(a)(1) of the Act and Federal regulation pursuant to section 4(d)	Applicable	Hand excavation will not harass the California clapper rail during its breeding season.

Notes:

§ Section
 §§ Sections
 ARAR Applicable or relevant and appropriate requirement

TABLE 2: ACTION-SPECIFIC APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

Memorandum for a Time-Critical Removal Action at Two Campfire Locations in the Western Transition Area, Richmond Field Station

BAAQMD	Bay Area Air Quality Management District
CCR	<i>California Code of Regulations</i>
CFR	<i>Code of Federal Regulations</i>
tit.	Title
USC	<i>United States Code</i>

APPENDIX A
ANALYTICAL DATA RESULTS

SOP Volume: Client Services
 Section: 1.1.2
 Page: 1 of 1
 Effective Date: 08-Aug-07
 Revision: 3 Number 1 of 3
 Filename: E:\QC\Forms\QC\Cooler.wpd



COOLER RECEIPT CHECKLIST

Login#: 200592 Date Received: 1/17/08 Number of Coolers: 1
 Client: Tetra Tech Project: Multi-Inc. Samp.

A. Preliminary Examination Phase

Date Opened: 1/17 By (print): K Wellbrock (sign) K Wellbrock

1. Did cooler come with a shipping slip (airbill, etc.)? YES NO
- If YES, enter carrier name and airbill number: _____
2. Were custody seals on outside of cooler? YES NO
- How many and where? _____ Seal date: _____ Seal name: _____
3. Were custody seals unbroken and intact at the date and time of arrival? YES NO N/A
4. Were custody papers dry and intact when received? YES NO
5. Were custody papers filled out properly (ink, signed, etc.)? YES NO
6. Did you sign the custody papers in the appropriate place? YES NO
7. Was project identifiable from custody papers? YES NO
- If YES, enter project name at the top of this form.
8. Describe type of packing in cooler: bags of ice
9. If required, was sufficient ice used? Samples should be ≤ -6 degrees C. YES NO
- Type of ice: Wet Temperature: no temp blank - on ice direct from field
10. Were Encore sampling devices present in the cooler? YES NO
- If YES, enter time they were transferred to the freezer _____

B. Login Phase

Date Logged In: 1-17-08 By (print): Faith Nichob (sign) Faith

1. Did all bottles arrive unbroken? YES NO
2. Were labels in good condition and complete (ID, date, time, signature, etc.)? YES NO *
3. Did bottle labels agree with custody papers? YES NO
4. Were appropriate containers used for the tests indicated? YES NO
5. Were correct preservatives added to samples? NA YES NO
6. Was sufficient amount of sample sent for tests indicated? YES NO
7. Were bubbles absent in VOA samples? If NO, list sample IDs below N/A YES NO
8. Was the client contacted concerning this sample delivery? YES NO

If YES, give details below.

Who was called? _____ By whom? _____ Date: _____

Additional Comments:

B3: No sample RFS-WTAA-002 sent

Total Volatile Hydrocarbons

Lab #:	200592	Location:	Multi-Inc. Samp
Client:	Tetra Tech EMI	Prep:	EPA 5030B
Project#:	103DS1518014.01	Analysis:	EPA 8015B
Field ID:	RFS-WTAA-001	Diln Fac:	1.000
Lab ID:	200592-004	Batch#:	133917
Matrix:	Soil	Sampled:	01/17/08
Units:	mg/Kg	Received:	01/17/08
Basis:	dry	Analyzed:	01/19/08

Moisture: 16%

Analyte	Result	RL
Gasoline C7-C12	ND	1.2

Surrogate	%REC	Limits
Trifluorotoluene (FID)	125	71-132
Bromofluorobenzene (FID)	109	69-145

ND= Not Detected
 RL= Reporting Limit

Total Volatile Hydrocarbons

Lab #:	200592	Location:	Multi-Inc. Samp
Client:	Tetra Tech EMI	Prep:	EPA 5030B
Project#:	103DS1518014.01	Analysis:	EPA 8015B
Field ID:	RFS-WTAA-002	Diln Fac:	1.000
Lab ID:	200592-006	Batch#:	133917
Matrix:	Soil	Sampled:	01/17/08
Units:	mg/Kg	Received:	01/17/08
Basis:	dry	Analyzed:	01/19/08

Moisture: 26%

Analyte	Result	RL
Gasoline C7-C12	ND	1.4

Surrogate	%REC	Limits
Trifluorotoluene (FID)	127	71-132
Bromofluorobenzene (FID)	109	69-145

ND= Not Detected
 RL= Reporting Limit

Batch QC Report

Total Volatile Hydrocarbons			
Lab #:	200592	Location:	Multi-Inc. Samp
Client:	Tetra Tech EMI	Prep:	EPA 5030B
Project#:	103DS1518014.01	Analysis:	EPA 8015B
Type:	BLANK	Basis:	as received
Lab ID:	QC424678	Diln Fac:	1.000
Matrix:	Soil	Batch#:	133917
Units:	mg/Kg	Analyzed:	01/19/08

Analyte	Result	RL
Gasoline C7-C12	ND	1.0

Surrogate	%REC	Limits
Trifluorotoluene (FID)	116	71-132
Bromofluorobenzene (FID)	97	69-145

ND= Not Detected
 RL= Reporting Limit

Batch QC Report

Total Volatile Hydrocarbons			
Lab #:	200592	Location:	Multi-Inc. Samp
Client:	Tetra Tech EMI	Prep:	EPA 5030B
Project#:	103DS1518014.01	Analysis:	EPA 8015B
Type:	LCS	Basis:	as received
Lab ID:	QC424680	Diln Fac:	1.000
Matrix:	Soil	Batch#:	133917
Units:	mg/Kg	Analyzed:	01/19/08

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	5.000	4.511	90	80-120

Surrogate	%REC	Limits
Trifluorotoluene (FID)	149 *	71-132
Bromofluorobenzene (FID)	148 *	69-145

*= Value outside of QC limits; see narrative

Batch QC Report

Total Volatile Hydrocarbons			
Lab #:	200592	Location:	Multi-Inc. Samp
Client:	Tetra Tech EMI	Prep:	EPA 5030B
Project#:	103DS1518014.01	Analysis:	EPA 8015B
Field ID:	RFS-WTA-DU1-001	Diln Fac:	1.000
MSS Lab ID:	200592-001	Batch#:	133917
Matrix:	Soil	Sampled:	01/17/08
Units:	mg/Kg	Received:	01/17/08
Basis:	as received	Analyzed:	01/21/08

Type: MS Lab ID: QC424681

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	0.1241	9.615	6.771	69	43-120

Surrogate	%REC	Limits
Trifluorotoluene (FID)	130	71-132
Bromofluorobenzene (FID)	107	69-145

Type: MSD Lab ID: QC424682

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	9.259	6.910	73	43-120	6	25

Surrogate	%REC	Limits
Trifluorotoluene (FID)	140 *	71-132
Bromofluorobenzene (FID)	117	69-145

*= Value outside of QC limits; see narrative

RPD= Relative Percent Difference

Total Extractable Hydrocarbons			
Lab #:	200592	Location:	Multi-Inc. Samp
Client:	Tetra Tech EMI	Prep:	SHAKER TABLE
Project#:	103DS1518014.01	Analysis:	EPA 8015B
Matrix:	Soil	Sampled:	01/17/08
Units:	mg/Kg	Received:	01/17/08
Batch#:	133928	Prepared:	01/20/08

Field ID: RFS-WTA-DU1-001
 Type: SAMPLE
 Lab ID: 200592-001
 Basis: dry

Moisture: 21%
 Diln Fac: 1.000
 Analyzed: 01/22/08
 Cleanup Method: EPA 3630C

Analyte	Result	RL
Diesel C10-C24	16 Y	1.3
Motor Oil C24-C36	100	6.3

Surrogate	%REC	Limits
Hexacosane	88	46-128

Field ID: RFS-WTA-DU2-001
 Type: SAMPLE
 Lab ID: 200592-002
 Basis: dry

Moisture: 19%
 Diln Fac: 1.000
 Analyzed: 01/22/08
 Cleanup Method: EPA 3630C

Analyte	Result	RL
Diesel C10-C24	40 Y	1.2
Motor Oil C24-C36	150	6.2

Surrogate	%REC	Limits
Hexacosane	84	46-128

Field ID: RFS-WTA-DU3-001
 Type: SAMPLE
 Lab ID: 200592-003
 Basis: dry

Moisture: 18%
 Diln Fac: 1.000
 Analyzed: 01/22/08
 Cleanup Method: EPA 3630C

Analyte	Result	RL
Diesel C10-C24	20 Y	1.2
Motor Oil C24-C36	150	6.1

Surrogate	%REC	Limits
Hexacosane	103	46-128

Field ID: RFS-WTAA-001
 Type: SAMPLE
 Lab ID: 200592-004
 Basis: dry

Moisture: 16%
 Diln Fac: 1.000
 Analyzed: 01/22/08
 Cleanup Method: EPA 3630C

Analyte	Result	RL
Diesel C10-C24	150 Y	1.2
Motor Oil C24-C36	370	5.9

Surrogate	%REC	Limits
Hexacosane	84	46-128

Y= Sample exhibits chromatographic pattern which does not resemble standard
 ND= Not Detected
 RL= Reporting Limit

Total Extractable Hydrocarbons			
Lab #:	200592	Location:	Multi-Inc. Samp
Client:	Tetra Tech EMI	Prep:	SHAKER TABLE
Project#:	103DS1518014.01	Analysis:	EPA 8015B
Matrix:	Soil	Sampled:	01/17/08
Units:	mg/Kg	Received:	01/17/08
Batch#:	133928	Prepared:	01/20/08

Field ID: RFS-WSM-DU1-001
 Type: SAMPLE
 Lab ID: 200592-005
 Basis: dry

Moisture: 50%
 Diln Fac: 5.000
 Analyzed: 01/22/08
 Cleanup Method: EPA 3630C

Analyte	Result	RL
Diesel C10-C24	130 Y	10
Motor Oil C24-C36	560	50

Surrogate	%REC	Limits
Hexacosane	94	46-128

Field ID: RFS-WTAA-002
 Type: SAMPLE
 Lab ID: 200592-006
 Basis: dry

Moisture: 26%
 Diln Fac: 1.000
 Analyzed: 01/22/08
 Cleanup Method: EPA 3630C

Analyte	Result	RL
Diesel C10-C24	19 Y	1.4
Motor Oil C24-C36	190	6.8

Surrogate	%REC	Limits
Hexacosane	90	46-128

Type: BLANK
 Lab ID: QC424730
 Basis: as received

Diln Fac: 1.000
 Analyzed: 01/21/08
 Cleanup Method: EPA 3630C

Analyte	Result	RL
Diesel C10-C24	ND	1.0
Motor Oil C24-C36	ND	5.0

Surrogate	%REC	Limits
Hexacosane	106	46-128

Y= Sample exhibits chromatographic pattern which does not resemble standard
 ND= Not Detected
 RL= Reporting Limit

Batch QC Report

Total Extractable Hydrocarbons			
Lab #:	200592	Location:	Multi-Inc. Samp
Client:	Tetra Tech EMI	Prep:	SHAKER TABLE
Project#:	103DS1518014.01	Analysis:	EPA 8015B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC424731	Batch#:	133928
Matrix:	Soil	Prepared:	01/20/08
Units:	mg/Kg	Analyzed:	01/21/08
Basis:	as received		

Cleanup Method: EPA 3630C

Analyte	Spiked	Result	%REC	Limits
Diesel C10-C24	49.81	44.81	90	55-131

Surrogate	%REC	Limits
Hexacosane	106	46-128

Semivolatile Organics by GC/MS			
Lab #:	200592	Location:	Multi-Inc. Samp
Client:	Tetra Tech EMI	Prep:	EPA 3550B
Project#:	103DS1518014.01	Analysis:	EPA 8270C
Field ID:	RFS-WTAA-001	Batch#:	133881
Lab ID:	200592-004	Sampled:	01/17/08
Matrix:	Soil	Received:	01/17/08
Units:	ug/Kg	Prepared:	01/18/08
Basis:	dry	Analyzed:	01/22/08
Diln Fac:	10.00		

Moisture: 16%

Analyte	Result	RL
N-Nitrosodimethylamine	ND	3,900
Phenol	ND	3,900
bis(2-Chloroethyl)ether	ND	3,900
2-Chlorophenol	ND	3,900
1,3-Dichlorobenzene	ND	3,900
1,4-Dichlorobenzene	ND	3,900
Benzyl alcohol	ND	3,900
1,2-Dichlorobenzene	ND	3,900
2-Methylphenol	ND	3,900
bis(2-Chloroisopropyl) ether	ND	3,900
4-Methylphenol	ND	3,900
N-Nitroso-di-n-propylamine	ND	3,900
Hexachloroethane	ND	3,900
Nitrobenzene	ND	3,900
Isophorone	ND	3,900
2-Nitrophenol	ND	7,900
2,4-Dimethylphenol	ND	3,900
Benzoic acid	ND	20,000
bis(2-Chloroethoxy)methane	ND	3,900
2,4-Dichlorophenol	ND	3,900
1,2,4-Trichlorobenzene	ND	3,900
Naphthalene	ND	790
4-Chloroaniline	ND	3,900
Hexachlorobutadiene	ND	3,900
4-Chloro-3-methylphenol	ND	3,900
2-Methylnaphthalene	ND	790
Hexachlorocyclopentadiene	ND	7,900
2,4,6-Trichlorophenol	ND	3,900
2,4,5-Trichlorophenol	ND	3,900
2-Chloronaphthalene	ND	3,900
2-Nitroaniline	ND	7,900
Dimethylphthalate	ND	3,900
Acenaphthylene	ND	790
2,6-Dinitrotoluene	ND	3,900
3-Nitroaniline	ND	7,900
Acenaphthene	ND	790
2,4-Dinitrophenol	ND	7,900
4-Nitrophenol	ND	7,900
Dibenzofuran	ND	3,900
2,4-Dinitrotoluene	ND	3,900
Diethylphthalate	ND	3,900
Fluorene	ND	790
4-Chlorophenyl-phenylether	ND	3,900
4-Nitroaniline	ND	7,900
4,6-Dinitro-2-methylphenol	ND	7,900
N-Nitrosodiphenylamine	ND	3,900
Azobenzene	ND	3,900
4-Bromophenyl-phenylether	ND	3,900
Hexachlorobenzene	ND	3,900

J= Estimated value
 DO= Diluted Out
 ND= Not Detected
 RL= Reporting Limit

Semivolatile Organics by GC/MS			
Lab #:	200592	Location:	Multi-Inc. Samp
Client:	Tetra Tech EMI	Prep:	EPA 3550B
Project#:	103DS1518014.01	Analysis:	EPA 8270C
Field ID:	RFS-WTAA-001	Batch#:	133881
Lab ID:	200592-004	Sampled:	01/17/08
Matrix:	Soil	Received:	01/17/08
Units:	ug/Kg	Prepared:	01/18/08
Basis:	dry	Analyzed:	01/22/08
Diln Fac:	10.00		

Analyte	Result	RL
Pentachlorophenol	ND	7,900
Phenanthrene	ND	790
Anthracene	ND	790
Di-n-butylphthalate	ND	3,900
Fluoranthene	ND	790
Pyrene	ND	790
Butylbenzylphthalate	ND	3,900
3,3'-Dichlorobenzidine	ND	7,900
Benzo(a)anthracene	ND	790
Chrysene	ND	790
bis(2-Ethylhexyl)phthalate	ND	3,900
Di-n-octylphthalate	ND	3,900
Benzo(b)fluoranthene	ND	790
Benzo(k)fluoranthene	ND	790
Benzo(a)pyrene	ND	790
Indeno(1,2,3-cd)pyrene	ND	790
Dibenz(a,h)anthracene	ND	790
Benzo(g,h,i)perylene	ND	790

Tentatively Identified Compounds	Result
1,1'-Biphenyl, 2,2',3,4-tetrachloro-	2700 J
1,1'-Biphenyl, 2,2',4,5'-tetrachloro-	3500 J
1,1'-Biphenyl, 2,4',5-trichloro-	2000 J
1,1'-Biphenyl, 2,4,6-trichloro-	3900 J
2-Pentanone, 4-hydroxy-4-methyl-	3200 J

Surrogate	%REC	Limits
2-Fluorophenol	DO	33-120
Phenol-d5	DO	35-120
2,4,6-Tribromophenol	DO	25-120
Nitrobenzene-d5	DO	38-120
2-Fluorobiphenyl	DO	44-120
Terphenyl-d14	DO	40-120

J= Estimated value
 DO= Diluted Out
 ND= Not Detected
 RL= Reporting Limit

Semivolatile Organics by GC/MS

Lab #:	200592	Location:	Multi-Inc. Samp
Client:	Tetra Tech EMI	Prep:	EPA 3550B
Project#:	103DS1518014.01	Analysis:	EPA 8270C
Field ID:	RFS-WTAA-002	Batch#:	134048
Lab ID:	200592-006	Sampled:	01/17/08
Matrix:	Soil	Received:	01/17/08
Units:	ug/Kg	Prepared:	01/23/08
Basis:	dry	Analyzed:	01/28/08
Diln Fac:	3.000		

Moisture: 26%

Analyte	Result	RL
N-Nitrosodimethylamine	ND	1,300
Phenol	ND	1,300
bis(2-Chloroethyl)ether	ND	1,300
2-Chlorophenol	ND	1,300
1,3-Dichlorobenzene	ND	1,300
1,4-Dichlorobenzene	ND	1,300
Benzyl alcohol	ND	1,300
1,2-Dichlorobenzene	ND	1,300
2-Methylphenol	ND	1,300
bis(2-Chloroisopropyl) ether	ND	1,300
4-Methylphenol	ND	1,300
N-Nitroso-di-n-propylamine	ND	1,300
Hexachloroethane	ND	1,300
Nitrobenzene	ND	1,300
Isophorone	ND	1,300
2-Nitrophenol	ND	2,700
2,4-Dimethylphenol	ND	1,300
Benzoic acid	ND	6,700
bis(2-Chloroethoxy)methane	ND	1,300
2,4-Dichlorophenol	ND	1,300
1,2,4-Trichlorobenzene	ND	1,300
Naphthalene	ND	270
4-Chloroaniline	ND	1,300
Hexachlorobutadiene	ND	1,300
4-Chloro-3-methylphenol	ND	1,300
2-Methylnaphthalene	ND	270
Hexachlorocyclopentadiene	ND	2,700
2,4,6-Trichlorophenol	ND	1,300
2,4,5-Trichlorophenol	ND	1,300
2-Chloronaphthalene	ND	1,300
2-Nitroaniline	ND	2,700
Dimethylphthalate	ND	1,300
Acenaphthylene	ND	270
2,6-Dinitrotoluene	ND	1,300
3-Nitroaniline	ND	2,700
Acenaphthene	ND	270
2,4-Dinitrophenol	ND	2,700
4-Nitrophenol	ND	2,700
Dibenzofuran	ND	1,300
2,4-Dinitrotoluene	ND	1,300
Diethylphthalate	ND	1,300
Fluorene	ND	270
4-Chlorophenyl-phenylether	ND	1,300
4-Nitroaniline	ND	2,700
4,6-Dinitro-2-methylphenol	ND	2,700
N-Nitrosodiphenylamine	ND	1,300
Azobenzene	ND	1,300
4-Bromophenyl-phenylether	ND	1,300
Hexachlorobenzene	ND	1,300
Pentachlorophenol	ND	2,700

J= Estimated value
 ND= Not Detected
 RL= Reporting Limit

Semivolatile Organics by GC/MS			
Lab #:	200592	Location:	Multi-Inc. Samp
Client:	Tetra Tech EMI	Prep:	EPA 3550B
Project#:	103DS1518014.01	Analysis:	EPA 8270C
Field ID:	RFS-WTAA-002	Batch#:	134048
Lab ID:	200592-006	Sampled:	01/17/08
Matrix:	Soil	Received:	01/17/08
Units:	ug/Kg	Prepared:	01/23/08
Basis:	dry	Analyzed:	01/28/08
Diln Fac:	3.000		

Analyte	Result	RL
Phenanthrene	ND	270
Anthracene	ND	270
Di-n-butylphthalate	ND	1,300
Fluoranthene	ND	270
Pyrene	ND	270
Butylbenzylphthalate	ND	1,300
3,3'-Dichlorobenzidine	ND	2,700
Benzo(a)anthracene	ND	270
Chrysene	ND	270
bis(2-Ethylhexyl)phthalate	ND	1,300
Di-n-octylphthalate	ND	1,300
Benzo(b)fluoranthene	ND	270
Benzo(k)fluoranthene	ND	270
Benzo(a)pyrene	ND	270
Indeno(1,2,3-cd)pyrene	ND	270
Dibenz(a,h)anthracene	ND	270
Benzo(g,h,i)perylene	ND	270

Tentatively Identified Compounds	Result
2-Pentanone, 4-hydroxy-4-methyl-	7600 J
Unknown 1	580 J

Surrogate	%REC	Limits
2-Fluorophenol	59	33-120
Phenol-d5	61	35-120
2,4,6-Tribromophenol	60	25-120
Nitrobenzene-d5	59	38-120
2-Fluorobiphenyl	60	44-120
Terphenyl-d14	56	40-120

J= Estimated value
 ND= Not Detected
 RL= Reporting Limit

Batch QC Report

Semivolatile Organics by GC/MS			
Lab #:	200592	Location:	Multi-Inc. Samp
Client:	Tetra Tech EMI	Prep:	EPA 3550B
Project#:	103DS1518014.01	Analysis:	EPA 8270C
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC424489	Batch#:	133881
Matrix:	Soil	Prepared:	01/18/08
Basis:	as received	Analyzed:	01/18/08

Analyte	Result	RL	Units
N-Nitrosodimethylamine	ND	330	ug/Kg
Phenol	ND	330	ug/Kg
bis(2-Chloroethyl)ether	ND	330	ug/Kg
2-Chlorophenol	ND	330	ug/Kg
1,3-Dichlorobenzene	ND	330	ug/Kg
1,4-Dichlorobenzene	ND	330	ug/Kg
Benzyl alcohol	ND	330	ug/Kg
1,2-Dichlorobenzene	ND	330	ug/Kg
2-Methylphenol	ND	330	ug/Kg
bis(2-Chloroisopropyl) ether	ND	330	ug/Kg
4-Methylphenol	ND	330	ug/Kg
N-Nitroso-di-n-propylamine	ND	330	ug/Kg
Hexachloroethane	ND	330	ug/Kg
Nitrobenzene	ND	330	ug/Kg
Isophorone	ND	330	ug/Kg
2-Nitrophenol	ND	670	ug/Kg
2,4-Dimethylphenol	ND	330	ug/Kg
Benzoic acid	ND	1,700	ug/Kg
bis(2-Chloroethoxy)methane	ND	330	ug/Kg
2,4-Dichlorophenol	ND	330	ug/Kg
1,2,4-Trichlorobenzene	ND	330	ug/Kg
Naphthalene	ND	67	ug/Kg
4-Chloroaniline	ND	330	ug/Kg
Hexachlorobutadiene	ND	330	ug/Kg
4-Chloro-3-methylphenol	ND	330	ug/Kg
2-Methylnaphthalene	ND	67	ug/Kg
Hexachlorocyclopentadiene	ND	670	ug/Kg
2,4,6-Trichlorophenol	ND	330	ug/Kg
2,4,5-Trichlorophenol	ND	330	ug/Kg
2-Chloronaphthalene	ND	330	ug/Kg
2-Nitroaniline	ND	670	ug/Kg
Dimethylphthalate	ND	330	ug/Kg
Acenaphthylene	ND	67	ug/Kg
2,6-Dinitrotoluene	ND	330	ug/Kg
3-Nitroaniline	ND	670	ug/Kg
Acenaphthene	ND	67	ug/Kg
2,4-Dinitrophenol	ND	670	ug/Kg
4-Nitrophenol	ND	670	ug/Kg
Dibenzofuran	ND	330	ug/Kg
2,4-Dinitrotoluene	ND	330	ug/Kg
Diethylphthalate	ND	330	ug/Kg
Fluorene	ND	67	ug/Kg
4-Chlorophenyl-phenylether	ND	330	ug/Kg
4-Nitroaniline	ND	670	ug/Kg
4,6-Dinitro-2-methylphenol	ND	670	ug/Kg
N-Nitrosodiphenylamine	ND	330	ug/Kg
Azobenzene	ND	330	ug/Kg
4-Bromophenyl-phenylether	ND	330	ug/Kg
Hexachlorobenzene	ND	330	ug/Kg
Pentachlorophenol	ND	670	ug/Kg
Phenanthrene	ND	67	ug/Kg
Anthracene	ND	67	ug/Kg
Di-n-butylphthalate	ND	330	ug/Kg

J= Estimated value
 ND= Not Detected
 RL= Reporting Limit

Batch QC Report

Semivolatile Organics by GC/MS			
Lab #:	200592	Location:	Multi-Inc. Samp
Client:	Tetra Tech EMI	Prep:	EPA 3550B
Project#:	103DS1518014.01	Analysis:	EPA 8270C
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC424489	Batch#:	133881
Matrix:	Soil	Prepared:	01/18/08
Basis:	as received	Analyzed:	01/18/08

Analyte	Result	RL	Units
Fluoranthene	ND	67	ug/Kg
Pyrene	ND	67	ug/Kg
Butylbenzylphthalate	ND	330	ug/Kg
3,3'-Dichlorobenzidine	ND	670	ug/Kg
Benzo(a)anthracene	ND	67	ug/Kg
Chrysene	ND	67	ug/Kg
bis(2-Ethylhexyl)phthalate	ND	330	ug/Kg
Di-n-octylphthalate	ND	330	ug/Kg
Benzo(b)fluoranthene	ND	67	ug/Kg
Benzo(k)fluoranthene	ND	67	ug/Kg
Benzo(a)pyrene	ND	67	ug/Kg
Indeno(1,2,3-cd)pyrene	ND	67	ug/Kg
Dibenz(a,h)anthracene	ND	67	ug/Kg
Benzo(g,h,i)perylene	ND	67	ug/Kg

Tentatively Identified Compounds	Result	Units
2-Pentanone, 4-hydroxy-4-methyl-	6.0 J	mg/Kg
Toluene	0.19 J	mg/Kg

Surrogate	%REC	Limits
2-Fluorophenol	106	33-120
Phenol-d5	115	35-120
2,4,6-Tribromophenol	51	25-120
Nitrobenzene-d5	84	38-120
2-Fluorobiphenyl	94	44-120
Terphenyl-d14	53	40-120

J= Estimated value
 ND= Not Detected
 RL= Reporting Limit

Batch QC Report

Semivolatile Organics by GC/MS			
Lab #:	200592	Location:	Multi-Inc. Samp
Client:	Tetra Tech EMI	Prep:	EPA 3550B
Project#:	103DS1518014.01	Analysis:	EPA 8270C
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC424490	Batch#:	133881
Matrix:	Soil	Prepared:	01/18/08
Units:	ug/Kg	Analyzed:	01/18/08
Basis:	as received		

Analyte	Spiked	Result	%REC	Limits
Phenol	2,657	1,721	65	38-120
2-Chlorophenol	2,657	1,902	72	41-120
1,4-Dichlorobenzene	1,328	1,115	84	47-120
N-Nitroso-di-n-propylamine	1,328	893.4	67	29-120
1,2,4-Trichlorobenzene	1,328	1,173	88	46-120
4-Chloro-3-methylphenol	2,657	1,927	73	44-120
Acenaphthene	1,328	1,006	76	43-120
4-Nitrophenol	2,657	2,028	76	31-120
2,4-Dinitrotoluene	1,328	1,183	89	44-120
Pentachlorophenol	2,657	2,176	82	21-120
Pyrene	1,328	985.3	74	42-120

Surrogate	%REC	Limits
2-Fluorophenol	71	33-120
Phenol-d5	73	35-120
2,4,6-Tribromophenol	58	25-120
Nitrobenzene-d5	77	38-120
2-Fluorobiphenyl	79	44-120
Terphenyl-d14	52	40-120

Batch QC Report

Semivolatile Organics by GC/MS			
Lab #:	200592	Location:	Multi-Inc. Samp
Client:	Tetra Tech EMI	Prep:	EPA 3550B
Project#:	103DS1518014.01	Analysis:	EPA 8270C
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC425247	Batch#:	134048
Matrix:	Soil	Prepared:	01/23/08
Units:	ug/Kg	Analyzed:	01/25/08
Basis:	as received		

Analyte	Result	RL
N-Nitrosodimethylamine	ND	330
Phenol	ND	330
bis(2-Chloroethyl)ether	ND	330
2-Chlorophenol	ND	330
1,3-Dichlorobenzene	ND	330
1,4-Dichlorobenzene	ND	330
Benzyl alcohol	ND	330
1,2-Dichlorobenzene	ND	330
2-Methylphenol	ND	330
bis(2-Chloroisopropyl) ether	ND	330
4-Methylphenol	ND	330
N-Nitroso-di-n-propylamine	ND	330
Hexachloroethane	ND	330
Nitrobenzene	ND	330
Isophorone	ND	330
2-Nitrophenol	ND	660
2,4-Dimethylphenol	ND	330
Benzoic acid	ND	1,700
bis(2-Chloroethoxy)methane	ND	330
2,4-Dichlorophenol	ND	330
1,2,4-Trichlorobenzene	ND	330
Naphthalene	ND	66
4-Chloroaniline	ND	330
Hexachlorobutadiene	ND	330
4-Chloro-3-methylphenol	ND	330
2-Methylnaphthalene	ND	66
Hexachlorocyclopentadiene	ND	660
2,4,6-Trichlorophenol	ND	330
2,4,5-Trichlorophenol	ND	330
2-Chloronaphthalene	ND	330
2-Nitroaniline	ND	660
Dimethylphthalate	ND	330
Acenaphthylene	ND	66
2,6-Dinitrotoluene	ND	330
3-Nitroaniline	ND	660
Acenaphthene	ND	66
2,4-Dinitrophenol	ND	660
4-Nitrophenol	ND	660
Dibenzofuran	ND	330
2,4-Dinitrotoluene	ND	330
Diethylphthalate	ND	330
Fluorene	ND	66
4-Chlorophenyl-phenylether	ND	330
4-Nitroaniline	ND	660
4,6-Dinitro-2-methylphenol	ND	660
N-Nitrosodiphenylamine	ND	330
Azobenzene	ND	330
4-Bromophenyl-phenylether	ND	330
Hexachlorobenzene	ND	330
Pentachlorophenol	ND	660
Phenanthrene	ND	66
Anthracene	ND	66

J= Estimated value
 ND= Not Detected
 RL= Reporting Limit

Batch QC Report

Semivolatile Organics by GC/MS			
Lab #:	200592	Location:	Multi-Inc. Samp
Client:	Tetra Tech EMI	Prep:	EPA 3550B
Project#:	103DS1518014.01	Analysis:	EPA 8270C
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC425247	Batch#:	134048
Matrix:	Soil	Prepared:	01/23/08
Units:	ug/Kg	Analyzed:	01/25/08
Basis:	as received		

Analyte	Result	RL
Di-n-butylphthalate	ND	330
Fluoranthene	ND	66
Pyrene	ND	66
Butylbenzylphthalate	ND	330
3,3'-Dichlorobenzidine	ND	660
Benzo(a)anthracene	ND	66
Chrysene	ND	66
bis(2-Ethylhexyl)phthalate	ND	330
Di-n-octylphthalate	ND	330
Benzo(b)fluoranthene	ND	66
Benzo(k)fluoranthene	ND	66
Benzo(a)pyrene	ND	66
Indeno(1,2,3-cd)pyrene	ND	66
Dibenz(a,h)anthracene	ND	66
Benzo(g,h,i)perylene	ND	66

Tentatively Identified Compounds	Result
2-Pentanone, 4-hydroxy-4-methyl-	3800 J

Surrogate	%REC	Limits
2-Fluorophenol	73	33-120
Phenol-d5	71	35-120
2,4,6-Tribromophenol	53	25-120
Nitrobenzene-d5	66	38-120
2-Fluorobiphenyl	84	44-120
Terphenyl-d14	74	40-120

J= Estimated value
 ND= Not Detected
 RL= Reporting Limit

Batch QC Report

Semivolatile Organics by GC/MS			
Lab #:	200592	Location:	Multi-Inc. Samp
Client:	Tetra Tech EMI	Prep:	EPA 3550B
Project#:	103DS1518014.01	Analysis:	EPA 8270C
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC425248	Batch#:	134048
Matrix:	Soil	Prepared:	01/23/08
Units:	ug/Kg	Analyzed:	01/25/08
Basis:	as received		

Analyte	Spiked	Result	%REC	Limits
Phenol	2,670	1,131	42	38-120
2-Chlorophenol	2,670	1,422	53	41-120
1,4-Dichlorobenzene	1,335	960.0	72	47-120
N-Nitroso-di-n-propylamine	1,335	588.3	44	29-120
1,2,4-Trichlorobenzene	1,335	962.6	72	46-120
4-Chloro-3-methylphenol	2,670	2,138	80	44-120
Acenaphthene	1,335	893.0	67	43-120
4-Nitrophenol	2,670	1,768	66	31-120
2,4-Dinitrotoluene	1,335	1,043	78	44-120
Pentachlorophenol	2,670	1,845	69	21-120
Pyrene	1,335	971.7	73	42-120

Surrogate	%REC	Limits
2-Fluorophenol	56	33-120
Phenol-d5	46	35-120
2,4,6-Tribromophenol	80	25-120
Nitrobenzene-d5	62	38-120
2-Fluorobiphenyl	72	44-120
Terphenyl-d14	77	40-120

Batch QC Report

Semivolatile Organics by GC/MS			
Lab #:	200592	Location:	Multi-Inc. Samp
Client:	Tetra Tech EMI	Prep:	EPA 3550B
Project#:	103DS1518014.01	Analysis:	EPA 8270C
Field ID:	ZZZZZZZZZZ	Batch#:	134048
MSS Lab ID:	200701-001	Sampled:	01/22/08
Matrix:	Soil	Received:	01/23/08
Units:	ug/Kg	Prepared:	01/23/08
Basis:	as received	Analyzed:	01/25/08
Diln Fac:	1.000		

Type: MS Lab ID: QC425249

Analyte	MSS Result	Spiked	Result	%REC	Limits
Phenol	<136.9	2,668	1,850	69	41-120
2-Chlorophenol	<142.5	2,668	2,048	77	42-120
1,4-Dichlorobenzene	<34.03	1,334	1,075	81	50-120
N-Nitroso-di-n-propylamine	<28.14	1,334	860.9	65	38-120
1,2,4-Trichlorobenzene	<30.40	1,334	1,113	83	50-120
4-Chloro-3-methylphenol	<141.0	2,668	2,076	78	48-120
Acenaphthene	<30.00	1,334	1,114	84	50-120
4-Nitrophenol	<169.1	2,668	2,220	83	36-120
2,4-Dinitrotoluene	<30.66	1,334	1,027	77	46-120
Pentachlorophenol	<134.1	2,668	1,960	73	19-120
Pyrene	31.18	1,334	1,185	87	44-120

Surrogate	%REC	Limits
2-Fluorophenol	75	33-120
Phenol-d5	72	35-120
2,4,6-Tribromophenol	81	25-120
Nitrobenzene-d5	79	38-120
2-Fluorobiphenyl	82	44-120
Terphenyl-d14	90	40-120

Type: MSD Lab ID: QC425250

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Phenol	2,672	1,689	63	41-120	9	28
2-Chlorophenol	2,672	1,735	65	42-120	17	28
1,4-Dichlorobenzene	1,336	961.2	72	50-120	11	28
N-Nitroso-di-n-propylamine	1,336	867.2	65	38-120	1	30
1,2,4-Trichlorobenzene	1,336	999.0	75	50-120	11	28
4-Chloro-3-methylphenol	2,672	2,025	76	48-120	3	28
Acenaphthene	1,336	1,043	78	50-120	7	27
4-Nitrophenol	2,672	2,044	77	36-120	8	36
2,4-Dinitrotoluene	1,336	962.0	72	46-120	7	29
Pentachlorophenol	2,672	1,930	72	19-120	2	56
Pyrene	1,336	1,101	80	44-120	8	31

Surrogate	%REC	Limits
2-Fluorophenol	62	33-120
Phenol-d5	62	35-120
2,4,6-Tribromophenol	70	25-120
Nitrobenzene-d5	69	38-120
2-Fluorobiphenyl	75	44-120
Terphenyl-d14	81	40-120

RPD= Relative Percent Difference

Organochlorine Pesticides

Lab #:	200592	Location:	Multi-Inc. Samp
Client:	Tetra Tech EMI	Prep:	EPA 3550B
Project#:	103DS1518014.01	Analysis:	EPA 8081A
Field ID:	RFS-WTAA-001	Batch#:	133882
Lab ID:	200592-004	Sampled:	01/17/08
Matrix:	Soil	Received:	01/17/08
Units:	ug/Kg	Prepared:	01/18/08
Basis:	dry	Analyzed:	01/31/08
Diln Fac:	20.00		

Moisture: 16%

Cleanup Method: EPA 3620B

Analyte	Result	RL
alpha-BHC	ND	40
beta-BHC	ND	40
gamma-BHC	210	40
delta-BHC	ND	40
Heptachlor	ND	40
Aldrin	ND	40
Heptachlor epoxide	ND	40
Endosulfan I	ND	40
Dieldrin	ND	78
4,4'-DDE	ND	78
Endrin	ND	78
Endosulfan II	ND	78
Endosulfan sulfate	ND	78
4,4'-DDD	ND	78
Endrin aldehyde	ND	78
4,4'-DDT	ND	78
alpha-Chlordane	ND	40
gamma-Chlordane	ND	40
Methoxychlor	ND	400
Toxaphene	ND	1,400

Surrogate	%REC	Limits
TCMX	DO	54-120
Decachlorobiphenyl	DO	49-142

DO= Diluted Out
 ND= Not Detected
 RL= Reporting Limit

Organochlorine Pesticides			
Lab #:	200592	Location:	Multi-Inc. Samp
Client:	Tetra Tech EMI	Prep:	EPA 3550B
Project#:	103DS1518014.01	Analysis:	EPA 8081A
Field ID:	RFS-WTAA-002	Batch#:	133918
Lab ID:	200592-006	Sampled:	01/17/08
Matrix:	Soil	Received:	01/17/08
Units:	ug/Kg	Prepared:	01/19/08
Basis:	dry	Analyzed:	02/01/08
Diln Fac:	5.000		

Moisture: 26%

Cleanup Method: EPA 3620B

Analyte	Result	RL
alpha-BHC	ND	11
beta-BHC	ND	11
gamma-BHC	ND	11
delta-BHC	ND	11
Heptachlor	ND	11
Aldrin	ND	11
Heptachlor epoxide	ND	11
Endosulfan I	ND	11
Dieldrin	ND	22
4,4'-DDE	14 J	22
Endrin	ND	22
Endosulfan II	ND	22
Endosulfan sulfate	ND	22
4,4'-DDD	ND	22
Endrin aldehyde	ND	22
4,4'-DDT	13 C J	22
alpha-Chlordane	13 C	11
gamma-Chlordane	9.5 C J	11
Methoxychlor	ND	110
Toxaphene	ND	410

Surrogate	%REC	Limits
TCMX	93	54-120
Decachlorobiphenyl	95	49-142

C= Presence confirmed, but RPD between columns exceeds 40%

J= Estimated value

ND= Not Detected

RL= Reporting Limit

Batch QC Report

Organochlorine Pesticides			
Lab #:	200592	Location:	Multi-Inc. Samp
Client:	Tetra Tech EMI	Prep:	EPA 3550B
Project#:	103DS1518014.01	Analysis:	EPA 8081A
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC424493	Batch#:	133882
Matrix:	Soil	Prepared:	01/18/08
Units:	ug/Kg	Analyzed:	01/18/08
Basis:	as received		

Cleanup Method: EPA 3620B

Analyte	Result	RL
alpha-BHC	ND	1.7
beta-BHC	ND	1.7
gamma-BHC	ND	1.7
delta-BHC	ND	1.7
Heptachlor	ND	1.7
Aldrin	ND	1.7
Heptachlor epoxide	ND	1.7
Endosulfan I	ND	1.7
Dieldrin	ND	3.3
4,4'-DDE	ND	3.3
Endrin	ND	3.3
Endosulfan II	ND	3.3
Endosulfan sulfate	ND	3.3
4,4'-DDD	ND	3.3
Endrin aldehyde	ND	3.3
4,4'-DDT	ND	3.3
alpha-Chlordane	ND	1.7
gamma-Chlordane	ND	1.7
Methoxychlor	ND	17
Toxaphene	ND	60

Surrogate	%REC	Limits
TCMX	67	54-120
Decachlorobiphenyl	84	49-142

ND= Not Detected

RL= Reporting Limit

Batch QC Report

Organochlorine Pesticides			
Lab #:	200592	Location:	Multi-Inc. Samp
Client:	Tetra Tech EMI	Prep:	EPA 3550B
Project#:	103DS1518014.01	Analysis:	EPA 8081A
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC424497	Batch#:	133882
Matrix:	Soil	Prepared:	01/18/08
Units:	ug/Kg	Analyzed:	01/18/08
Basis:	as received		

Cleanup Method: EPA 3620B

Analyte	Spiked	Result	%REC	Limits
gamma-BHC	13.28	11.35	85	44-120
Heptachlor	13.28	11.63	88	44-120
Aldrin	13.28	11.35	85	47-120
Dieldrin	26.56	23.71	89	50-120
Endrin	26.56	24.04	91	27-128
4,4'-DDT	26.56	25.57	96	42-128

Surrogate	%REC	Limits
TCMX	94	54-120
Decachlorobiphenyl	107	49-142

Batch QC Report

Organochlorine Pesticides			
Lab #:	200592	Location:	Multi-Inc. Samp
Client:	Tetra Tech EMI	Prep:	EPA 3550B
Project#:	103DS1518014.01	Analysis:	EPA 8081A
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC424683	Batch#:	133918
Matrix:	Soil	Prepared:	01/19/08
Units:	ug/Kg	Analyzed:	01/21/08
Basis:	as received		

Cleanup Method: EPA 3620B

Analyte	Result	RL
alpha-BHC	ND	1.7
beta-BHC	ND	1.7
gamma-BHC	ND	1.7
delta-BHC	ND	1.7
Heptachlor	ND	1.7
Aldrin	ND	1.7
Heptachlor epoxide	ND	1.7
Endosulfan I	ND	1.7
Dieldrin	ND	3.3
4,4'-DDE	ND	3.3
Endrin	ND	3.3
Endosulfan II	ND	3.3
Endosulfan sulfate	ND	3.3
4,4'-DDD	ND	3.3
Endrin aldehyde	ND	3.3
4,4'-DDT	ND	3.3
alpha-Chlordane	ND	1.7
gamma-Chlordane	ND	1.7
Methoxychlor	ND #	17
Toxaphene	ND	59

Surrogate	%REC	Limits
TCMX	54	54-120
Decachlorobiphenyl	71	49-142

#= CCV drift outside limits; average CCV drift within limits per method requirements

ND= Not Detected

RL= Reporting Limit

Batch QC Report

Organochlorine Pesticides			
Lab #:	200592	Location:	Multi-Inc. Samp
Client:	Tetra Tech EMI	Prep:	EPA 3550B
Project#:	103DS1518014.01	Analysis:	EPA 8081A
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC424684	Batch#:	133918
Matrix:	Soil	Prepared:	01/19/08
Units:	ug/Kg	Analyzed:	01/21/08
Basis:	as received		

Cleanup Method: EPA 3620B

Analyte	Spiked	Result	%REC	Limits
gamma-BHC	13.25	10.10	76	44-120
Heptachlor	13.25	10.00	76	44-120
Aldrin	13.25	10.37	78	47-120
Dieldrin	26.49	19.40	73	50-120
Endrin	26.49	17.05	64	27-128
4,4'-DDT	26.49	19.15	72	42-128

Surrogate	%REC	Limits
TCMX	87	54-120
Decachlorobiphenyl	84	49-142

Polychlorinated Biphenyls (PCBs)

Lab #:	200592	Location:	Multi-Inc. Samp
Client:	Tetra Tech EMI	Prep:	EPA 3550B
Project#:	103DS1518014.01	Analysis:	EPA 8082
Field ID:	RFS-WTAA-001	Batch#:	133882
Lab ID:	200592-004	Sampled:	01/17/08
Matrix:	Soil	Received:	01/17/08
Units:	ug/Kg	Prepared:	01/18/08
Basis:	dry	Analyzed:	01/23/08
Diln Fac:	250.0		

Moisture: 16%

Cleanup Method: EPA 3665A

Analyte	Result	RL
Aroclor-1016	ND	2,000
Aroclor-1221	ND	4,000
Aroclor-1232	ND	2,000
Aroclor-1242	ND	2,000
Aroclor-1248	60,000	2,000
Aroclor-1254	18,000	2,000
Aroclor-1260	2,400	2,000

Surrogate	%REC	Limits
TCMX	DO	66-140
Decachlorobiphenyl	DO	51-152

DO= Diluted Out
 ND= Not Detected
 RL= Reporting Limit

Polychlorinated Biphenyls (PCBs)

Lab #:	200592	Location:	Multi-Inc. Samp
Client:	Tetra Tech EMI	Prep:	EPA 3550B
Project#:	103DS1518014.01	Analysis:	EPA 8082
Field ID:	RFS-WTAA-002	Batch#:	133929
Lab ID:	200592-006	Sampled:	01/17/08
Matrix:	Soil	Received:	01/17/08
Units:	ug/Kg	Prepared:	01/20/08
Basis:	dry	Analyzed:	01/23/08
Diln Fac:	1.000		

Moisture: 26%

Cleanup Method: EPA 3665A

Analyte	Result	RL
Aroclor-1016	ND	16
Aroclor-1221	ND	32
Aroclor-1232	ND	16
Aroclor-1242	ND	16
Aroclor-1248	200	16
Aroclor-1254	180	16
Aroclor-1260	81	16

Surrogate	%REC	Limits
TCMX	106	66-140
Decachlorobiphenyl	107	51-152

ND= Not Detected
 RL= Reporting Limit

Batch QC Report

Polychlorinated Biphenyls (PCBs)			
Lab #:	200592	Location:	Multi-Inc. Samp
Client:	Tetra Tech EMI	Prep:	EPA 3550B
Project#:	103DS1518014.01	Analysis:	EPA 8082
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC424493	Batch#:	133882
Matrix:	Soil	Prepared:	01/18/08
Units:	ug/Kg	Analyzed:	01/18/08
Basis:	as received		

Cleanup Method: EPA 3620B

Analyte	Result	RL
Aroclor-1016	ND	12
Aroclor-1221	ND	24
Aroclor-1232	ND	12
Aroclor-1242	ND	12
Aroclor-1248	ND	12
Aroclor-1254	ND	12
Aroclor-1260	ND	12

Surrogate	%REC	Limits
TCMX	116	66-140
Decachlorobiphenyl	110	51-152

ND= Not Detected
 RL= Reporting Limit

Batch QC Report

Polychlorinated Biphenyls (PCBs)			
Lab #:	200592	Location:	Multi-Inc. Samp
Client:	Tetra Tech EMI	Prep:	EPA 3550B
Project#:	103DS1518014.01	Analysis:	EPA 8082
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC424494	Batch#:	133882
Matrix:	Soil	Prepared:	01/18/08
Units:	ug/Kg	Analyzed:	01/18/08
Basis:	as received		

Cleanup Method: EPA 3620B

Analyte	Spiked	Result	%REC	Limits
Aroclor-1221	332.4	311.1	94	67-122

Surrogate	%REC	Limits
TCMX	97	66-140
Decachlorobiphenyl	73	51-152

Batch QC Report

Polychlorinated Biphenyls (PCBs)			
Lab #:	200592	Location:	Multi-Inc. Samp
Client:	Tetra Tech EMI	Prep:	EPA 3550B
Project#:	103DS1518014.01	Analysis:	EPA 8082
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC424734	Batch#:	133929
Matrix:	Soil	Prepared:	01/20/08
Units:	ug/Kg	Analyzed:	01/21/08
Basis:	as received		

Cleanup Method: EPA 3665A

Analyte	Result	RL
Aroclor-1016	ND	12
Aroclor-1221	ND	24
Aroclor-1232	ND	12
Aroclor-1242	ND	12
Aroclor-1248	ND	12
Aroclor-1254	ND	12
Aroclor-1260	ND	12

Surrogate	%REC	Limits
TCMX	110	66-140
Decachlorobiphenyl	117	51-152

ND= Not Detected

RL= Reporting Limit

Batch QC Report

Polychlorinated Biphenyls (PCBs)			
Lab #:	200592	Location:	Multi-Inc. Samp
Client:	Tetra Tech EMI	Prep:	EPA 3550B
Project#:	103DS1518014.01	Analysis:	EPA 8082
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC424735	Batch#:	133929
Matrix:	Soil	Prepared:	01/20/08
Units:	ug/Kg	Analyzed:	01/21/08
Basis:	as received		

Cleanup Method: EPA 3665A

Analyte	Spiked	Result	%REC	Limits
Aroclor-1221	329.4	317.0	96	67-122

Surrogate	%REC	Limits
TCMX	118	66-140
Decachlorobiphenyl	120	51-152

Target Analyte List Metals

Lab #:	200592	Project#:	103DS1518014.01
Client:	Tetra Tech EMI	Location:	Multi-Inc. Samp
Field ID:	RFS-WTAA-001	Basis:	dry
Lab ID:	200592-004	Sampled:	01/17/08
Matrix:	Soil	Received:	01/17/08
Units:	mg/Kg		

Moisture: 16%

Analyte	Result	RL	Diln	Fac	Batch#	Prepared	Analyzed	Prep	Analysis
Aluminum	20,000	120	20.00		133963	01/21/08	01/22/08	EPA 3050B	EPA 6010B
Antimony	3.3	0.60	1.000		133963	01/21/08	01/22/08	EPA 3050B	EPA 6010B
Arsenic	19	0.34	1.000		133963	01/21/08	01/22/08	EPA 3050B	EPA 6010B
Barium	400	0.30	1.000		133963	01/21/08	01/22/08	EPA 3050B	EPA 6010B
Beryllium	0.36	0.12	1.000		133963	01/21/08	01/22/08	EPA 3050B	EPA 6010B
Cadmium	2.9	0.30	1.000		133963	01/21/08	01/22/08	EPA 3050B	EPA 6010B
Calcium	2,100	30	1.000		133963	01/21/08	01/22/08	EPA 3050B	EPA 6010B
Chromium	51	0.30	1.000		133963	01/21/08	01/22/08	EPA 3050B	EPA 6010B
Cobalt	11	0.30	1.000		133963	01/21/08	01/22/08	EPA 3050B	EPA 6010B
Copper	1,200	6.8	20.00		133963	01/21/08	01/22/08	EPA 3050B	EPA 6010B
Iron	52,000	120	20.00		133963	01/21/08	01/22/08	EPA 3050B	EPA 6010B
Lead	220	0.30	1.000		133963	01/21/08	01/22/08	EPA 3050B	EPA 6010B
Magnesium	3,400	30	1.000		133963	01/21/08	01/22/08	EPA 3050B	EPA 6010B
Manganese	480	0.30	1.000		133963	01/21/08	01/22/08	EPA 3050B	EPA 6010B
Mercury	9.0	0.46	20.00		133902	01/18/08	01/18/08	METHOD	EPA 7471A
Molybdenum	3.6	0.30	1.000		133963	01/21/08	01/22/08	EPA 3050B	EPA 6010B
Nickel	61	0.30	1.000		133963	01/21/08	01/22/08	EPA 3050B	EPA 6010B
Potassium	1,100	30	1.000		133963	01/21/08	01/22/08	EPA 3050B	EPA 6010B
Selenium	ND	0.60	1.000		133963	01/21/08	01/22/08	EPA 3050B	EPA 6010B
Silver	42	0.30	1.000		133963	01/21/08	01/22/08	EPA 3050B	EPA 6010B
Sodium	420	30	1.000		133963	01/21/08	01/22/08	EPA 3050B	EPA 6010B
Thallium	ND	0.60	1.000		133963	01/21/08	01/22/08	EPA 3050B	EPA 6010B
Vanadium	33	0.30	1.000		133963	01/21/08	01/22/08	EPA 3050B	EPA 6010B
Zinc	940	24	20.00		133963	01/21/08	01/22/08	EPA 3050B	EPA 6010B

ND= Not Detected
 RL= Reporting Limit

Target Analyte List Metals

Lab #:	200592	Project#:	103DS1518014.01
Client:	Tetra Tech EMI	Location:	Multi-Inc. Samp
Field ID:	RFS-WTAA-002	Basis:	dry
Lab ID:	200592-006	Sampled:	01/17/08
Matrix:	Soil	Received:	01/17/08
Units:	mg/Kg	Prepared:	01/21/08

Moisture: 26%

Analyte	Result	RL	Diln Fac	Batch#	Analyzed	Prep	Analysis
Aluminum	32,000	310	50.00	133963	01/22/08	EPA 3050B	EPA 6010B
Antimony	33	0.68	1.000	133963	01/22/08	EPA 3050B	EPA 6010B
Arsenic	17	0.36	1.000	133963	01/22/08	EPA 3050B	EPA 6010B
Barium	1,600	15	50.00	133963	01/22/08	EPA 3050B	EPA 6010B
Beryllium	0.37	0.14	1.000	133963	01/22/08	EPA 3050B	EPA 6010B
Cadmium	9.3	0.34	1.000	133963	01/22/08	EPA 3050B	EPA 6010B
Calcium	14,000	620	50.00	133963	01/22/08	EPA 3050B	EPA 6010B
Chromium	200	0.34	1.000	133963	01/22/08	EPA 3050B	EPA 6010B
Cobalt	15	0.34	1.000	133963	01/22/08	EPA 3050B	EPA 6010B
Copper	21,000	18	50.00	133963	01/22/08	EPA 3050B	EPA 6010B
Iron	70,000	310	50.00	133963	01/22/08	EPA 3050B	EPA 6010B
Lead	1,400	12	50.00	133963	01/22/08	EPA 3050B	EPA 6010B
Magnesium	4,200	34	1.000	133963	01/22/08	EPA 3050B	EPA 6010B
Manganese	1,300	15	50.00	133963	01/22/08	EPA 3050B	EPA 6010B
Mercury	23	0.51	20.00	133950	01/21/08	METHOD	EPA 7471A
Molybdenum	12	0.34	1.000	133963	01/22/08	EPA 3050B	EPA 6010B
Nickel	100	0.34	1.000	133963	01/22/08	EPA 3050B	EPA 6010B
Potassium	1,500	34	1.000	133963	01/22/08	EPA 3050B	EPA 6010B
Selenium	ND	0.68	1.000	133963	01/22/08	EPA 3050B	EPA 6010B
Silver	190	15	50.00	133963	01/22/08	EPA 3050B	EPA 6010B
Sodium	1,200	34	1.000	133963	01/22/08	EPA 3050B	EPA 6010B
Thallium	ND	0.68	1.000	133963	01/22/08	EPA 3050B	EPA 6010B
Vanadium	40	0.34	1.000	133963	01/22/08	EPA 3050B	EPA 6010B
Zinc	3,600	62	50.00	133963	01/22/08	EPA 3050B	EPA 6010B

ND= Not Detected
 RL= Reporting Limit

Batch QC Report

Target Analyte List Metals			
Lab #:	200592	Location:	Multi-Inc. Samp
Client:	Tetra Tech EMI	Prep:	METHOD
Project#:	103DS1518014.01	Analysis:	EPA 7471A
Analyte:	Mercury	Basis:	as received
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC424593	Batch#:	133902
Matrix:	Soil	Prepared:	01/18/08
Units:	mg/Kg	Analyzed:	01/18/08

Result	RL
ND	0.020

ND= Not Detected
 RL= Reporting Limit

Batch QC Report

Target Analyte List Metals			
Lab #:	200592	Location:	Multi-Inc. Samp
Client:	Tetra Tech EMI	Prep:	METHOD
Project#:	103DS1518014.01	Analysis:	EPA 7471A
Analyte:	Mercury	Diln Fac:	1.000
Matrix:	Soil	Batch#:	133902
Units:	mg/Kg	Prepared:	01/18/08
Basis:	as received	Analyzed:	01/18/08

Type	Lab ID	Spiked	Result	%REC	Limits	RPD	Lim
BS	QC424594	0.5000	0.5270	105	80-120		
BSD	QC424595	0.5000	0.5310	106	80-120	1	20

Batch QC Report

Target Analyte List Metals			
Lab #:	200592	Location:	Multi-Inc. Samp
Client:	Tetra Tech EMI	Prep:	METHOD
Project#:	103DS1518014.01	Analysis:	EPA 7471A
Analyte:	Mercury	Basis:	as received
Field ID:	ZZZZZZZZZZ	Diln Fac:	10.00
Type:	Serial Dilution	Batch#:	133902
MSS Lab ID:	200585-003	Sampled:	01/16/08
Lab ID:	QC424596	Received:	01/17/08
Matrix:	Soil	Analyzed:	01/18/08
Units:	mg/Kg		

MSS Result	MSS RL	Result	RL	% Diff	Lim
0.7411	0.03571	0.6268	0.1786	15 *	10

*= Value outside of QC limits; see narrative

RL= Reporting Limit

Batch QC Report

Target Analyte List Metals			
Lab #:	200592	Location:	Multi-Inc. Samp
Client:	Tetra Tech EMI	Prep:	METHOD
Project#:	103DS1518014.01	Analysis:	EPA 7471A
Analyte:	Mercury	Basis:	as received
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC424826	Batch#:	133950
Matrix:	Soil	Prepared:	01/21/08
Units:	mg/Kg	Analyzed:	01/21/08

Result	RL
ND	0.020

ND= Not Detected
 RL= Reporting Limit

Batch QC Report

Target Analyte List Metals			
Lab #:	200592	Location:	Multi-Inc. Samp
Client:	Tetra Tech EMI	Prep:	METHOD
Project#:	103DS1518014.01	Analysis:	EPA 7471A
Analyte:	Mercury	Diln Fac:	1.000
Field ID:	ZZZZZZZZZZ	Batch#:	133950
MSS Lab ID:	200607-001	Sampled:	01/18/08
Matrix:	Soil	Received:	01/18/08
Units:	mg/Kg	Prepared:	01/21/08
Basis:	as received	Analyzed:	01/21/08

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim
MS	QC424830	0.01104	0.3906	0.4094	102	70-143		
MSD	QC424831		0.4808	0.5115	104	70-143	2	22

RPD= Relative Percent Difference

Batch QC Report

Target Analyte List Metals			
Lab #:	200592	Location:	Multi-Inc. Samp
Client:	Tetra Tech EMI	Prep:	EPA 3050B
Project#:	103DS1518014.01	Analysis:	EPA 6010B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC424887	Batch#:	133963
Matrix:	Soil	Prepared:	01/21/08
Units:	mg/Kg	Analyzed:	01/22/08
Basis:	as received		

Analyte	Result	RL
Aluminum	7.9 b	5.0
Antimony	ND	0.50
Arsenic	ND	0.29
Barium	ND	0.25
Beryllium	ND	0.10
Cadmium	ND	0.25
Calcium	ND	25
Chromium	ND	0.25
Cobalt	ND	0.25
Copper	ND	0.29
Iron	19 b	5.0
Lead	ND	0.25
Magnesium	ND	25
Manganese	0.15 J	0.25
Molybdenum	ND	0.25
Nickel	ND	0.25
Potassium	ND	25
Selenium	ND	0.50
Silver	ND	0.25
Sodium	ND	25
Thallium	ND	0.50
Vanadium	ND	0.25
Zinc	ND	1.0

J= Estimated value

b= See narrative

ND= Not Detected

RL= Reporting Limit