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ENVIRONMENTAL | CONSTRUCTION | MEC SERVICES

CLOSURE PLAN

Krassel Wood Treatment Site, EPA ID Number IDR000204990

September 2013

PAYETTE NATIONAL FOREST, IDAHO



Submitted to:
USDA Forest Service
Region 4
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Krassel Wood Treatment Site
T 19 N, R 6 E, Section 21 NE ¼
Krassel District
Payette National Forest
Valley County, Idaho

Client Contract Number/Order Number:
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1.0 INTRODUCTION

This plan has been prepared to address the permanent closure of a former wood post and pole treatment facility at the Krassel Work Center in Valley County, Idaho (the "Site"). A Closure Plan is needed to comply with the Idaho Hazardous Waste Management Act (HWMA) and the Resource Conservation and Recovery Act (RCRA). This Closure Plan provides a description and details of how the Site will be cleaned up. Upon approval of the closure plan by the Idaho Department of Environmental Quality (IDEQ), a Time-Critical Removal Action will occur under authority of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the Superfund Amendments and Reauthorization Act of 1986 (SARA) and will meet the requirements of the IDEQ.

2.0 GENERAL SITE DESCRIPTION AND LOCATION

The Krassel Work Center is located in the Krassel Ranger District of the Payette National Forest, Valley County, Idaho (Figure 1). The site is approximately 38 miles by road from McCall near the confluence of Indian Creek and the South Fork of the Salmon River. It is located in the NE1/4 of Section 21, T19N, R6E, with approximate coordinates of latitude 44°58'30"N, longitude 115°43'41"W (44.975, -115.728). The elevation is approximately 3,960 feet above mean sea level (amsl). The Site may be accessed from Forest Road 674.

The Site is surrounded by land managed by the Forest Service and there are no residential or commercial properties in the vicinity of the Site. The closest population centers are the small town of Yellow Pine approximately 15 miles to the east (25 miles by road) and Cascade, 15 miles to the southwest by road. The Site lies between approximately 200 feet and 1,700 feet to the east of the South Fork of the Salmon River. Indian Creek borders the Krassel Work Center to the south. The Site consists of an upper work center and lower guard station (Figure 2). The lower guard station includes a house and 2 other dwellings, a barn, a garage and a tack room. The upper work center consists of an office/warehouse; barracks, modular/mobile homes and travel trailers; a gas house, powder house and fuel storage; a filter house, generator house, trailer covers; a wash house, water supply well, water tank storage; an airstrip and secured equipment storage buildings.

3.0 DESCRIPTION AND BACKGROUND OF THE WOOD TREATMENT FACILITY

The USDA Forest Service (Forest Service) operated a small post and pole treatment operation in the 1960s and 1970s at the site. A dip tank and drying racks were located east of the airstrip and approximately 600 feet northeast of a weather station and a building used as an office (Figure 3). The dip tank consisted of a 32-inch culvert set in a 42-inch culvert with a 5-inch concrete collar between the two culverts. It was 50 inches high and had a pipe in bottom with a valve on the end that allowed the tank to drain to the side of hill approximately 28 feet to the southeast of the tank. The drying racks were located approximately 50 feet to the west/northwest of the tank.

Wood treatment involved soaking posts and poles in a preservative solution contained in the dip tank and then placing the treated wood on racks to dry. In 1993, the Forest Service collected ten soil samples from test pits around the dip tank. Results were reported as "creosote" with concentrations in soil from 7 ppm to 449 ppm over an approximate 1,700 square foot area. The dip tank was cleaned

out in 1996. Residual liquids and sludge removed from the tank were profiled as F032 hazardous wastes and transported for disposal at Clean Harbors hazardous waste disposal facility in Aragonite, Utah.

In May 2010, the Forest Service drilled a water supply well approximately 200 feet to the southeast of the former post and pole treatment site. The well water was tested for pentachlorophenol (PCP) and ten other SVOCs. All SVOCs, including PCP, were below analytical detection limits. The Forest Service believes that impact to the drinking water supply well from wood treatment activities is unlikely due to the distance between the dip tank and the well (approximately 200 feet) and depth to the water producing zone (greater than 230 feet).

One sample of residual tank liquid and 13 soil samples were collected in July 2010. PCP was detected at 4.6 mg/l in the liquid. The Forest Service believes that this concentration is indicative of residual contamination that remained after the tank was cleaned out in 1996. Sludge and liquids that were removed from the dip tank were transported in November 2012 to Clean Harbors, a RCRA – permitted hazardous waste disposal facility in Aragonite, UT. Soil samples were collected at depths ranging from 6" to 48" bgs. Soil samples were submitted for analysis of RCRA D-List Semi-Volatile Organic Compounds (SVOCs) including PCP. With the exception of two samples collected from the drain outlet area, all analytes in the soil samples were below analytical detection limits. PCP was detected at 1.6 mg/kg and 1.4 mg/kg at 1 foot and 4 feet below ground surface in this area. Three samples from the drain outlet area were submitted for analysis of dioxins and furans. Dioxins and furans were detected in all three samples with Total Toxic Equivalency (TEQ) values of 1,420 pg/g; 248 pg/g and 21.6 pg/g reported by the laboratory. The Forest Service removed the dip tank in October 2012 and stored it onsite for later disposal. Approximately 5 cubic yards of contaminated soil were excavated and stockpiled adjacent to the excavation. Appendix 1 contains photographs of the wood treatment area (MSE 2013).

The Forest Service conducted a Preliminary Assessment (PA) / Site Inspection (SI) at the Site in October and November 2012. The purpose of this investigation was to collect information concerning conditions at the Krassel Wood Treatment site to assess the threat posed to human health and the environment and to determine the need for additional action. Figure 4 shows the locations where samples were collected during the PA/SI. Although some metals and dioxins were detected at concentrations above EPA Regional Screening levels, phenols appeared to be the contaminant of primary concern. Table 1 summarized the results of phenol concentrations in soil samples. The PA/SI concluded that a closure plan should be developed to address residual contamination from wood preservative chemicals in soils within and surrounding the tank excavation and waste management/disposal methods for the former treatment tank, piping and contaminated soils.

4.0 OVERVIEW OF CLOSURE PROCEDURES

To close the wood treatment facility, the Forest Service intends to remove all hazardous waste, hazardous debris, and hazardous waste residues from the site. Precautions will be taken to minimize, control, or eliminate the escape and migration of hazardous waste, hazardous constituents, leachate, contaminated runoff or hazardous decomposition products to the ground surface, surface water, groundwater and atmosphere.

TABLE 1 – Summary of Phenol Concentrations in Soil

Sample ID	Date Collected	Analyte Concentration (mg/kg)										
		Pentachloro-phenol	Phenol	4-Chloro-3-methylphenol	2-Chloro-phenol	2,4-Dichloro-phenol	2,4-Dimethyl-phenol	4,6-Dinitro-2-methylphenol	2,4-Dinitro-phenol	2-Nitro-phenol	4-Nitro-phenol	2,4,6-Trichloro-phenol
Krassel-EP-S2-WC	10/23/2012	1.5	<0.007	<0.0048	<0.0083	<0.0075	<0.047	<0.12	<0.098	<0.013	<0.052	<0.0078
DR-S-COMP-1 FT	11/6/2012	<0.048	<0.007	<0.0048	<0.0083	<0.0075	<0.047	<0.12	<0.098	<0.013	<0.052	<0.0078
DR-N-COMP-1 FT	11/6/2012	<0.048	<0.007	<0.0048	<0.0083	<0.0075	<0.047	<0.12	<0.098	<0.013	<0.052	<0.0078
K-SP-COMP-1-4 FT	11/6/2012	2.4 (J)	<0.007	<0.0048	<0.0083	<0.0075	<0.047	<0.12	<0.098	<0.013	<0.052	<0.0078
K-EX-N10-10 FT	11/6/2012	80 (J)	<3.5	<2.4	<4.2	<3.7	<24.0	<62.0	<49.0	<6.5	<26.0	<3.9
K-EX-N15-15 FT	11/6/2012	0.22 (J)	<0.007	<0.0048	<0.0083	<0.0075	<0.047	<0.12	<0.098	<0.013	<0.052	<0.0078
K-EX-E5-5 FT	11/6/2012	<0.048	<0.007	<0.0048	<0.0083	<0.0075	<0.047	<0.12	<0.098	<0.013	<0.052	<0.0078
K-EX-E10-10 FT	11/6/2012	<0.048	<0.007	<0.0048	<0.0083	<0.0075	<0.047	<0.12	<0.098	<0.013	<0.052	<0.0078
K-EX-E15-15 FT	11/6/2012	<0.048	<0.007	<0.0048	<0.0083	<0.0075	<0.047	<0.12	<0.098	<0.013	<0.052	<0.0078
K-EX-E5+-1 FT	11/6/2012	<0.048	<0.007	<0.0048	<0.0083	<0.0075	<0.047	<0.12	<0.098	<0.013	<0.052	<0.0078
K-EX-E10+-1 FT	11/6/2012	<0.048	<0.007	<0.0048	<0.0083	<0.0075	<0.047	<0.12	<0.098	<0.013	<0.052	<0.0078
K-EX-N5+-1 FT	11/6/2012	<0.048	<0.007	<0.0048	<0.0083	<0.0075	<0.047	<0.12	<0.098	<0.013	<0.052	<0.0078
K-EX-N10+-1 FT	11/6/2012	<0.048	0.058 (J)	<0.0048	<0.0083	<0.0075	<0.047	<0.12	<0.098	<0.013	<0.052	<0.0078
K-EX-C10-10 FT	11/6/2012	49.0	<0.7	<0.48	<0.83	<0.75	<4.7	<12.0	<9.8	<1.3	<5.2	<0.78
K-EX-C15-15 FT	11/6/2012	0.45	<0.007	<0.0048	<0.0083	<0.0075	<0.047	<0.12	<0.098	<0.013	<0.052	<0.0078
K-EX-S5-5 FT	11/6/2012	23.0 (J)	<0.007	<0.0048	<0.0083	<0.0075	<0.047	<0.12	<0.098	<0.013	<0.052	<0.0078
K-EX-S10-10 FT	11/6/2012	39.0	<0.7	<0.48	<0.83	<0.75	<4.7	<12.0	<9.8	<1.3	<5.2	<0.78
K-EX-S15-15 FT	11/6/2012	0.21 (J)	<0.007	<0.0048	<0.0083	<0.0075	<0.047	<0.12	<0.098	<0.013	<0.052	<0.0078
K-EX-S5+-1 FT	11/6/2012	<0.048	<0.007	<0.0048	<0.0083	<0.0075	<0.047	<0.12	<0.098	<0.013	<0.052	<0.0078
K-EX-S10+-1 FT	11/6/2012	<0.048	<0.007	<0.0048	<0.0083	<0.0075	<0.047	<0.12	<0.098	<0.013	<0.052	<0.0078
K-EX-W10-10 FT	11/6/2012	74.0	<0.35	<0.24	<0.42	<0.37	<2.4	<6.2	<4.9	<0.65	<2.6	<0.39
K-EX-W15-15 FT	11/6/2012	0.37	<0.007	<0.0048	<0.0083	<0.0075	<0.047	<0.12	<0.098	<0.013	<0.052	<0.0078
K-EX-W5+-1 FT	11/6/2012	<0.048	<0.007	<0.0048	<0.0083	<0.0075	<0.047	<0.12	<0.098	<0.013	<0.052	<0.0078
K-EX-W10+-1 FT	11/6/2012	<0.048	<0.007	<0.0048	<0.0083	<0.0075	<0.047	<0.12	<0.098	<0.013	<0.052	<0.0078
K-V-5-5 FT	11/6/2012	16.0	<0.14	<0.095	<0.17	<0.15	<0.94	<2.5	<2.0	<0.26	<1.0	<0.16
K-V-10-10 FT	11/6/2012	<0.048	<0.007	<0.0048	<0.0083	<0.0075	<0.047	<0.12	<0.098	<0.013	<0.052	<0.0078
K-V-15-15 FT	11/6/2012	<0.048	<0.007	<0.0048	<0.0083	<0.0075	<0.047	<0.12	<0.098	<0.013	<0.052	<0.0078
K-V-E-1 FT	11/6/2012	0.059 (J)	<0.007	<0.0048	<0.0083	<0.0075	<0.047	<0.12	<0.098	<0.013	<0.052	<0.0078
K-V-S-1 FT	11/6/2012	0.087 (J5)	<0.007	<0.0048	<0.0083	<0.0075	<0.047	<0.12	<0.098	<0.013	<0.052 (J3)	<0.0078 (J3)
K-V-N-1 FT	11/6/2012	<0.048	<0.007	<0.0048	<0.0083	<0.0075	<0.047	<0.12	<0.098	<0.013	<0.052	<0.0078
K-V-W-1 FT	11/6/2012	<0.048	<0.007	<0.0048	<0.0083	<0.0075	<0.047	<0.12	<0.098	<0.013	<0.052	<0.0078

TABLE 1 – Summary of Phenol Concentrations in Soil (continued)

Sample ID	Date Collected	Analyte Concentration (mg/kg)										
		Pentachloro-phenol	Phenol	4-Chloro-3-methylphenol	2-Chloro-phenol	2,4-Dichloro-phenol	2,4-Dimethyl-phenol	4,6-Dinitro-2-methylphenol	2,4-Dinitro-phenol	2-Nitro-phenol	4-Nitro-phenol	2,4,6-Trichloro-phenol
K-EX-F-COMP-1 FT	11/7/2012	3.6 (J)	<0.007	<0.0048	<0.0083	<0.0075	<0.047	<0.12	<0.098	<0.013	<0.052	<0.0078
EPA RSL for Residential Soil		0.89	18,000	NA	390	180	1,200	NA	120	NA	NA	44
EPA RSL for Industrial Soil		2.7	180,000	NA	5,100	1,800	12,000	NA	1200	NA	NA	160

Notes:

Concentrations highlighted in grey exceed the RSL value for residential soil for a 1 x 10^{-6} excess cancer risk.

Concentrations highlighted in orange exceed the RSL value for residential soil for a 1 x 10^{-5} excess cancer risk

Concentrations highlighted in red exceed the RSL value for industrial soil for a 1 x 10^{-5} excess cancer risk

J = Estimated value below the lowest calibration point. Confidence correlates with concentration. (EPA)

J3 = The associated batch QC was outside the established quality control range for precision.

J5 = The sample matrix interfered with the ability to make any accurate determination; spike value is high

NA = Not Applicable; MCL is primary concern

RSL = EPA Regional Screening Level residential soil exposure: 1x10^{-5} risk for carcinogens or hazard index of 1 for non-carcinogens.

It is anticipated that all hazardous wastes and contaminated materials generated during the removal action will be properly packaged, labeled and transported under a Uniform Hazardous Waste Manifest to a permitted RCRA hazardous waste disposal facility. Therefore, post closure care will not be required. However, if contaminated materials cannot be practically removed, a contingency plan will be prepared to describe alternate closure and post closure care requirements needed to comply with relevant or applicable regulations. The following materials are anticipated to require removal during closure activities:

4.1 Tank – A former dip tank was excavated in October 2012. The tank was wrapped in plastic liner material and stored onsite adjacent to the excavation. The tank will be classified as F032 debris. The disposal facility will immobilize any residual contaminants through encapsulation prior to land disposal.

4.2 Soil Stockpile and Contaminated Subsoil – Approximately 5 cubic yards of soil was excavated during removal of the former dip tank. A composite sample of the soil contained pentachlorophenol and other contaminants associated with wood treatment chemicals. The soil will be classified as F032 hazardous. Additional laboratory analysis may be required to profile this material for disposal.

Contaminated subsoils potentially present beneath the soil stockpile and tank storage area will be removed by excavating the top 6 inches of surface soil. This material will be handled in the same manner as stockpiled soil and may contribute another 1 cubic yard of soil for disposal. Soil samples will be collected after removing these materials to confirm that the material storage areas are free of wood treatment chemicals. Confirmation samples will be analyzed for Contaminants of Concern (COCs) identified in Section 5.

4.3 Residual Soil Contamination – The results of sampling activities conducted in November 2012 indicate that residual contamination remains in the area of the tank excavation. In an email dated March 25, 2013, IDEQ indicated that it would require the Forest Service to: at its discretion, remove soils down to 15 feet and not resample (as there are several samples showing clean soils at 15 feet), or selectively excavate the stained and obviously contaminated soils around the 10 foot level (or deeper), then take a minimum of two composite samples from the floor of the excavation to confirm that the remedial objectives have been met. Additionally IDEQ indicated that further dioxin sampling is not necessary. Therefore, additional excavation will be conducted to reduce residual concentrations of PCP to below 6 mg/kg by over-excavating soil to a maximum depth of 15 feet below ground surface. Regardless of the final excavation depth, soil cleanup confirmation samples will be collected as described in Section 5. Table 1 lists the analytical methods, minimum detection limits and reporting detection limits for each COC.
The following PA/SI samples exceeded the target cleanup level identified by IDEQ:

- K-EX-N10-10 FT: 10 feet north of the center of the excavation at a depth of 10 feet below ground surface.
- K-EX-C10-10 FT: Center of the excavation 10 feet below ground surface or 5 feet below the floor of the excavation.
- K-EX-S5-5 FT: 5 feet south of the center of the excavation at depth of 5 feet below ground surface.
- K-EX-S10-10 FT: 10 feet south of the center of the excavation at depth of 10 feet below ground surface.

- K-EX-W10-10 FT: 10 feet west of the center of the excavation at depth of 10 feet below ground surface.
- K-V-5-5 FT: 5 feet below the discharge valve, 28 feet to the southeast of the center of the excavation.

It is difficult to accurately predict the quantity of soil requiring excavation. Based on the PA/SI data, it appears that wood preservative contamination extends to depths of at least 10 feet (but less than 15 feet) below ground surface beneath the center of the excavation and within an area 10 feet to the north, south, and west of the center of the excavation. A very rough volume calculation suggests that 85 to 90 cubic yards of contaminated soil from this area may require excavation and disposal. Additional excavation to a depth of between 5 and 10 feet will also be required in the area of the drain valve. This could result in an additional 35 to 40 cubic yards of contaminated soil requiring disposal also based on a rough calculation and very general contaminant distribution assumptions. Soil samples will be collected after excavating contaminated soil to confirm that the tank excavation and drain valve areas are free of wood treatment chemicals. An underground 1-inch diameter drain pipe extending from the tank excavation to a hillside 28 feet to the southeast will be removed during soil excavation and handled as F032 hazardous debris.

Total Petroleum Hydrocarbons (TPH) / Diesel Range Organics (DRO) appeared to correlate well with PCP in samples collected during the PA/SI. Cleanup confirmation samples may be submitted for analysis of TPH-DRO in addition to PCP. Additional laboratory analysis will be required to profile this material for disposal. Sampling procedures, analytical test methods and detection limits are addressed in the Sampling and Analysis Plan.

4.4 Decontamination Washwater – Cleaning solutions used to decontaminate excavation equipment (washwater and rinsate) will be contained, collected, and packaged for disposal at a permitted hazardous waste facility. It is anticipated that liquids will be classified as F032 hazardous. Additional laboratory analysis will be required to profile these liquids for disposal.

4.5 Contaminated Materials – Liner material used to envelop the contaminated soil stockpile consists of a double layer of 4 mil Visqueen. The enveloped soil was placed on a platform of medium density fiberboard (MDF) to prevent direct contact with the ground. The former dip tank was wrapped with 4 mil Visqueen and an additional layer of polyethylene tarp material. These materials will profiled for disposal at a permitted hazardous waste disposal facility. It is anticiptated that these materials will be classified as F032 debris. Contaminated personal protective equipment (PPE) and disposable sampling tools and decontamination equipment will be handled in the same manner.

4.6 Transportation and Disposal – Hazardous waste soils and washdown water / rinsate will be profiled as F032 hazardous waste based on previous disposal activities conducted by the Forest Service. The tank, liners and other contaminated materials will be classified as F032 hazardous debris. U.S. Ecology, a permitted RCRA hazardous waste disposal facility located in Grandview, Idaho, has been preliminarily identified for disposal of these materials. However, there is some uncertainty as to whether the hazardous waste soil and water will be accepted for land disposal. In order to make this determination, representative samples of water and excavated soil will be analyzed for profiling parameters specified by the disposal facility.

The removal action is envisioned as a 3-stage process: 1) mobilizing excavation equipment to the site to remove and stockpile contaminated of soil and collect wash down water so that representative

samples of these waste streams can be collected and analyzed; 2) profiling wastes for land disposal upon receipt of analytical data, assuming RCRA universal or alternate treatment standards are met; and 3) remobilizing to the site to load hazardous wastes and debris for transportation by a licensed hazardous waste hauler to the disposal facility. If the profiled waste does not meet the universal treatment standards or alternate treatment standards, incineration may be required.

5.0 CLOSURE SAMPLING AND ANALYSES PLAN

Closure Sampling and Analysis will follow procedures identified in the Sampling and Analysis Plan (SAP) that was prepared for the PA/SI (Appendix 2). The SAP describes COCs, sampling procedures, analytical test methods, sample handling and QA/QC procedures. However, closure sampling assumptions differ from the PA/SI sampling assumptions in the following ways:

- In an email correspondence dated March 25, 2013, the IDEQ indicated that soil excavation should be conducted to remove all contaminated soils to 6 mg/kg of PCP within the tank excavation and at the drain pipe areas. Therefore, PCP is the COC for this removal action.
- Contaminated soil removal will require excavation to a maximum depth of 15 feet below ground surface (10 feet below the floor of the excavation) in the center of the dip tank excavation and 10 feet to the north west and south;
- Conceptually, the area requiring excavation is a semicircular arc with its origin at the center of the excavation and a radius of 10 feet fanning out to the west (approximately 157 square feet);
- Soil within the semicircular area would be excavated to a depth of 15 feet, producing approximately 2,356 cubic feet (87 cubic yards) of potentially contaminated soil;
- Contaminated soils will require excavation beneath the drain valve to a depth of between 5 and 10 feet below ground surface;
- Conceptually, the area requiring excavation is a cone with its base 10 feet below ground surface and a radius of 10 feet. The volume of contaminated soil within this area could be as much as 1,047 cubic feet (39 cubic yards);

Excavation depths are based on the results of sampling and analysis conducted during the PA/SI and described in Section 4.3. Based on the results of the PA/SI, PCP concentrations that exceed the target cleanup level of 6 mg/kg correlate well with TPH-DRO concentrations in excess of 400 mg/kg. Although volatile aromatic analytes (BTEX) were not detected in soil samples, a characteristic petroleum odor was observed in stockpiled soils that had been covered. Therefore, an organic vapor monitor may be useful in guiding the excavation along with visual evidence of contamination.

The actual sizes and shapes of the excavations will vary as excavation walls are stepped back to prevent sloughing and achieve stable configurations and as the excavation follows zones of contamination that may not fall within the assumed areas.

Staging areas will be established adjacent to each excavation to place contaminated soil for profile sampling and later loading into trucks. Staging areas will be lined with 60 mil HDPE, bermed and sloped inward to contain excavated soil. Separate staging areas may also be established to store clean soil for reuse.

It is anticipated that over-excavation will be performed to depths of 15 feet in the area of the tank excavation and to depths of 10 feet in the area of the drain valve. Soil cleanup confirmation samples will be collected from the excavations in the following manner:

- Two grab samples will be collected from the floor of each excavation.
- Up to 4 grab samples will be collected from the walls of each excavation.
- Samples will either be equally spaced within each excavation or located in areas that displayed the highest apparent contamination based on field evidence.

Soil samples will be submitted to ESC Lab Sciences in Mt. Juliet, TN for analysis. Table 1 lists the analytical methods, minimum detection limits and reporting detection limits for each COC.

Table 2. Proposed Laboratory Analyses

Analyte	Matrix	MDL	RDL	EPA Method
TPH/Diesel-Range Organics	Soil	0.77 mg/kg	4.0 mg/kg	8015/3546-DRO
Pentachlorophenol	Soil	0.048 mg/kg	0.34 mg/kg	8270D/ SV8270PCP

Notes:
MDL = Minimum Detection Limit for the Analytical Method.
RDL = Reporting Detection Limit (equivalent to Practical Quantitation Limit)

Profile sampling will be required by the selected disposal facility. It is anticipated representative samples of stockpiled soil and wash-down water will be collected for analysis of profile parameters in addition to any analytical data that has already been generated.

6.0 QA/QC PLAN AND PROCEDURES

Quality assurance/quality control procedures will follow those described in Section 5 of the SAP (Appendix 2). In addition, the following procedures will be observed during the closure activities:

7.0 HEALTH AND SAFETY PLAN FOR CLOSURE ACTIVITIES

This Closure Plan incorporates the Health and Safety Plan (HASP) prepared in October 2012 for the PA/SI sampling activities. The primary differences between PA/SI and Closure activities will be:

1) The use of excavation equipment and large trucks for transporting contaminated soils to the disposal facility during; and
2) Excavation hazard control during Site closure activities.

It is anticipated that HASP Section 5.2.1- Drilling Physical Hazard Control will apply to heavy equipment to be used during closure activities. However, excavation activities have additional potential to create physical hazards. Control measures implemented to minimize potential excavation physical hazards are presented below.

All excavation activities must be performed in accordance with OSHA safety standards for excavating, 29 CFR 1926 Subpart P. In particular, the following points shall be observed:

- Any underground or overhead utilities in the vicinity shall be located prior to excavation or drilling activities.
- Field personnel shall stand well clear of trenches and pits during excavation. Personnel not involved in monitoring or operation of excavating equipment or drilling rig shall remain a safe distance from the equipment.
- Access by the general public shall be impeded by means of traffic cones, construction fencing or barricades, if drilling or excavation occurs in a publicly trafficked area. If it is absolutely necessary that an excavation be left open overnight, the area shall be barricaded and a warning sign placed. Open excavations shall not be left unattended without the permission of the project manager and the property owner or tenant.
- Vehicles and equipment shall be kept far enough from excavations to prevent caving hazards, and shall not under any circumstances be placed closer than three feet from the edge of an excavation.
- Entry into any unshored excavation greater than five feet in depth is forbidden, unless the slope is gentler than 1:1.
- Personnel shall stand upwind of excavations, boreholes, spoils, etc., whenever practical. Always approach an excavation into potentially contaminated material from upwind.
- All team members must make a conscious effort to remain aware of their own and others' positions relative to moving equipment. Know where the emergency shutoff is located.
- Personnel shall not, under any circumstances, enter or ride in any equipment not designed specifically for carrying human passengers.

8.0 SITE MANAGEMENT

8.1 Erosion Control – Silt fence will be installed in areas surrounding excavation zones, staging areas, and decontamination areas to contain sediment migration during the removal action.

8.2 Contaminated Soil Staging Areas – It is anticipated that contaminated soil will be stockpiled for profile sampling and staged for loading into trucks that will transport it to the disposal facility. Staging areas will be bermed and lined with 60 mil HDPE.

8.3 Decontamination Areas – Temporary areas will be established for the decontamination of small sampling equipment and large excavation equipment. These areas will be bermed, lined and sloped inward to contain washwater and rinsate. The decontamination area will have a sump or basin to collect washwater and rinsate and facilitate transfer of liquids to containers or contaminated soil stockpiles. Equipment will be brushed clean, washed with an Alconox solution, and triple rinsed with de-ionized or distilled water.

8.4 Management and Disposal of Wastes - Wash down water will be collected and transferred into suitable containers and managed as F032 waste as discussed in Section 4.4.

8.5 Field Quality Control Samples - Decontamination rinsate samples will be collected from the final decontamination of each piece of sampling and heavy equipment and submitted for analysis of COCs. Sample handling procedures are described in the SAP. Duplicate samples will be collected during cleanup confirmation sampling at a frequency of 10%. Field blanks will be prepared by filling

a sample container with distilled water in the field and submitting the sample for analysis of COCs. Field blanks will be collected at a frequency of 20%. A trip blank supplied by the laboratory will accompany each shipment of samples to the laboratory.

8.6 Site Restoration – The Forest Service plans to the site for equipment storage following closure. The excavation will be backfilled with clean, imported fill obtained from the boundary of the Work Center, well away from the closure area. Following backfilling, the area will be vegetated with a standard Forest Service seed mix.

9.0 SCHEDULE FOR CLOSURE

The schedule for Site closure is subject to a number of factors that are difficult to predict currently. The following schedule provides an estimate of project tasks and duration, but is subject to change. Site activities are anticipated to begin in the Spring of 2014.

Table 3 – Schedule for Site Closure Activities

Task	Wk 0	Wk 1	Wk 2	Wk 3	Wk 4	Wk 5	Wk 6	Wk 7	Wk 8	Wk 9	Wk 10	Wk 11
0-Notice to Proceed from FS												
1-Contracting												
2-Scheduling												
3-Mob/ Demob												
4-Excavate/Stockpile Soil												
5-Lab Analysis / Profile												
6-Remobilization												
7-Load/Haul/Manifest												
8-Backfill/ Compact												
9-Site Restoration												
10-Reporting												

Notes:

The start of site closure activities are dependent on:

- Finalizing a Consent Order with IDEQ,
- Forest Service bidding and contracting process,
- The selected contractor's ability to mobilize to the site, and
- Weather conditions.

The report will be reviewed by a Professional Engineer.

10.0 REFERENCES

E W Wells Group, LLC, 2012a. Health and Safety Plan, Krassel Wood Treatment Site, Payette National Forest, Idaho, October 2012.

E W Wells Group, LLC, 2012b. Sampling and Analysis Plan, Krassel Wood Treatment Site, Payette National Forest, Idaho, October 2012.

E W Wells Group, LLC, 2013. Final Preliminary Assessment / Site Inspection, Krassel Wood Treatment Site, Payette National Forest, Idaho, April 2013.

USEPA, 2010. Closure Plan Guidance, updated May 25, 2010. http://www.epa.gov/wastes/hazard/tsd/permit/tsd-regs/general/clos-plan.pdf

FIGURES

Figure 1 - Location Map
Krassel Work Center
Payette National Forest, Idaho


YELLOW PINE
(25 MILES)
S Fork Salmon River
Wood Post
Treatment Site
WEATHER
STATION
AIR STRIP
UPPER
KRASSEL
GUARD
STATION
Water
Storage
Tanks
FSR 674
EMPLOYEE
HOUSING
LOWER
KRASSEL
GUARD
STATION
INDIAN CREEK
CASCADE
(15 MILES)
LEGEND
BUILDINGS
ROADS
WATER BODY
WELL SITE
N
25 0 50 100 200
FIGURE 2. SITE FEATURES
KRASSEL WORK CENTER
PAYETTE NF, VALLEY COUNTY IDAHO
EW WELLS-MSE
1555 Shoreline Drive, Suite 150
Boise, ID 83702
(208) 345-8282

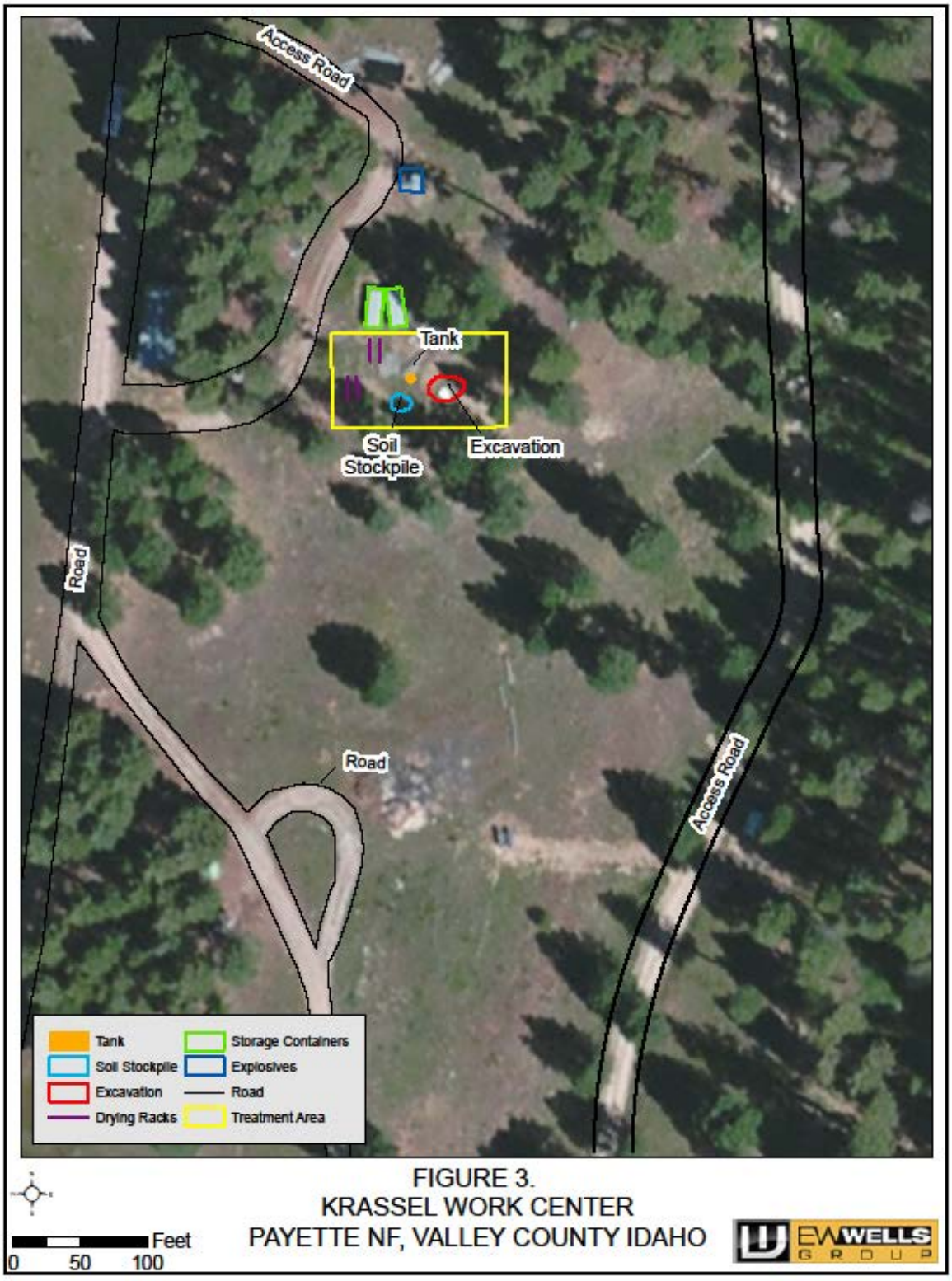

FIGURE 3.
KRASSEL WORK CENTER
PAYETTE NF, VALLEY COUNTY IDAHO

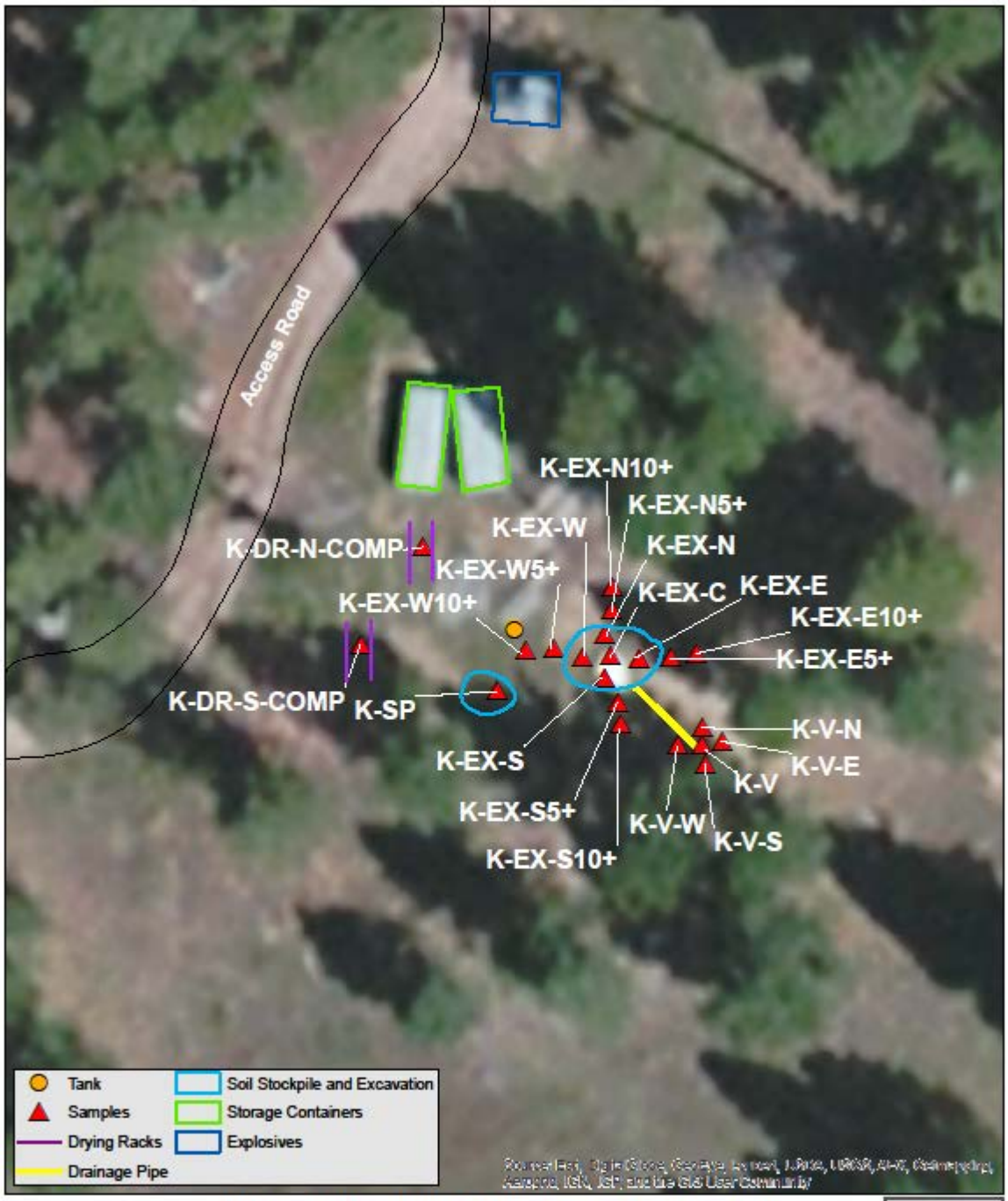

FIGURE 4. POST TREATMENT SITE SAMPLE LOCATIONS
KRASSEL WORK CENTER
PAYETTE NF, VALLEY COUNTY IDAHO

APPENDIX 1 - PHOTOGRAPHS OF WOOD TREATMENT AREA

Photograph 1 – Drying rack area

Photograph 2 – Excavation/Tank pit;

Photograph 3 –Drain valve sample location

Photograph 4 – Drying rack; Tank (L); Stockpile (R)

Photograph 5 – Covered excavation / tank pit

Photograph 6 – Soil stockpile

APPENDIX 2 – SAMPLING AND ANALYSIS PLAN

E W WELLS-MSE

ENVIRONMENTAL | CONSTRUCTION | MEC SERVICES

SAMPLING AND ANALYSIS PLAN

Krassel Wood Treatment Site

October 2012

PAYETTE NATIONAL FOREST, IDAHO

Submitted to:
USDA Forest Service
Region 4
HC 63, Box 1669, Hwy 93
Challis, Idaho 83226

Submitted by:
E W Wells Group - MSE
1555 Shoreline Drive, Suite 150
Boise, ID 83702
(208) 345-8292

Location:
Krassel Wood Treatment Site
T 19 N, R 6 E, Section 21 NE ¼
Krassel District
Payette National Forest
Valley County, Idaho

Client Contract Number:
0610-12-211123
AG-0261-P-12-0183

Author:
Rolf V Lange, P.G.
Senior Project Manager

Reviewer:
Chris Lammer, P.E.
Senior Program Manager

Boise Health & Safety Officer:
Scott Kirkland

SAMPLING AND ANALYSIS PLAN
Krassel Wood Treatment Site
Payette National Forest, Idaho

TABLE OF CONTENTS

1.0 DISTRIBUTION LIST AND SIGNATURE PAGE

Dean Morgan _____ Signature/Date
Contracting Officer's Representative
USDA Forest Service
Challis-Yankee Fork Ranger District
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Challis, ID 83226
dmorgan04@fs.fed.us

Rolf Lange _____ Signature/Date
Project Manager
E W Wells Group, LLC
1463 Gregson Avenue
Salt Lake City, UT 84106
rlange@mse-env.com

Eric Hieb _____ Signature/Date
Field Engineer
E W Wells Group, LLC
1555 Shoreline Drive, Suite 150
Boise, ID 83702
ehieb@mse-env.com

2.0 KEY PERSONNEL

The following key personnel and companies are involved in this project:

Owner/Owner's Representative:
USDA Forest Service, Region 4 – Dean Morgan, COR

State of Idaho:
Department of Environmental Quality – Mark Jeffers, Environmental Hydrogeologist; Mark Van Kleek, Water Quality Science Officer

E W Wells Program Manager:
Paul Hunter, P.G.

E W Wells Project Manager:
Rolf Lange, P.G.

E W Wells Project/Field Personnel:
Eric Hieb, E.I.T.

Direct Push Driller:
Cascade Drilling – Jeff Townsend

Analytical Laboratory:
ESC Lab Sciences – Jared Willis

3.0 PROJECT DEFINITION AND BACKGROUND

3.1 Project Statement

E W Well Group, LLC (Wells) was contracted by the USDA Forest Service (Forest Service) to conduct a Preliminary Assessment/Site Inspection (PA/SI) of a wood treatment dip tank, drain line and drying rack at the Krassel Wood Treatment Site (Site) in the Payette National Forest, Idaho. The PA/SI will further characterize the site and determine whether further action is warranted under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) or required by Idaho Department of Environmental Quality (IDEQ). The purpose of this Sampling and Analysis Plan (SAP) is to establish the requirements and procedures that will be implemented during PA/SI sampling and analysis activities at the Krassel Wood Treatment Site.

This SAP will describe the sampling plan design, rationale, and objectives; specify the sampling locations, sampling and analytical methods and protocols, sample frequency, and analytical parameters; specify procedures for sample management, equipment decontamination, field instrument operation and calibration, investigation-derived waste (IDW) management, and field documentation. Quality Assurance/ Quality Control (QA/QC) will be applied throughout the entire project including during sample collection, laboratory analysis, and data reduction and

interpretation phases of the work. Potential contaminants of concern primarily include Poly Aromatic Hydrocarbons (PAHs), Pentachlorphenol (PCP), Creosote, and Petroleum Products.

3.2 Background

The Site is owned by USDA Forest Service (USFS) and was historically used for treating wood posts. A dip tank constructed from concentric corrugated metal pipes and concrete is present, with a 1-inch drain pipe leading to a drain valve approximately 28 feet away. A drying rack is also reportedly located at the facility nearby, approximately 50 feet from the tank.

Ten soil samples were collected by USFS personnel from test pits in 1993. Results were reported as "creosote" with concentrations in soil from 7 ppm to 449 ppm over an approximately 1,700 square foot area. The highest concentration was in a sample collected 7 inches below ground surface (bgs) near the outlet of the drain pipe. None of the 10 samples collected in 1993 were reported as clean (or non-detect). Laboratory reports from the 1993 sampling are not available. Because there is no specific laboratory test for creosote, which is a mixture of hundreds of organic compounds, these values are assumed to be the sum of several chemicals (likely poly-aromatic hydrocarbons). These 10 samples were also tested for pentachlorophenol (PCP) with none detected. A sketch of the sampling locations and creosote concentrations are provided in Appendix 1.

An additional 13 soil samples and one sample of water from the tank were collected in July 2010. These samples were submitted to Analytical Laboratories of Boise, Idaho for analysis of PCP and 10 other organic compounds by EPA Method 8270 (not the full analyte list for this method). The chain of custody forms indicate that a Toxicity Characteristic Leaching Procedure (TCLP) extraction was requested for all samples. The laboratory reports do not state if this extraction was performed. Because the TCLP extraction of solids (soil) involves a 20:1 dilution, results of samples analyzed using this method would be much lower than results of a total (non-TCLP) analysis. PCP was reported as 1.6 mg/kg and 1.4 mg/kg in two of these soil samples (samples K-3a and K-3c, respectively) with none detected in the other 11 samples. PCP was reported as 4.6 mg/L in the sample of water from the tank. All other analytes were reported as below detection limits for all samples. Copies of lab reports are provided in Appendix 1.

Three of the July 2010 soil samples collected near the outlet of the drain pipe, samples K-3a, K-3b and K-3c, were also submitted to Environmental Science Corp. of Mt. Juliet, TN on September 9, 2010 for analysis of dioxins and furans. Dioxins and furans were detected in all three samples with 2,3,7,8-TCDD Toxic Equivalency Quotient (TEQ) values of 1,420 pg/g in K-3a; 248 pg/g in K-3b, and 21.6 pg/g in K-3c. These samples were collected from 1, 3, and 4 feet bgs, respectively. Copies of lab reports are provided in Appendix 1.

A new water supply well was completed at the site on June 2, 2010. This well is located approximately 200 feet from the dip tank and is 248 feet deep with the upper 136 feet cased (8-inch steel) and the lower 60 feet screened. The well was completed with a sand pack from 148 feet to the base of the boring. The static water level recorded on the well driller's report was 70 feet. A water sample from this well was tested for PCP and ten other semivolatile organic chemicals (SVOCs). With detection limits of 2 µg/L for PCP and an a drinking water Maximum

Contaminant Level (MCL) of 1 µg/L for PCP, the lab report concluded no analytes (PCP and the ten SVOCs) were detected above identified detection limits.

4.0 SAMPLING AND ANALYSIS

Field screening, testing and cleanup verification sampling will be conducted in accordance with *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*, Environmental Protection Agency (EPA) SW-846. SW-846 functions primarily as a guidance document setting forth acceptable methods for hazardous waste-related sampling and analysis.

Direct push boring soil samples will be collected at the location of the drain valve at 5, 10, and 15 feet below ground surface (bgs) to help define the vertical extent of contamination. Soil samples will be collected at approximately 9 to 12 inches bgs from locations 5 feet from the drain valve to the north, south, east and west to help define the lateral extent of contamination.

The dip tank was drained and extracted on September 27, 2012. The pipeline from the dip tank to the drain valve is intact. The pipe connection to the bottom of the dip tank (end of pipe) is located in the excavation that remained after tank extraction. It was noted that the "end of the pipe" area has a visible moist area of approximately 2 ft. x 2 ft. Soil samples will be collected from 5 direct push borings to define vertical extent and lateral extent of contamination in the area of the extracted dip tank. Placement of these borings will include at least one boring in the moist area on the floor of the excavation. The other borings would radiate out 5 feet from the moist area north, south, east, and west within and outside the excavation. Samples from each boring will be collected at 5 and 10 feet below the floor of the excavation or 5, 10 and 15 feet bgs if the boring is outside the boundaries of the excavation. If field evidence suggests that contamination may be present below the proposed depth intervals, additional samples may be collected to verify field observations. Surficial samples will be collected at approximately 9 to 12 inches bgs from locations 5 and 10 feet laterally to the north, south, east and west of the edges of the dip tank excavation to define lateral extent of impact, if present.

Two composite soil samples will also be collected from the floor/walls of the dip tank excavation. One sample will be a four point composite from the floor of the excavation and one will be an eight point composite (two subsamples from each of the four side walls).

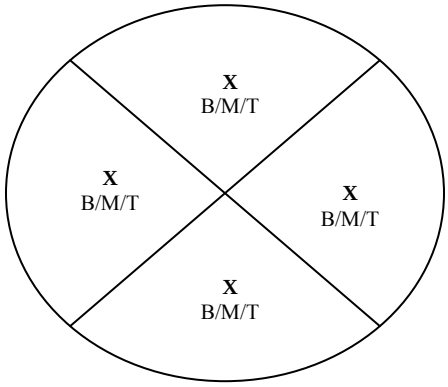
Resulting from the dip tank excavation, a soil stock pile was created and is located approximately 10 feet from the excavation. The stockpile is estimated to be approximately 3 to 5 cubic yards and is generally cone-shaped. One (1) additional composite sample will be collected from the soil stockpile. Sampling will be conducted according to the following procedure:

- The soil stockpile will be divided into 4 equal pie-shaped segments;
- A soil boring will be driven in the center of each segment and a sample collected from the bottom third, middle third, and top third of each boring resulting in 12 subsamples;
- A hand auger will be used to collect samples;
- All subsamples will be of equal volume;
- All subsamples will be collected from a depth of at least one foot below the surface of the pile;

- All subsamples will be combined in a large, clean stainless steel mixing bowl or disposable aluminum pan;
- Large stones, sticks and vegetation will be removed;
- Subsamples will be thoroughly mixed together with a clean stainless steel or disposable spoon;
- An adequate volume of the resulting composite sample will be transferred into an appropriate container provided by the laboratory selected to perform the required analysis.

Figure 1 illustrates the sampling approach.

Figure 1 – Sampling Points for Soil Stockpile



Key:
X = Boring / Sample Location
B = Subsample collected from bottom 1/3 of pile
M = Subsample collected from middle 1/3 of pile
T = Subsample collected from top 1/3 of pile

Two composite soil samples will be collected from the drying rack area. Each of these will be prepared by collecting 4 to 6 sub-samples from between 9 and 12 inches bgs. These sub-samples will be field composited using disposable plastic equipment. Two additional soil samples will be collected from between 9 to 12 inches bgs in areas where visual inspection suggests liquids from the drain valve may have traveled downslope along a swale when the tank was drained.

One background soil sample will be collected from 9 to 12 inches bgs approximately 300 feet from the dip tank and analyzed for metals only. One matrix spike/ matrix spike duplicate analysis will be performed on one of the soil samples for quality control purposes.

Latitude, longitude, and approximate elevation of each sampling location will be measured using a recreational-grade Global Positioning System (GPS). Excess soil will be returned to its borings/origin. All used sampling equipment, PPE, and other IDW will be placed in a 55-gallon

drum and left on site. All IDW will be labeled with a "Non-Classified Waste Material" label indicating that the contents of the container have not been classified and must be managed with caution until classified and then managed accordingly.

The new water well, located approximately 200 feet from the dip tank location will be sampled and analyzed for PCP, BTEX, PAHs and metals. This sample will be divided into two sub-samples with the second serving as a blind duplicate for QA evaluation. Based on the Well Driller's Report on file with the Idaho Department of Water Resources, The well is constructed with 8-inch steel casing from 1.5 feet to 135 feet and 6-inch PVC casing from -8 inches to 188 feet and 6-inch slotted PVC screen from 188 feet to 248 feet. Static water level was measured at 70 feet. Based on this information, an estimated 178 feet of standing water may be present within the 6 inch diameter PVC well casing. One casing volume is therefore equivalent to approximately 34.95 cubic feet of water or approximately 261.44 gallons.

Specific compounds that will be evaluated in each sample are listed in Table 1.

Table 1. Proposed Laboratory Analyses

Analyte	Soil	Water Supply Well	EPA Method
Benzene, Toluene, Ethylbenzene, and Xylenes (BTEX)	X	X	8260B
Copper and Zinc (total metals)	X	X	6010B
Diesel-Range Organics	X	NA	8015/3510C
Benzo(a)pyrene and Pentachlorophenol	X	X	8270C/ SV8270PCP
PAHs	X	X	8270C-SIM
Phenols	X	NA	8270C, acid
RCRA-8 Metals: Arsenic, Barium, Cadmium, Chromium, Lead, Mercury, Selenium, and Silver (total metals)	X	X	6010B 7470A–Hg (w) 7471–Hg (s) 6020-As (w)

Notes:
Background soil sample will be analyzed for metals only.
NA = Not Analyzed

4.1 Sample Collection

All samples collected for field screening, testing and cleanup verification will be collected in accordance with industry standards and SW-846 protocols. The following equipment may be used collect grab samples:

1. Decontaminated or stainless steel sampling spoon or disposable spoon
2. Disposable vinyl gloves
3. Sample kit (lab furnished), containing:

a. Ice chest/cooler
b. Sample containers with lids
c. Sample labels
d. Packing material
e. Chain of custody form(s)
f. Return express shipping label(s)/sticker(s)

4. Large (1 gallon) Ziploc® bags
5. Large trash bags
6. Cube ice – 10 pounds
7. Shipping tape/or Duct tape
8. Waterproof marker (e.g., Sharpie®)
9. Ink pens, black or blue
10. Field logbook

Preparation:

1. Sample kits and containers will be ordered from the lab a minimum of seven (7) days prior to sampling date.
2. Ice and de-ionized water will be purchased prior to driving to site.

4.1.1 Grab and Composite Soil Sample Collection Procedures

All sampling activities will be conducted using safe practices and using appropriate personal protective equipment (PPE) in accordance with the Site Health and Safety Plan. A procedure for soil composite sampling is discussed below:

Grab Sample Collection

1. A decontaminated or stainless steel spoon or plastic spoons will be used to collect a soil sample from the area of interest.
2. Soil will be transferred from the or spoon directly into sample containers. The required number of sample containers will be filled completely.
3. New disposable gloves will be worn for the collection of each grab soil sample
4. The sample containers will be wiped clean with a paper towel and lids screwed back on tightly.
5. Sample containers will be labeled properly and placed in the cooler with ice.

Composite Sample Collection

1. Composite samples will be comprised of selected grab samples collected at locations within an area or zone of interest to characterize the nature of contamination within the given volume of soils.
2. A decontaminated or stainless steel spoon or plastic spoon will be used to collect the grab samples from the area of interest.

3. An equal volume of each grab sample will be placed into a common stainless steel container. The soils will be carefully mixed to create a homogeneous soil matrix for the composite sample.
4. Soil will be transferred from the mixing container directly to the sample containers. The required number of sample containers will be filled completely.
5. New disposable gloves will be worn for the collection of each grab soil sample
6. The sample containers will be wiped clean with a paper towel and lids screwed back on tightly.
7. Sample containers will be labeled properly and placed in the cooler with ice.

4.1.2 Well Water Sample Collection

When sampling wells for environmental contaminants, it is standard practice is to remove a minimum of three casing volumes of water before collecting the sample. That would require removing approximately 784 gallons of water from the well based on the well data discussed in Section 4.0. Depth to static water level will be measured in the water supply well to confirm reported conditions, provided an access port is available. Site personnel have indicated that the flow rate from a valve at the pump house is approximately 6 gallons per minute. The well will be purged of 3 casing volumes of water prior to sampling. This will be accomplished by opening a valve and allowing water to run for approximately 2 to 2.5 hours. Samples will be collected directly from the valve discharge, transferred into appropriate containers provided by the laboratory and placed in a cooler with ice for transport to the laboratory.

4.2 Sample Identification

Samples will be identified and documented to provide a permanent record of field activities.

4.2.1 Equipment and Materials

The following equipment and materials will be needed to properly document sampling activities.

1. Waterproof marker (e.g., Sharpie®);
2. Ink pens, black or blue;
3. Field logbook;
4. Clip board;
5. Sample labels;
6. Chain of custody form(s) with zip lock bag(s); and
7. Return express shipment label/sticker(s).

4.2.2 Sample Identifier (Name)

All samples will be given a unique identification that is descriptive of the sample. The sample identification procedure will follow the format shown below.

Sample ID: Site - Sample Type & Number – Location and Depth

For example: Krassel DV – S1 – N5

Where: Krassel DV = Krassel Drain Valve
S1 = Soil Sample #1
N5 = North of Drain Valve, 5 feet deep

4.2.3 Sample Labels

Sample containers will be labeled to identify the sample and specify the analyses required. Labeling information is listed below. Labels will be filled out using indelible ink marking pens.

1. Project name or site: Krassel Wood Treatment Site
2. Sample name: *See above*
3. Sample date / time: (mm/dd/yy, military time)
4. Sample matrix: Soil / Water, or Other Material
5. Analyses requested: ex. Total Metals (RCRA 8), etc.
6. Preservatives used: ex. No-Pres, HNO_3, etc.
7. Sampler name: Name

4.2.4 Sample Chain of Custody

Sample chain of custody documentation must accompany every shipment of samples to the laboratories. The chain-of-custody forms can be partially filled out in advance, prior to going to the field; however, they will need to be finalized in the field. The following information is to be included on all chain of custodies by the sampler:

1. Project name or site: Krassel Wood Treatment Site
2. Project number: EN12-185
3. Sample name: See above
4. Sample date / time: (mm/dd/yy, military time)
5. Sample type: Soil / Water, or Other Material
6. Number of containers
7. Analyses requested: semi-volatile organic compounds (SVOCs)
8. Preservatives used: None, HCL, etc.
9. Sampler name: Name
10. MSE contact name: Name
11. Turn around time: Standard
12. Sampler signature
13. Relinquished by (signature)/Date/Time (military)/Received by (signature).

4.3 Logbook

The following information should be recorded in the project logbook for each sample collected:

1. Sample date / time: (mm/dd/yy, military time)
2. Sample name: see above
3. Sample type: Soil / Water, or Other Material

4. Sample location (e.g. North wall of excavation, depth)
5. Analyses requested
6. Sampler name

Note: Sample Names, Dates and Times MUST match on all of the labels; chain of custody forms; and in the project field logbook.

4.4 Sample Equipment Decontamination

All equipment that will come in contact with sampled soils will first be decontaminated to prevent possible cross contamination between samples that could bias analytical results. Disposable equipment will be used as frequently as possible.

4.4.1 Equipment and Materials

The following equipment will be needed to decontaminate sampling equipment:

1. tap water
2. alconox detergent soap
3. deionized rinse water
4. scrub brush (e.g. toilet bowl)
5. pipe brush
6. clean pvc or stainless steel buckets
7. aluminum foil

4.4.2 Decontamination Procedures for Sampling Equipment

Equipment requiring decontamination for this project includes the split-spoon sampler and stainless steel sampling spoons. The equipment must be decontaminated prior to use and between samples. Equipment will be disassembled, brushed clean, washed with an Alconox solution, and triple rinsed with de-ionized water.

The equipment will be wrapped with aluminum foil after it is decontaminated to protect it and keep it ready for its next use. Decontamination fluids can be added to Materials designated for offsite disposal as IDW.

4.5 Analytical Reporting

The laboratory reports will document all aspects of sample management and the analytical results for the project samples. The following is a list of the required information that will be included in the laboratory reports.

- Client name and address
- Client contact
- Laboratory name and address
- Laboratory contact
- Project name

- Client sample identification
- Laboratory sample identification
- Dates samples were collected, received by the laboratory, extracted, and analyzed
- Sample custody documentation
- Analytical method number(s) and project protocols
- Case narrative/sample group comments
- Analytical result and qualifier symbol definitions
- Analytical results for all samples and quality control samples
- Quality control parameters including method detection limit (MDL), limits of quantitation (PQL), result qualifiers, dilution factors
- Analyst initials
- Laboratory data reviewer name and signature

5.0 QUALITY ASSURANCE PROJECT PLAN

The Quality Assurance Project Plan (QAPP) is developed to provide guidelines for field and laboratory operations. The project Data Quality Objectives (DQO) are designed to produce data of known and acceptable quality, allowing the site investigators to fully assess the degree and extent of constituents of concern in the media present at the site. During the site assessment, activities and analyses will be conducted using standard procedures and established methodologies to ensure that acceptable levels of data accuracy, precision, completeness, representativeness, and comparability were achieved. This consistency also minimizes loss of data due to unforeseen conditions and results in data that is reproducible at all levels.

5.1 Field Quality Assurance/ Quality Control

Field QA/QC procedures are designed to minimize generation of analytical data that are biased by field contamination or sampling error. The following field procedures will be employed:

- Standard Operating Procedures for consistent sample collection (Section 4.1)
- Equipment Decontamination Procedures to minimize cross-contamination (Section 4.4)
- Proper Handling Procedures to avoid compromising sample integrity during collection and shipping (observe sample container, labeling, preservation and holding time requirements)

5.2 Laboratory Quality Control Procedures

Laboratory quality control procedures adopted for this project are those outlined in the Quality Assurance Manual (QA Manual) by ESC Lab Sciences as Appendix 2. The QA Manual documents the laboratory's management system and demonstrates the ability to execute the indicated tests and/or procedures and to meet regulatory requirements. The QA Manual establishes compliance with ISO 17025, NELAC, DOD QSM, and AIHA. Specific procedures addressed by the Laboratory's Quality Assurance Plan include:

- Sample Management;
- Technical Requirements;

- Waste Minimization/Disposal;
- Reagent/Standard Preparation;
- General Laboratory Techniques (which are not otherwise specified);
- Test Methods (sample preparation and analysis procedures, instrument standardization, precision and bias, detection and reporting limits, and analytical method-specific quality control procedures);
- Equipment Calibration and Maintenance;
- QC Samples (type, purpose, frequency, acceptance criteria);
- Corrective Action;
- Data Reduction and Validation;
- Reporting; and
- Records Management.

Quantitative laboratory analytical data (QC Level II) will be generated through the implementation of this SAP. Laboratory data will be of sufficient quality to facilitate a risk evaluation through comparison with contaminant Regional Screening Levels (RSLs) published by EPA or risk assessment if required later. These data will also support the data quality assessment activities described below. EPA analytical methods will be selected to provide detection limits that are equal to or below the RBCs for contaminants of concern. With minor exceptions, the items identified above are activities and procedures that are addressed internally by the laboratory at the level of data quality required for this project. However, project personnel will scrutinize the laboratory reports produced for this project as an additional check of data quality. Specific items to be assessed are:

Data Package Completeness - the laboratory reports will be assessed to confirm that they include a case narrative, appropriate method and/or practical quantitation limits and sample custody documentation.

Laboratory QC Samples - The adequacy of laboratory control procedures will be verified by determining whether laboratory quality control samples are within established control limits. Method blanks will be assessed to monitor target analyte contamination in the analyses batch. Laboratory control samples will be evaluated to assess the method performance and provide information on method accuracy. Matrix Spike (MS) and Matrix Spike duplicate (MSD) analyses are will be evaluated to assess method performance for a selected sample matrix in the analytical batch and to provide a measure of method precision. Batch MS performance can be applied to other similar matrices in the batch with caution. MS and MSDs will be evaluated to determine whether reproducibilities are consistent with project data quality goals as measured by relative percent difference (%RPD). Spike recovery data (%REC) for Laboratory Control Sample (LCS), MS and MSD will be evaluated to determine whether recoveries are within the established control limits. Surrogates, added to all samples will be evaluated to assess method performance/bias for each sample within a batch.

Sample Holding Times - Since each EPA analytical method to be performed for the project has a specific holding time, within which sample integrity is judged to be adequate, the date of sample collection, extraction/preparation and analyses will be checked for all analyses. Proper sample preservation will also be documented. Sample container, preservation and holding time

requirements for specific analyses to be performed are provided below as Table 2. Sample container requirements are specified by the laboratory.

Table 2. Sample Containers, Preservation and Holding Times

Parameter	Method	Container	Pres. (°C)	Holding Time (days)
Soil				
BTEX	8260B	2oz Clr-NoPres soil jar	4° C	14
Total Metals (RCRA 8) and Cu, Zn	6010B, 7471 (Hg)	2oz Clr-NoPres soil jar	4° C	180, 28[a]
DRO and TS (dry weight conversion)	2540G	4oz Clr-NoPres soil jar	4° C	14
PAHs	8270C-SIM	4oz Clr-NoPres soil jar	4° C	14
Phenols and PCP	8270C	4oz Clr-NoPres soil jar	4° C	14
Water				
BTEX	8260B	(3) 40ml-HCL vial	4° C	14
Total Metals (RCRA 8) and Cu, Zn	6010B, 7470A (Hg) 6020 (As)	500ml HDPE-HNO3 bottle	4° C	180, 28[a]
DRO	8015/3510C	(3) 40ml Amb-NoPres jar	4° C	7
PAHs	8270C-SIM	(3) 40ml Amb-NoPres vial	4° C	7
Phenols and PCP	SV8270PCP	(2) 100ml Amb-NoPres jars	4° C	7

[a] ICP metals have 180 day holding time; Hg has 28 day holding time
[b] Out of hold upon receipt at the lab (supposed to be a field measurement)

Compound Identification, Quantitation and Detection Limits – Laboratory reports will be reviewed to verify that all requested analyses have been reported and to confirm that analytical method detection limits are adequate to compare the data with project cleanup standards. Identification of tentatively identified compounds and the use of appropriate data qualifiers will be noted as part of this review. The Reporting Limits (RLs) for the analytes of interest are provided below as Table 3. For a complete list of RLs refer to Appendix 2.

Table 3. Reporting Limits

Analyte	Water RL	MCL	RSL (10^{-5})	Unit	Soil RL	RSL (10^{-5})	Unit
Arsenic	1.0	10.0	NA	ug/L	1000	3900	ug/kg
Barium	5.0	2000	NA	ug/L	250	1.5E+8	ug/kg
Cadmium	5.0	5.0	NA	ug/L	250	7.0E+5	ug/kg
Chromium	10.0	100	NA	ug/L	500	2900	ug/kg
Lead	5.0	15.0	NA	ug/L	250	1.7E+4	ug/kg
Mercury	0.2	2.0	NA	ug/L	20.0	1.0E+6	ug/kg
Selenium	20.0	50.0	NA	ug/L	1000	3.9E+6	ug/kg
Silver [1]	10.0	100	NA	ug/L	500	3.9E+6	ug/kg
Copper [1]	20.0	1000	NA	ug/L	1000	3.1E+7	ug/kg
Zinc [1]	30.0	5000	NA	ug/L	1500	2.3E+8	ug/kg
Benzene	0.001	0.005	NA	mg/L	0.001	11.0	mg/kg

Toluene	0.005	1.0	NA	mg/L	0.005	5.0E+4	mg/kg
Ethylbenzene	0.001	0.7	NA	mg/L	0.001	540	mg/kg
Total Xylenes	0.003	10.0	NA	mg/L	0.003	6.3E+3	mg/kg
DRO	0.1	-	-	mg/L	4.0	-	mg/kg
PAHs [2]	0.000250 – 0.000050	0.0002	NA	mg/L	0.006-0.033	0.00043 – 17,000	mg/kg
Phenol	0.01	-	45.0	mg/L	0.33	1.8E+5	mg/kg
Pentachlorophenol	0.001	0.001	NA	mg/L	0.33	89.0	mg/kg

Notes:

RL = Laboratory reporting limit

MCL = Federal Drinking Water Standard Maximum Contaminant Level

RSL = EPA Regional Screening Level adjusted to $1x10^{-5}$ risk for carcinogens; or hazard index of 1 for non-carcinogens.

NA = Not Applicable; MCL is primary concern

1 = National Secondary Drinking Water Standards (non-enforceable).

2 = MCL is for Benzo(a)Pyrene. Other PAHs do not have MCLs. RL for Benzo(a)Pyrene is 0.000050 mg/L. Soil screening level for Benzo(a)Pyrene is 0.015 mg/kg; RL is 0.006 mg/kg.

Performance Evaluation - Analytical data will be reviewed to confirm that the data quality criteria have been adequately addressed. Precision, accuracy, representativeness, comparability and completeness (PARCC) Data Quality Indicators will be addressed as part of this evaluation.

5.3 Data Quality Indicators

This section discusses the results of the analytical data quality requirements in terms of data quality indicators.

5.3.1 Precision Assessment

Also known as reproducibility, precision is a measure of mutual agreement among individual measurements of the same property usually under prescribed conditions. This is the random component of error. The Relative Percent Difference (RPD) of two duplicate samples is used to assess the precision of the data. For laboratory duplicates, field duplicates and matrix spike duplicates, the following represents the equation to calculate Relative Percent Difference (RPD):

$$RPD = \frac{100\% \times (C_1 - C_2)}{(C_1 + C_2) / 2}$$

Where: C_1 = Concentration in first sample

C_2 = Concentration in second sample

Laboratory duplicate measurements are obtained for each set of samples and analyzed to assess the laboratory's precision. Acceptable RPDs for duplicate samples generally range from 35% to 50%.

5.3.2 Accuracy Assessment

Accuracy is a measure of the closeness of the agreement between a "true" or reference value and the associated measured value. The recoveries of standard reference materials (SRM), matrix

spikes, and surrogate spikes are used to evaluate the accuracy of the measurements. These recoveries are typically calculated as "percent recovery" and are represented by the following equations:

Percent Recovery for SRM:

$$\% \text{ Recovery} = \frac{100\% \times (C_m)}{C_T}$$

Where: C_m = Measured SRM Value
C_T = True SRM Value

Percent Recovery for Spiked Samples (Matrix and Surrogate):

$$\% \text{ Recovery} = \frac{100\% \times (S-U)}{C}$$

Where: S = Measured Value of Spiked Sample
U = Measured Value of Un-spiked Sample
C = True Value of Spike Added

Acceptable spike recoveries are established by the laboratory and typically range from 50% to 150% and are used to assess the accuracy of measurements.

5.3.3 Representativeness Assessment

Representativeness is a parameter that expresses the degree to which sample data accurately and precisely represent a characteristic of a population, parameter variations at a sampling point, or an environmental condition. The evaluation criteria for representativeness include: (1) implementation of standard operating procedures; (2) adherence to sample holding times; (3) use of analytical detection limits that are at or below regulatory standards; and (4) the absence of contamination in method blanks. In addition, 90% of LCS duplicates should meet RPD goals.

5.3.4 Comparability Assessment

Comparability is defined as the confidence with which one data set can be compared to another data set. Using standard sampling and analysis procedures maximizes comparability.

5.3.5 Completeness Assessment

Completeness is defined as the percentage of valid measurements to planned measurements. For the purpose of the completeness calculation, the number of measurements planned is defined as the total number of analytes that the laboratory will be requested to analyze. The percent completeness of the data will calculated according to the following equation:

$$\text{Completeness} = 100\% \times \frac{\text{Number of Valid Measurements}}{\text{Number of Planned Measurements}}$$

A calculated completeness of 90% or greater is considered acceptable. Analytical results for blanks and laboratory QC samples are not included in this total.

Corrective Action Summary - The need for corrective action will be determined based on the performance evaluation results for the data quality criteria identified above.

6.0 TRAINING REQUIREMENTS AND CERTIFICATION

Wells personnel have advanced health and safety training, in addition to 40-hour Hazardous Waste Site Operations and 8-hour Refresher courses, as specified in OSHA, 29 CFR 1910.120. A site health and safety plan will be prepared and provided by Wells to Wells' field personnel. Subcontractors (direct push) will be responsible for preparation of a health and safety plans for their personnel.

7.0 REPORTS

Wells will prepare a PA/SI report containing separate sections discussing assessment findings and results. The report will identify sample locations. Wells will also provide an electronic version of the report. A summary of data quality will be included in the PA/SI report.

8.0 DATA REVIEW, VALIDATION, AND VERIFICATION

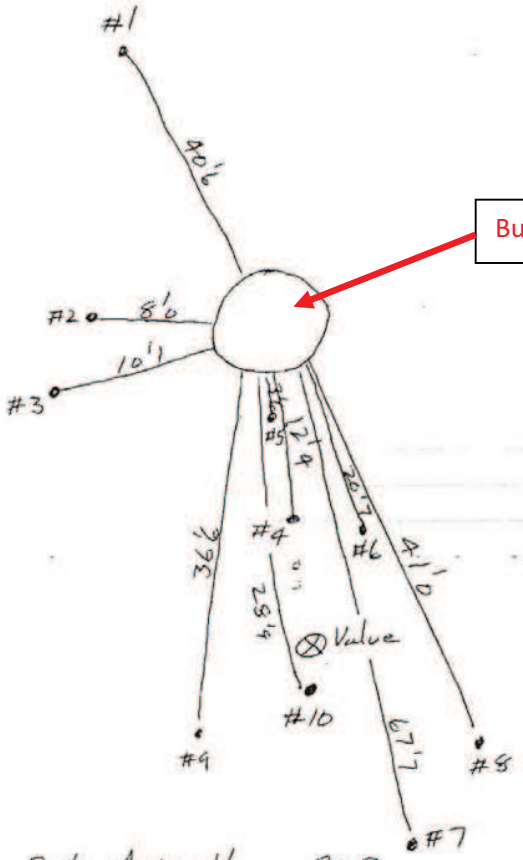
Wells personnel will review all analytical results for QA/QC prior to the preparations of the PA/SI report. Reports containing laboratory analytical data results contain information regarding data validation with respect to the attainment of minimum reporting levels and acceptable quality control results.

Appendix 1 – Laboratory Analysis

Payette National Forest

2c Krassel Work Center

Date Sampled
10/18/93



#	Depth	Dist.	Azimeth	PCP	Creosote ppm
1	5"	40.6	264	0	16
2	6"	8'0	209	0	12
3	7"	10'1	153	0	7
4	6"	12'4	103	0	31
5	12"	3'6	76	0	44
6	5"	20'7	94	0	9
7	6"	67'7	95	0	9
8	6"	41'0	100	0	12
9	5"	36'6	110	0	23
10	7"	28'9	103	0	449
To valve		27'7	103		

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Client: US FOREST SERVICE
Address: HC63, BOX 1669, HWY 93
CHALLIS, ID 83226
Attn: DEAN MORGAN

Batch #: 120716010
Project Name: KRASSEL PEST & POLE

Analytical Results Report

Sample Number 120716010-001
Client Sample ID K2
Matrix Soil
Comments

Sampling Date 7/10/2012
Sampling Time 5:45 PM
Sample Location

Date/Time Received 7/12/2012 12:05 PM

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Benzene	ND	mg/Kg	0.005	7/18/2012	SAT	EPA 8260B	
Ethylbenzene	ND	mg/Kg	0.005	7/18/2012	SAT	EPA 8260B	
Toluene	0.00552	mg/Kg	0.005	7/18/2012	SAT	EPA 8260B	
Total Xylene	0.0179	mg/Kg	0.01	7/18/2012	SAT	EPA 8260B	
%moisture	57	Percent				%moisture	

Surrogate Data

Sample Number 120716010-001

Surrogate Standard	Method	Percent Recovery	Control Limits
1,2-Dichlorobenzene-d4	EPA 8260B	97.2	70-130
1,2-Dichloroethane-d4	EPA 8260B	106.0	70-130
4-Bromofluorobenzene	EPA 8260B	102.0	70-130
Toluene-d8	EPA 8260B	99.6	70-130

Authorized Signature

John Coddington, Lab Manager

MCL EPA's Maximum Contaminant Level
ND Not Detected
PQL Practical Quantitation Limit

The results reported relate only to the samples indicated.
Soil/solid results are reported on a dry-weight basis unless otherwise noted.

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; CO:ID00013; FL(NELAP):E87893; ID:ID00013; IN:C-ID-01; KY:90142; MT:CERT0028; NM: ID00013; OR:ID200001-002; WA:C595
Certifications held by Anatek Labs WA: EPA:WA00169; ID:WA00169; WA:C585; MT:Cert0095

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Batch #: 120716010
Project Name: KRASSEL PEST & POLE

Analytical Results Report

Sample Number	120716010-001	**Sampling Date**	7/10/2012	**Date/Time Received**	7/12/2012	12:05 PM
Client Sample ID	K2	**Sampling Time**	5:45 PM	**Extraction Date**	7/20/2012	
Matrix	Soil	**Sample Location**				
Comments						

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
1,2,4-Trichlorobenzene	ND	mg/Kg	0.05	7/20/2012	EMP	EPA 8270C	
1,2-Dichlorobenzene	ND	mg/Kg	0.05	7/20/2012	EMP	EPA 8270C	
1,2-Diphenyl hydrazine	ND	mg/Kg	0.05	7/20/2012	EMP	EPA 8270C	
1,3-Dichlorobenzene	ND	mg/Kg	0.05	7/20/2012	EMP	EPA 8270C	
1,4-Dichlorobenzene	ND	mg/Kg	0.05	7/20/2012	EMP	EPA 8270C	
1-Methylnaphthalene	10.9	mg/Kg	0.05	7/20/2012	EMP	EPA 8270C	
2,3,4,6-Tetrachlorophenol	ND	mg/Kg	0.05	7/20/2012	EMP	EPA 8270C	
2,3,5,6-Tetrachlorophenol	ND	mg/Kg	0.05	7/20/2012	EMP	EPA 8270C	
2,4,5-Trichlorophenol	ND	mg/Kg	0.05	7/20/2012	EMP	EPA 8270C	
2,4,6-Trichlorophenol	ND	mg/Kg	0.05	7/20/2012	EMP	EPA 8270C	
2,4-Dichlorophenol	ND	mg/Kg	0.05	7/20/2012	EMP	EPA 8270C	
2,4-Dimethylphenol	ND	mg/Kg	0.05	7/20/2012	EMP	EPA 8270C	
2,4-Dinitrophenol	ND	mg/Kg	0.05	7/20/2012	EMP	EPA 8270C	
2,4-Dinitrotoluene	ND	mg/Kg	0.05	7/20/2012	EMP	EPA 8270C	
2,6-Dinitrotoluene	ND	mg/Kg	0.05	7/20/2012	EMP	EPA 8270C	
2-Chloronaphthalene	ND	mg/Kg	0.05	7/20/2012	EMP	EPA 8270C	
2-Chlorophenol	ND	mg/Kg	0.05	7/20/2012	EMP	EPA 8270C	
2-Methylnaphthalene	13.2	mg/Kg	0.05	7/20/2012	EMP	EPA 8270C	
2-Methylphenol	ND	mg/Kg	0.05	7/20/2012	EMP	EPA 8270C	
2-Nitroaniline	ND	mg/Kg	0.05	7/20/2012	EMP	EPA 8270C	
2-Nitrophenol	ND	mg/Kg	0.05	7/20/2012	EMP	EPA 8270C	
3,3'-Dichlorobenzidine	ND	mg/Kg	0.05	7/20/2012	EMP	EPA 8270C	

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; CO:ID00013; FL(NELAP):E87893; ID:ID00013; IN:C-ID-01; KY:90142; MT:CERT0028; NM: ID00013; OR:ID200001-002; WA:C595
Certifications held by Anatek Labs WA: EPA:WA00169; ID:WA00169; WA:C585; MT:Cert0095

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Analytical Results Report

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Client Sample ID	K2	**Sampling Time**	5:45 PM	**Extraction Date**	7/20/2012	
Matrix	Soil	**Sample Location**				
Comments						

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
3+4-Methylphenol	ND	mg/Kg	0.05	7/20/2012	EMP	EPA 8270C	
3-Nitroaniline	ND	mg/Kg	0.05	7/20/2012	EMP	EPA 8270C	
4,6-Dinitro-2-methylphenol	ND	mg/Kg	0.05	7/20/2012	EMP	EPA 8270C	
4-Bromophenyl-phenylether	ND	mg/Kg	0.05	7/20/2012	EMP	EPA 8270C	
4-Chloro-3-methylphenol	ND	mg/Kg	0.05	7/20/2012	EMP	EPA 8270C	
4-Chloroaniline	ND	mg/Kg	0.05	7/20/2012	EMP	EPA 8270C	
4-Chlorophenyl-phenylether	ND	mg/Kg	0.05	7/20/2012	EMP	EPA 8270C	
4-Nitroaniline	ND	mg/Kg	0.05	7/20/2012	EMP	EPA 8270C	
4-Nitrophenol	ND	mg/Kg	0.05	7/20/2012	EMP	EPA 8270C	
Acenaphthene	ND	mg/Kg	0.05	7/20/2012	EMP	EPA 8270C	
Acenaphthylene	ND	mg/Kg	0.05	7/20/2012	EMP	EPA 8270C	
Aniline	ND	mg/Kg	0.05	7/20/2012	EMP	EPA 8270C	
Anthracene	ND	mg/Kg	0.05	7/20/2012	EMP	EPA 8270C	
Benzidine	ND	mg/Kg	0.05	7/20/2012	EMP	EPA 8270C	
Benzo(ghi)perylene	ND	mg/Kg	0.05	7/20/2012	EMP	EPA 8270C	
Benzo[a]anthracene	0.542	mg/Kg	0.05	7/20/2012	EMP	EPA 8270C	
Benzo[a]pyrene	ND	mg/Kg	0.05	7/20/2012	EMP	EPA 8270C	
Benzo[b]fluoranthene	0.056	mg/Kg	0.05	7/20/2012	EMP	EPA 8270C	
Benzo[k]fluoranthene	ND	mg/Kg	0.05	7/20/2012	EMP	EPA 8270C	
Benzyl alcohol	ND	mg/Kg	0.05	7/20/2012	EMP	EPA 8270C	
bis(2-Chloroethoxy)methane	ND	mg/Kg	0.05	7/20/2012	EMP	EPA 8270C	
bis(2-Chloroethyl)ether	ND	mg/Kg	0.05	7/20/2012	EMP	EPA 8270C	
bis(2-chloroisopropyl)ether	ND	mg/Kg	0.05	7/20/2012	EMP	EPA 8270C	

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Client Sample ID	K2	**Sampling Time**	5:45 PM	**Extraction Date**	7/20/2012	
Matrix	Soil	**Sample Location**				
Comments						

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
bis(2-Ethylhexyl)phthalate	0.121	mg/Kg	0.05	7/20/2012	EMP	EPA 8270C	
Butylbenzylphthalate	ND	mg/Kg	0.05	7/20/2012	EMP	EPA 8270C	
Carbazole	ND	mg/Kg	0.05	7/20/2012	EMP	EPA 8270C	
Chrysene	2.61	mg/Kg	0.05	7/20/2012	EMP	EPA 8270C	
Dibenz[a,h]anthracene	ND	mg/Kg	0.05	7/20/2012	EMP	EPA 8270C	
Dibenzofuran	ND	mg/Kg	0.05	7/20/2012	EMP	EPA 8270C	
Diethylphthalate	ND	mg/Kg	0.05	7/20/2012	EMP	EPA 8270C	
Dimethylphthalate	ND	mg/Kg	0.05	7/20/2012	EMP	EPA 8270C	
Di-n-butylphthalate	ND	mg/Kg	0.05	7/20/2012	EMP	EPA 8270C	
Di-n-octylphthalate	ND	mg/Kg	0.05	7/20/2012	EMP	EPA 8270C	
Fluoranthene	2.77	mg/Kg	0.05	7/20/2012	EMP	EPA 8270C	
Fluorene	ND	mg/Kg	0.05	7/20/2012	EMP	EPA 8270C	
Hexachlorobenzene	ND	mg/Kg	0.05	7/20/2012	EMP	EPA 8270C	
Hexachlorobutadiene	ND	mg/Kg	0.05	7/20/2012	EMP	EPA 8270C	
Hexachlorocyclopentadiene	ND	mg/Kg	0.05	7/20/2012	EMP	EPA 8270C	
Hexachloroethane	ND	mg/Kg	0.05	7/20/2012	EMP	EPA 8270C	
Indeno[1,2,3-cd]pyrene	ND	mg/Kg	0.05	7/20/2012	EMP	EPA 8270C	
Isophorone	ND	mg/Kg	0.05	7/20/2012	EMP	EPA 8270C	
Naphthalene	0.834	mg/Kg	0.05	7/20/2012	EMP	EPA 8270C	
Nitrobenzene	ND	mg/Kg	0.05	7/20/2012	EMP	EPA 8270C	
Nitrosodimethylamine	ND	mg/Kg	0.05	7/20/2012	EMP	EPA 8270C	
n-Nitroso-di-n-propylamine	ND	mg/Kg	0.05	7/20/2012	EMP	EPA 8270C	
n-Nitrosodiphenylamine	ND	mg/Kg	0.05	7/20/2012	EMP	EPA 8270C	

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CHALLIS, ID 83226
Attn: DEAN MORGAN

Batch #: 120716010
Project Name: KRASSEL PEST & POLE

Analytical Results Report

Sample Number	120716010-001	**Sampling Date**	7/10/2012	**Date/Time Received**	7/12/2012	12:05 PM
Client Sample ID	K2	**Sampling Time**	5:45 PM	**Extraction Date**	7/20/2012	
Matrix	Soil	**Sample Location**				
Comments						

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Pentachlorophenol	234	mg/Kg	0.05	7/20/2012	EMP	EPA 8270C	
Phenanthrene	73.4	mg/Kg	0.05	7/20/2012	EMP	EPA 8270C	
Phenol	ND	mg/Kg	0.05	7/20/2012	EMP	EPA 8270C	
Pyrene	11.5	mg/Kg	0.05	7/20/2012	EMP	EPA 8270C	
Pyridine	ND	mg/Kg	0.05	7/20/2012	EMP	EPA 8270C	
%moisture	57	Percent				%moisture	

Surrogate Data

Sample Number 120716010-001

Surrogate Standard	Method	Percent Recovery	Control Limits
2,4,6-Tribromophenol	EPA 8270C	93.1	19-122
2-Fluorobiphenyl	EPA 8270C	79.6	30-115
2-Fluorophenol	EPA 8270C	77.4	25-121
Nitrobenzene-d5	EPA 8270C	66.2	17-112
Phenol-d5	EPA 8270C	88.9	24-113
Terphenyl-d14	EPA 8270C	63.8	18-137

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Batch #: 120716010
Project Name: KRASSEL PEST & POLE

Analytical Results Report

Sample Number	120716010-002	**Sampling Date**	7/10/2012	**Date/Time Received**	7/12/2012	12:05 PM
Client Sample ID	K1A-C	**Sampling Time**	5:45 PM	**Extraction Date**	7/17/2012	
Matrix	Water	**Sample Location**				
Comments						

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
1,2,4-Trichlorobenzene	ND	ug/L	5	7/25/2012	EMP	EPA 8270C	
1,2-Dichlorobenzene	ND	ug/L	5	7/25/2012	EMP	EPA 8270C	
1,2-Diphenyl hydrazine	ND	ug/L	5	7/25/2012	EMP	EPA 8270C	
1,3-Dichlorobenzene	ND	ug/L	5	7/25/2012	EMP	EPA 8270C	
1,4-Dichlorobenzene	ND	ug/L	5	7/25/2012	EMP	EPA 8270C	
1-Methylnaphthalene	ND	ug/L	5	7/25/2012	EMP	EPA 8270C	
2,3,4,6-Tetrachlorophenol	1630	ug/L	5	7/25/2012	EMP	EPA 8270C	
2,3,5,6-Tetrachlorophenol	220	ug/L	5	7/25/2012	EMP	EPA 8270C	
2,4,5-Trichlorophenol	5.28	ug/L	5	7/25/2012	EMP	EPA 8270C	
2,4,6-Trichlorophenol	6.40	ug/L	5	7/25/2012	EMP	EPA 8270C	
2,4-Dichlorophenol	55.5	ug/L	5	7/25/2012	EMP	EPA 8270C	
2,4-Dimethylphenol	ND	ug/L	5	7/25/2012	EMP	EPA 8270C	
2,4-Dinitrophenol	ND	ug/L	5	7/25/2012	EMP	EPA 8270C	
2,4-Dinitrotoluene	ND	ug/L	5	7/25/2012	EMP	EPA 8270C	
2,6-Dinitrotoluene	ND	ug/L	5	7/25/2012	EMP	EPA 8270C	
2-Chloronaphthalene	ND	ug/L	5	7/25/2012	EMP	EPA 8270C	
2-Chlorophenol	ND	ug/L	5	7/25/2012	EMP	EPA 8270C	
2-Methylnaphthalene	ND	ug/L	5	7/25/2012	EMP	EPA 8270C	
2-Methylphenol	ND	ug/L	5	7/25/2012	EMP	EPA 8270C	
2-Nitroaniline	ND	ug/L	5	7/25/2012	EMP	EPA 8270C	
2-Nitrophenol	ND	ug/L	5	7/25/2012	EMP	EPA 8270C	
3,3'-Dichlorobenzidine	ND	ug/L	5	7/25/2012	EMP	EPA 8270C	
3+4-Methylphenol	ND	ug/L	5	7/25/2012	EMP	EPA 8270C	

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Client: US FOREST SERVICE
Address: HC63, BOX 1669, HWY 93
CHALLIS, ID 83226
Attn: DEAN MORGAN

Batch #: 120716010
Project Name: KRASSEL PEST & POLE

Analytical Results Report

Sample Number	120716010-002	**Sampling Date**	7/10/2012	**Date/Time Received**	7/12/2012	12:05 PM
Client Sample ID	K1A-C	**Sampling Time**	5:45 PM	**Extraction Date**	7/17/2012	
Matrix	Water	**Sample Location**				
Comments						

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
3-Nitroaniline	ND	ug/L	5	7/25/2012	EMP	EPA 8270C	
4,6-Dinitro-2-methylphenol	ND	ug/L	5	7/25/2012	EMP	EPA 8270C	
4-Bromophenyl-phenylether	ND	ug/L	5	7/25/2012	EMP	EPA 8270C	
4-Chloro-3-methylphenol	ND	ug/L	5	7/25/2012	EMP	EPA 8270C	
4-Chloroaniline	ND	ug/L	5	7/25/2012	EMP	EPA 8270C	
4-Chlorophenyl-phenylether	ND	ug/L	5	7/25/2012	EMP	EPA 8270C	
4-Nitroaniline	ND	ug/L	5	7/25/2012	EMP	EPA 8270C	
4-Nitrophenol	ND	ug/L	5	7/25/2012	EMP	EPA 8270C	
Acenaphthene	ND	ug/L	5	7/25/2012	EMP	EPA 8270C	
Acenaphthylene	ND	ug/L	5	7/25/2012	EMP	EPA 8270C	
Aniline	ND	ug/L	5	7/25/2012	EMP	EPA 8270C	
Anthracene	ND	ug/L	5	7/25/2012	EMP	EPA 8270C	
Benzidine	ND	ug/L	5	7/25/2012	EMP	EPA 8270C	
Benzo(ghi)perylene	ND	ug/L	5	7/25/2012	EMP	EPA 8270C	
Benzo[a]anthracene	ND	ug/L	5	7/25/2012	EMP	EPA 8270C	
Benzo[a]pyrene	ND	ug/L	5	7/25/2012	EMP	EPA 8270C	
Benzo[b]fluoranthene	ND	ug/L	5	7/25/2012	EMP	EPA 8270C	
Benzo[k]fluoranthene	ND	ug/L	5	7/25/2012	EMP	EPA 8270C	
Benzyl alcohol	ND	ug/L	5	7/25/2012	EMP	EPA 8270C	
bis(2-Chloroethoxy)methane	ND	ug/L	5	7/25/2012	EMP	EPA 8270C	
bis(2-Chloroethyl)ether	ND	ug/L	5	7/25/2012	EMP	EPA 8270C	
bis(2-chloroisopropyl)ether	ND	ug/L	5	7/25/2012	EMP	EPA 8270C	
bis(2-Ethylhexyl)phthalate	ND	ug/L	5	7/25/2012	EMP	EPA 8270C	

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Client: US FOREST SERVICE
Address: HC63, BOX 1669, HWY 93
CHALLIS, ID 83226
Attn: DEAN MORGAN

Batch #: 120716010
Project Name: KRASSEL PEST & POLE

Analytical Results Report

Sample Number	120716010-002	**Sampling Date**	7/10/2012	**Date/Time Received**	7/12/2012	12:05 PM
Client Sample ID	K1A-C	**Sampling Time**	5:45 PM	**Extraction Date**	7/17/2012	
Matrix	Water	**Sample Location**				
Comments						

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Butylbenzylphthalate	ND	ug/L	5	7/25/2012	EMP	EPA 8270C	
Carbazole	ND	ug/L	5	7/25/2012	EMP	EPA 8270C	
Chrysene	ND	ug/L	5	7/25/2012	EMP	EPA 8270C	
Dibenz[a,h]anthracene	ND	ug/L	5	7/25/2012	EMP	EPA 8270C	
Dibenzofuran	ND	ug/L	5	7/25/2012	EMP	EPA 8270C	
Diethylphthalate	ND	ug/L	5	7/25/2012	EMP	EPA 8270C	
Dimethylphthalate	ND	ug/L	5	7/25/2012	EMP	EPA 8270C	
Di-n-butylphthalate	ND	ug/L	5	7/25/2012	EMP	EPA 8270C	
Di-n-octylphthalate	ND	ug/L	5	7/25/2012	EMP	EPA 8270C	
Fluoranthene	ND	ug/L	5	7/25/2012	EMP	EPA 8270C	
Fluorene	ND	ug/L	5	7/25/2012	EMP	EPA 8270C	
Hexachlorobenzene	ND	ug/L	5	7/25/2012	EMP	EPA 8270C	
Hexachlorobutadiene	ND	ug/L	5	7/25/2012	EMP	EPA 8270C	
Hexachlorocyclopentadiene	ND	ug/L	5	7/25/2012	EMP	EPA 8270C	
Hexachloroethane	ND	ug/L	5	7/25/2012	EMP	EPA 8270C	
Indeno[1,2,3-cd]pyrene	ND	ug/L	5	7/25/2012	EMP	EPA 8270C	
Isophorone	ND	ug/L	5	7/25/2012	EMP	EPA 8270C	
Naphthalene	ND	ug/L	5	7/25/2012	EMP	EPA 8270C	
Nitrobenzene	ND	ug/L	5	7/25/2012	EMP	EPA 8270C	
Nitrosodimethylamine	ND	ug/L	5	7/25/2012	EMP	EPA 8270C	
n-Nitroso-di-n-propylamine	ND	ug/L	5	7/25/2012	EMP	EPA 8270C	
n-Nitrosodiphenylamine	ND	ug/L	5	7/25/2012	EMP	EPA 8270C	
Pentachlorophenol	17600	ug/L	5	7/25/2012	EMP	EPA 8270C	

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; CO:ID00013; FL(NELAP):E87893; ID:ID00013; IN:C-ID-01; KY:90142; MT:CERT0028; NM: ID00013; OR:ID200001-002; WA:C595
Certifications held by Anatek Labs WA: EPA:WA00169; ID:WA00169; WA:C585; MT:Cert0095

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Client: US FOREST SERVICE
Address: HC63, BOX 1669, HWY 93
CHALLIS, ID 83226
Attn: DEAN MORGAN

Batch #: 120716010
Project Name: KRASSEL PEST & POLE

Analytical Results Report

Sample Number	120716010-002	**Sampling Date**	7/10/2012	**Date/Time Received**	7/12/2012	12:05 PM
Client Sample ID	K1A-C	**Sampling Time**	5:45 PM	**Extraction Date**	7/17/2012	
Matrix	Water	**Sample Location**				
Comments						

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Phenanthrene	ND	ug/L	5	7/25/2012	EMP	EPA 8270C	
Phenol	ND	ug/L	5	7/25/2012	EMP	EPA 8270C	
Pyrene	ND	ug/L	5	7/25/2012	EMP	EPA 8270C	
Pyridine	ND	ug/L	5	7/25/2012	EMP	EPA 8270C	

Surrogate Data

Sample Number 120716010-002

Surrogate Standard	Method	Percent Recovery	Control Limits
2,4,6-Tribromophenol	EPA 8270C	103.7	53-122
2-Fluorobiphenyl	EPA 8270C	65.0	12-116
2-Fluorophenol	EPA 8270C	77.1	10-139
Nitrobenzene-d5	EPA 8270C	87.9	68-118
Phenol-d5	EPA 8270C	81.0	28-154
Terphenyl-d14	EPA 8270C	28.7	52-144

Authorized Signature

John Coddington, Lab Manager

MCL EPA's Maximum Contaminant Level
ND Not Detected
PQL Practical Quantitation Limit

This report shall not be reproduced except in full, without the written approval of the laboratory.
The results reported relate only to the samples indicated.
Soil/solid results are reported on a dry-weight basis unless otherwise noted.

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Login Report

Customer Name: US FOREST SERVICE
HC63, BOX 1669, HWY 93
CHALLIS ID 83226

Order ID: 120716010
Order Date: 7/16/2012

Contact Name: DEAN MORGAN

Project Name: KRASSEL PEST & POLE

Comment:

Sample #: 120716010-001 **Customer Sample #:** K2

Recv'd: ☑ **Collector:** DEAN MORGAN **Date Collected:** 7/10/2012
Quantity: 1 **Matrix:** Soil **Date Received:** 7/12/2012 12:05:00 P
Comment:

Test	Lab	Method	Due Date	Priority
%Moisture	M	%moisture	7/24/2012	***Normal (6-10 Days)***
BTEX 8260	M	EPA 8260B	7/24/2012	***Normal (6-10 Days)***
SEMIVOLATILES 8270	M	EPA 8270C	7/24/2012	***Normal (6-10 Days)***

Sample #: 120716010-002 **Customer Sample #:** K1A-C

Recv'd: ☑ **Collector:** DEAN MORGAN **Date Collected:** 7/10/2012
Quantity: 3 **Matrix:** Water **Date Received:** 7/12/2012 12:05:00 P
Comment:

Test	Lab	Method	Due Date	Priority
SEMIVOLATILES 8270	M	EPA 8270C	7/24/2012	***Normal (6-10 Days)***

SAMPLE CONDITION RECORD

Samples received in a cooler?	Yes
Samples received intact?	Yes
What is the temperature inside the cooler?	6.0
Samples received with a COC?	Yes
Samples received within holding time?	Yes
Are all sample bottles properly preserved?	Yes
Are VOC samples free of headspace?	N/A
Is there a trip blank to accompany VOC samples?	N/A
Labels and chain agree?	Yes

120716 010 **USFO** Last Due 7/24/2012

1st SAMP 7/10/2012 1st RCVD 7/12/2012

Anatek Log-in KRASSEL PEST & POLE

Anatek Labs, Inc.

Chain of Custody Record

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Company Name: US Forest Service	Project Manager: Dean Morgan
Address: HC 63, Box 1669, Hwy 93	Project Name & #: Krassel Post + Pole
City: Challis State: ID Zip: 83226	Email Address: dmorgan04@fs.fed.us
Phone: office 208.879.4157, cell 208. 993.1747	Purchase Order #:
Fax: 208.879.6239	Sampler Name & phone: Same as Mgr.

Turn Around Time & Reporting

Please refer to our normal turn around times at: http://www.anateklabs.com/services/guidelines/reporting.asp

X Normal — *All rush order requests must be prior approved.

__Next Day* __2nd Day* __Other*

__Phone __Mail __Fax X Email

Provide Sample Description / **List Analyses Requested** / **Note Special Instructions/Comments**

Lab ID	Sample Identification	Sampling Date/Time	Matrix	# of Containers	Sample Volume	Preservative:	BTEX 8270C Soil	BTEX 8270C Water
1	K2	7/10/12 1745hr	Soil	1	4oz		X	X	
2	K1A-C	7/10/12, 1745hr	Water	3	1L			X

MWBS

includes K1B, K1C

Inspection Checklist

Received Intact?	Y	N
Labels & Chains Agree?	Y	N
Containers Sealed?	Y	N
VOC Head Space?	Y	N

Fed Ex Ice yes seal no

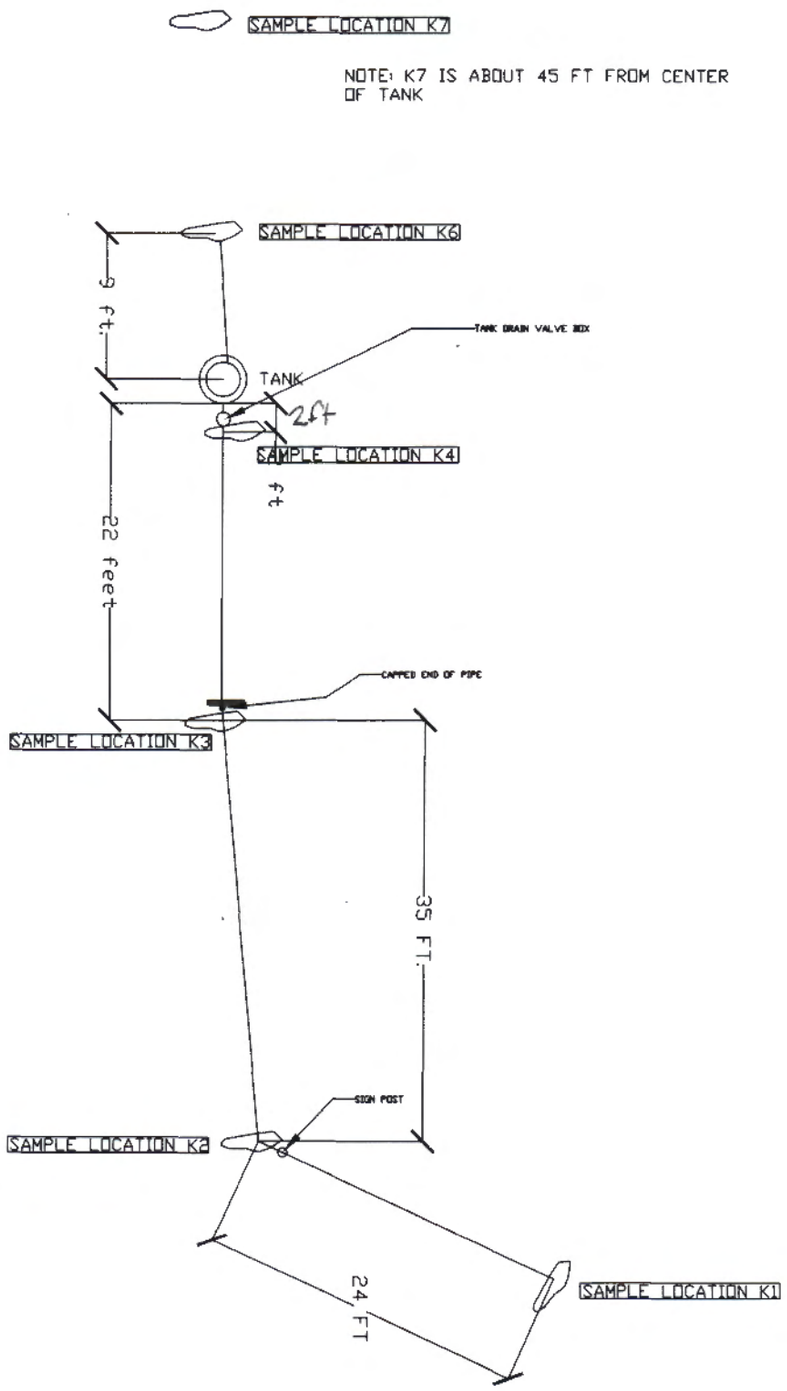
Temperature (°C): 6.0

Preservative: None

Date & Time: 7/12/12 1205

Inspected By: BT

	Printed Name	Signature	Company	Date	Time
Relinquished by	Dean Morgan	Dean C Morgan	USDA FS	7/11/12	1105hr
Received by	B Thomson	B Thomson	Anatek	7/12/12	1205
Relinquished by					
Received by					
Relinquished by					
Received by					



PLAN VIEW

KRASSEL SAMPLE LOCATIONS
JULY 22, 2010
NOT TO SCALE

Krassel Sampling – July 22, 2010

Sample ID	Matrix	Time	Depth	Location	Soil type
K1A	Soil	1139	12”	Lowest area, vegetation appears stressed	Decomposed Granite (DG) sand with cobble size 1 to 3” Diameter
K1B	Soil	1139	36”	Same as above	Same
K2A	Soil	1148	12”	Near post about 25 ft. below drain outlet	DG sand with cobble size 1 to 3” Diameter
K2B	Soil	1148	36”	Same as above	same
K3A	Soil	1210	12”	At drain outlet	DG sand with cobble size 1 to 3” Diameter
K3B	Soil	1210	36”	Same as above	Same
K3C	Soil	1210	48”	Same as above	Same
K4A	Soil	1228	12”	Adjacent to outlet valve on down gradient side of tank	DG sand with cobble size 1 to 3” Diameter
K4B	Soil	1228	36”	Same as above	same
K4C	Soil	1228	48”	Same as above	same
K5	Water	1247	N/A	Standing water in the treatment tank	N/A
K6A	Soil	1255	12”	Up gradient from tank	DG sand with little to no cobble
K6B	Soil	1255	36”	Same as above	Same
K7A	Soil	1305	6”	Soil below historic drying rack	DG sand

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Phone (208) 342-5515

Date Report Printed: 8/3/2010 3:20:36 P
http://www.analyticallaboratories.com

Laboratory Analysis Report

Sample Number: 1021863

Attn: DEAN MORGAN
U.S. FOREST SERVICE-CHALLIS
HC 63, BOX 1669 HWY 93
CHALLIS, ID 83226

Collected By:
Submitted By: D MORGAN

Source of Sample:
PROJECT: KRASSEL CREOSOTE K-1A FROM SURFACE (1 FOOT DEPTH) (SOIL)

Time of Collection: 11:37
Date of Collection: 7/22/2010
Date Received: 7/23/2010
Report Date: 8/3/2010

PWS#:
PWS Name:

Field Temp: Temp Rcvd in Lab:

* E-mail Krassel results to dmorgan04@ff.fed.us and blheron@ctcweb.net

Test Requested	MCL	Analysis Result	Units	MDL	Method	Date Completed	Analyst
1,4-Dichlorobenzene		<7.5	mg/kg	7.5	EPA 8270	7/28/2010	CY
2,4,5-Trichlorophenol		<400	mg/kg	400	EPA 8270	7/28/2010	CY
2,4,6-Trichlorophenol		<2.0	mg/kg	2.0	EPA 8270	7/28/2010	CY
2,4-Dinitrotoluene		<0.13	mg/kg	0.13	EPA 8270	7/28/2010	CY
Hexachlorobenzene		<0.13	mg/kg	0.13	EPA 8270	7/28/2010	CY
Hexachlorobutadiene		<0.5	mg/kg	0.5	EPA 8270	7/28/2010	CY
Hexachloroethane		<3.0	mg/kg	3	EPA 8270	7/28/2010	CY
Nitrobenzene		<2.0	mg/kg	2	EPA 8270	7/28/2010	CY
Pentachlorophenol		<1.0	mg/kg	1.0	EPA 8270	7/28/2010	CY
Pyridine		<5.0	mg/kg	5.0	EPA 8270	7/28/2010	CY
Total Cresols		<2.0	mg/kg	2.0	EPA 8270	7/28/2010	CY

MCL = Maximum Contamination Level
MDL = Method Minimum Detection Limit
UR = Unregulated

Thank you for choosing Analytical Laboratories for your testing needs.

If you have any questions about this report, or any future analytical needs, please contact your client manager:

James Hibbs

Analytical Laboratories, Inc.

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Boise, Idaho 83703
Phone (208) 342-5515

Date Report Printed: 8/3/2010 3:20:36 P
http://www.analyticallaboratories.com

Laboratory Analysis Report

Sample Number: 1021864

Attn: DEAN MORGAN
U.S. FOREST SERVICE-CHALLIS
HC 63, BOX 1669 HWY 93
CHALLIS, ID 83226

Collected By:

Submitted By: D MORGAN

Source of Sample:

PROJECT: KRASSEL CREOSOTE K-1B FROM SURFACE (3 FOOT DEPTH) (SOIL)

Time of Collection: 11:39
Date of Collection: 7/22/2010
Date Received: 7/23/2010
Report Date: 8/3/2010

PWS#:

Field Temp: Temp Rcvd in Lab: **PWS Name:**

Test Requested	MCL	Analysis Result	Units	MDL	Method	Date Completed	Analyst
1,4-Dichlorobenzene		<7.5	mg/kg	7.5	EPA 8270	7/28/2010	CY
2,4,5-Trichlorophenol		<400	mg/kg	400	EPA 8270	7/28/2010	CY
2,4,6-Trichlorophenol		<2.0	mg/kg	2.0	EPA 8270	7/28/2010	CY
2,4-Dinitrotoluene		<0.13	mg/kg	0.130	EPA 8270	7/28/2010	CY
Hexachlorobenzene		<0.13	mg/kg	0.130	EPA 8270	7/28/2010	CY
Hexachlorobutadiene		<0.5	mg/kg	0.500	EPA 8270	7/28/2010	CY
Hexachloroethane		<3.0	mg/kg	3.0	EPA 8270	7/28/2010	CY
Nitrobenzene		<2.0	mg/kg	2.0	EPA 8270	7/28/2010	CY
Pentachlorophenol		<1.0	mg/kg	1.0	EPA 8270	7/28/2010	CY
Pyridine		<5.0	mg/kg	5.0	EPA 8270	7/28/2010	CY
Total Cresols		<2.0	mg/kg	2.0	EPA 8270	7/28/2010	CY

MCL = Maximum Contamination Level
MDL = Method Minimum Detection Limit
UR = Unregulated

Thank you for choosing Analytical Laboratories for your testing needs.

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James Hibbs

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Phone (208) 342-5515

Date Report Printed: 8/3/2010 3:20:36 P
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Laboratory Analysis Report

Sample Number: 1021865

Attn: DEAN MORGAN
U.S. FOREST SERVICE-CHALLIS
HC 63, BOX 1669 HWY 93
CHALLIS, ID 83226

Collected By:

Submitted By: D MORGAN

Source of Sample:

PROJECT: KRASSEL CREOSOTE K-2A FROM SURFACE (1 FOOT DEPTH) (SOIL)

Time of Collection: 11:48
Date of Collection: 7/22/2010
Date Received: 7/23/2010
Report Date: 8/3/2010

PWS#:

Field Temp: Temp Rcvd in Lab:

PWS Name:

Test Requested	MCL	Analysis Result	Units	MDL	Method	Date Completed	Analyst
1,4-Dichlorobenzene		<7.5	mg/kg	7.5	EPA 8270	7/28/2010	CY
2,4,5-Trichlorophenol		<400	mg/kg	400	EPA 8270	7/28/2010	CY
2,4,6-Trichlorophenol		<2.0	mg/kg	2.0	EPA 8270	7/28/2010	CY
2,4-Dinitrotoluene		<0.13	mg/kg	0.130	EPA 8270	7/28/2010	CY
Hexachlorobenzene		<0.13	mg/kg	0.130	EPA 8270	7/28/2010	CY
Hexachlorobutadiene		<0.5	mg/kg	0.500	EPA 8270	7/28/2010	CY
Hexachloroethane		<3.0	mg/kg	3.0	EPA 8270	7/28/2010	CY
Nitrobenzene		<2.0	mg/kg	2.0	EPA 8270	7/28/2010	CY
Pentachlorophenol		<1.0	mg/kg	1.0	EPA 8270	7/28/2010	CY
Pyridine		<5.0	mg/kg	5.0	EPA 8270	7/28/2010	CY
Total Cresols		<2.0	mg/kg	2.0	EPA 8270	7/28/2010	CY

MCL = Maximum Contamination Level
MDL = Method/Minimum Detection Limit
UR = Unregulated

Thank you for choosing Analytical Laboratories for your testing needs.

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Boise, Idaho 83703
Phone (208) 342-5515

Date Report Printed: 8/3/2010 3:20:36 P
http://www.analyticallaboratories.com

Laboratory Analysis Report

Sample Number: 1021866

Attn: DEAN MORGAN
U.S. FOREST SERVICE-CHALLIS
HC 63, BOX 1669 HWY 93
CHALLIS, ID 83226

Collected By:

Submitted By: D MORGAN

Source of Sample:

PROJECT: KRASSEL CREOSOTE K-2B FROM SURFACE (3 FOOT DEPTH) (SOIL)

Time of Collection: 11:48
Date of Collection: 7/22/2010
Date Received: 7/23/2010
Report Date: 8/3/2010

PWS#:

Field Temp: Temp Rcvd in Lab:

PWS Name:

Test Requested	MCL	Analysis Result	Units	MDL	Method	Date Completed	Analyst
1,4-Dichlorobenzene		<7.5	mg/kg	7.5	EPA 8270	7/28/2010	CY
2,4,5-Trichlorophenol		<400	mg/kg	400	EPA 8270	7/28/2010	CY
2,4,6-Trichlorophenol		<2.0	mg/kg	2.0	EPA 8270	7/28/2010	CY
2,4-Dinitrotoluene		<0.13	mg/kg	0.130	EPA 8270	7/28/2010	CY
Hexachlorobenzene		<0.13	mg/kg	0.130	EPA 8270	7/28/2010	CY
Hexachlorobutadiene		<0.5	mg/kg	0.500	EPA 8270	7/28/2010	CY
Hexachloroethane		<3.0	mg/kg	3.0	EPA 8270	7/28/2010	CY
Nitrobenzene		<2.0	mg/kg	2.0	EPA 8270	7/28/2010	CY
Pentachlorophenol		<1.0	mg/kg	1.0	EPA 8270	7/28/2010	CY
Pyridine		<5.0	mg/kg	5.0	EPA 8270	7/28/2010	CY
Total Cresols		<2.0	mg/kg	2.0	EPA 8270	7/28/2010	CY

MCL = Maximum Contamination Level
MDL = Method/Minimum Detection Limit
UR = Unregulated

Thank you for choosing Analytical Laboratories for your testing needs.

If you have any questions about this report, or any future analytical needs, please contact your client manager:

James Hibbs

Analytical Laboratories, Inc.
1804 N. 33rd Street
Boise, Idaho 83703
Phone (208) 342-5515

Date Report Printed: 8/3/2010 3:20:36 P
http://www.analyticallaboratories.com

Laboratory Analysis Report

Sample Number: 1021867

Attn: DEAN MORGAN
U.S. FOREST SERVICE-CHALLIS
HC 63, BOX 1669 HWY 93
CHALLIS, ID 83226

Collected By:
Submitted By: D MORGAN

Source of Sample:
PROJECT: KRASSEL CREOSOTE K-3A FROM SURFACE (1 FOOT DEPTH) (SOIL)

Time of Collection: 12:10
Date of Collection: 7/22/2010
Date Received: 7/23/2010
Report Date: 8/3/2010

PWS#:
PWS Name:

Field Temp: Temp Rcvd in Lab:

Test Requested	MCL	Analysis Result	Units	MDL	Method	Date Completed	Analyst
1,4-Dichlorobenzene		<7.5	mg/kg	7.5	EPA 8270	7/28/2010	CY
2,4,5-Trichlorophenol		<400	mg/kg	400	EPA 8270	7/28/2010	CY
2,4,6-Trichlorophenol		<2.0	mg/kg	2.0	EPA 8270	7/28/2010	CY
2,4-Dinitrotoluene		<0.13	mg/kg	0.130	EPA 8270	7/28/2010	CY
Hexachlorobenzene		<0.13	mg/kg	0.130	EPA 8270	7/28/2010	CY
Hexachlorobutadiene		<0.5	mg/kg	0.500	EPA 8270	7/28/2010	CY
Hexachloroethane		<3.0	mg/kg	3.0	EPA 8270	7/28/2010	CY
Nitrobenzene		<2.0	mg/kg	2.0	EPA 8270	7/28/2010	CY
Pentachlorophenol		1.6	mg/kg	1.0	EPA 8270	7/28/2010	CY
Pyridine		<5.0	mg/kg	5.0	EPA 8270	7/28/2010	CY
Total Cresols		<2.0	mg/kg	2.0	EPA 8270	7/28/2010	CY

MCL = Maximum Contamination Level
MDL = Method/Minimum Detection Limit
UR = Unregulated

Thank you for choosing Analytical Laboratories for your testing needs.

If you have any questions about this report, or any future analytical needs, please contact your client manager:

James Hibbs

Analytical Laboratories, Inc.

1804 N. 33rd Street
Boise, Idaho 83703
Phone (208) 342-5515

Date Report Printed: 8/3/2010 3:20:36 P
http://www.analyticallaboratories.com

Laboratory Analysis Report

Sample Number: 1021868

Attn: DEAN MORGAN
U.S. FOREST SERVICE-CHALLIS
HC 63, BOX 1669 HWY 93
CHALLIS, ID 83226

Collected By:

Submitted By: D MORGAN

Source of Sample:

PROJECT: KRASSEL CREOSOTE K-3B FROM SURFACE (3 FOOT DEPTH) (SOIL)

Time of Collection: 12:10
Date of Collection: 7/22/2010
Date Received: 7/23/2010
Report Date: 8/3/2010

PWS#:

Field Temp: Temp Rcvd in Lab: **PWS Name:**

Test Requested	MCL	Analysis Result	Units	MDL	Method	Date Completed	Analyst
1,4-Dichlorobenzene		<7.5	mg/kg	7.5	EPA 8270	7/28/2010	CY
2,4,5-Trichlorophenol		<400	mg/kg	400	EPA 8270	7/28/2010	CY
2,4,6-Trichlorophenol		<2.0	mg/kg	2.0	EPA 8270	7/28/2010	CY
2,4-Dinitrotoluene		<0.13	mg/kg	0.130	EPA 8270	7/28/2010	CY
Hexachlorobenzene		<0.13	mg/kg	0.130	EPA 8270	7/28/2010	CY
Hexachlorobutadiene		<0.5	mg/kg	0.500	EPA 8270	7/28/2010	CY
Hexachloroethane		<3.0	mg/kg	3.0	EPA 8270	7/28/2010	CY
Nitrobenzene		<2.0	mg/kg	2.0	EPA 8270	7/28/2010	CY
Pentachlorophenol		<1.0	mg/kg	1.0	EPA 8270	7/28/2010	CY
Pyridine		<5.0	mg/kg	5.0	EPA 8270	7/28/2010	CY
Total Cresols		<2.0	mg/kg	2.0	EPA 8270	7/28/2010	CY

MCL = Maximum Contamination Level
MDL = Method Minimum Detection Limit
UR = Unregulated

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James Hibbs

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Boise, Idaho 83703
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Date Report Printed: 8/3/2010 3:20:36 P
http://www.analyticallaboratories.com

Laboratory Analysis Report

Sample Number: 1021869

Attn: DEAN MORGAN
U.S. FOREST SERVICE-CHALLIS
HC 63, BOX 1669 HWY 93
CHALLIS, ID 83226

Collected By:

Submitted By: D MORGAN

Source of Sample:

PROJECT: KRASSEL CREOSOTE K-3C FROM SURFACE (4 FOOT DEPTH) (SOIL)

Time of Collection: 12:10
Date of Collection: 7/22/2010
Date Received: 7/23/2010
Report Date: 8/3/2010

PWS#:

Field Temp: Temp Rcvd in Lab: **PWS Name:**

Test Requested	MCL	Analysis Result	Units	MDL	Method	Date Completed	Analyst
1,4-Dichlorobenzene		<7.5	mg/kg	7.5	EPA 8270	7/28/2010	CY
2,4,5-Trichlorophenol		<400	mg/kg	400	EPA 8270	7/28/2010	CY
2,4,6-Trichlorophenol		<2.0	mg/kg	2.0	EPA 8270	7/28/2010	CY
2,4-Dinitrotoluene		<0.13	mg/kg	0.130	EPA 8270	7/28/2010	CY
Hexachlorobenzene		<0.13	mg/kg	0.130	EPA 8270	7/28/2010	CY
Hexachlorobutadiene		<0.5	mg/kg	0.500	EPA 8270	7/28/2010	CY
Hexachloroethane		<3.0	mg/kg	3.0	EPA 8270	7/28/2010	CY
Nitrobenzene		<2.0	mg/kg	2.0	EPA 8270	7/28/2010	CY
Pentachlorophenol		1.4	mg/kg	1.0	EPA 8270	7/28/2010	CY
Pyridine		<5.0	mg/kg	5.0	EPA 8270	7/28/2010	CY
Total Cresols		<2.0	mg/kg	2.0	EPA 8270	7/28/2010	CY

MCL = Maximum Contamination Level
MDL = Method/Minimum Detection Limit
UR = Unregulated

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James Hibbs

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1804 N. 33rd Street
Boise, Idaho 83703
Phone (208) 342-5515

Date Report Printed: 8/3/2010 3:20:36 P
http://www.analyticallaboratories.com

Laboratory Analysis Report

Sample Number: 1021870

Attn: DEAN MORGAN
U.S. FOREST SERVICE-CHALLIS
HC 63, BOX 1669 HWY 93
CHALLIS, ID 83226

Collected By:
Submitted By: D MORGAN

Source of Sample:
PROJECT: KRASSEL CREOSOTE K-4A FROM SURFACE (1 FOOT DEPTH) (SOIL)

Time of Collection: 12:28
Date of Collection: 7/22/2010
Date Received: 7/23/2010
Report Date: 8/3/2010

PWS#:
PWS Name:

Field Temp: Temp Rcvd in Lab:

Test Requested	MCL	Analysis Result	Units	MDL	Method	Date Completed	Analyst
1,4-Dichlorobenzene		<7.5	mg/kg	7.5	EPA 8270	7/28/2010	CY
2,4,5-Trichlorophenol		<400	mg/kg	400	EPA 8270	7/28/2010	CY
2,4,6-Trichlorophenol		<2.0	mg/kg	2.0	EPA 8270	7/28/2010	CY
2,4-Dinitrotoluene		<0.13	mg/kg	0.130	EPA 8270	7/28/2010	CY
Hexachlorobenzene		<0.13	mg/kg	0.130	EPA 8270	7/28/2010	CY
Hexachlorobutadiene		<0.5	mg/kg	0.500	EPA 8270	7/28/2010	CY
Hexachloroethane		<3.0	mg/kg	3.0	EPA 8270	7/28/2010	CY
Nitrobenzene		<2.0	mg/kg	2.0	EPA 8270	7/28/2010	CY
Pentachlorophenol		<1.0	mg/kg	1.0	EPA 8270	7/28/2010	CY
Pyridine		<5.0	mg/kg	5.0	EPA 8270	7/28/2010	CY
Total Cresols		<2.0	mg/kg	2.0	EPA 8270	7/28/2010	CY

MCL = Maximum Contamination Level
MDL = Method Minimum Detection Limit
UR = Unregulated

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If you have any questions about this report, or any future analytical needs, please contact your client manager:

James Hibbs

Analytical Laboratories, Inc.

1804 N. 33rd Street
Boise, Idaho 83703
Phone (208) 342-5515

Date Report Printed: 8/3/2010 3:20:36 P
http://www.analyticallaboratories.com

Laboratory Analysis Report

Sample Number: 1021871

Attn: DEAN MORGAN
U.S. FOREST SERVICE-CHALLIS
HC 63, BOX 1669 HWY 93
CHALLIS, ID 83226

Collected By:
Submitted By: D MORGAN

Source of Sample:
PROJECT: KRASSEL CREOSOTE K-4B (3 FOOT DEPTH) (SOIL)

Time of Collection: 12:28
Date of Collection: 7/22/2010
Date Received: 7/23/2010
Report Date: 8/3/2010

PWS#:
PWS Name:

Field Temp: Temp Rcvd in Lab:

Test Requested	MCL	Analysis Result	Units	MDL	Method	Date Completed	Analyst
1,4-Dichlorobenzene		<7.5	mg/kg	7.5	EPA 8270	7/28/2010	CY
2,4,5-Trichlorophenol		<400	mg/kg	400	EPA 8270	7/28/2010	CY
2,4,6-Trichlorophenol		<2.0	mg/kg	2.0	EPA 8270	7/28/2010	CY
2,4-Dinitrotoluene		<0.13	mg/kg	0.130	EPA 8270	7/28/2010	CY
Hexachlorobenzene		<0.13	mg/kg	0.130	EPA 8270	7/28/2010	CY
Hexachlorobutadiene		<0.5	mg/kg	0.500	EPA 8270	7/28/2010	CY
Hexachloroethane		<3.0	mg/kg	3.0	EPA 8270	7/28/2010	CY
Nitrobenzene		<2.0	mg/kg	2.0	EPA 8270	7/28/2010	CY
Pentachlorophenol		<1.0	mg/kg	1.0	EPA 8270	7/28/2010	CY
Pyridine		<5.0	mg/kg	5.0	EPA 8270	7/28/2010	CY
Total Cresols		<2.0	mg/kg	2.0	EPA 8270	7/28/2010	CY

MCL = Maximum Contamination Level
MDL = Method Minimum Detection Limit
UR = Unregulated

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James Hibbs

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Phone (208) 342-5515

Date Report Printed: 8/3/2010 3:20:36 P
http://www.analyticallaboratories.com

Laboratory Analysis Report

Sample Number: 1021872

Attn: DEAN MORGAN
U.S. FOREST SERVICE-CHALLIS
HC 63, BOX 1669 HWY 93
CHALLIS, ID 83226

Collected By:

Submitted By: D MORGAN

Source of Sample:

PROJECT: KRASSEL CREOSOTE K-4C (4 FOOT DEPTH) (SOIL)

Time of Collection: 12:28
Date of Collection: 7/22/2010
Date Received: 7/23/2010
Report Date: 8/3/2010

PWS#:

Field Temp: Temp Rcvd in Lab: **PWS Name:**

Test Requested	MCL	Analysis Result	Units	MDL	Method	Date Completed	Analyst
1,4-Dichlorobenzene		<7.5	mg/kg	7.5	EPA 8270	7/28/2010	CY
2,4,5-Trichlorophenol		<400	mg/kg	400	EPA 8270	7/28/2010	CY
2,4,6-Trichlorophenol		<2.0	mg/kg	2.0	EPA 8270	7/28/2010	CY
2,4-Dinitrotoluene		<0.13	mg/kg	0.130	EPA 8270	7/28/2010	CY
Hexachlorobenzene		<0.13	mg/kg	0.130	EPA 8270	7/28/2010	CY
Hexachlorobutadiene		<0.5	mg/kg	0.500	EPA 8270	7/28/2010	CY
Hexachloroethane		<3.0	mg/kg	3.0	EPA 8270	7/28/2010	CY
Nitrobenzene		<2.0	mg/kg	2.0	EPA 8270	7/28/2010	CY
Pentachlorophenol		<1.0	mg/kg	1.0	EPA 8270	7/28/2010	CY
Pyridine		<5.0	mg/kg	5.0	EPA 8270	7/28/2010	CY
Total Cresols		<2.0	mg/kg	2.0	EPA 8270	7/28/2010	CY

MCL = Maximum Contamination Level
MDL = Method/Minimum Detection Limit
UR = Unregulated

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James Hibbs

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Boise, Idaho 83703
Phone (208) 342-5515

Date Report Printed: 8/3/2010 3:20:36 P
http://www.analyticallaboratories.com

Laboratory Analysis Report

Sample Number: 1021873

Attn: DEAN MORGAN
U.S. FOREST SERVICE-CHALLIS
HC 63, BOX 1669 HWY 93
CHALLIS, ID 83226

Collected By:
Submitted By: D MORGAN

Source of Sample:
PROJECT: KRASSEL CREOSOTE K-5 (LIQUID IN WALL) (LIQUID)

Time of Collection: 12:47
Date of Collection: 7/22/2010
Date Received: 7/23/2010
Report Date: 8/3/2010

PWS#:
PWS Name:

Field Temp: Temp Rcvd in Lab:

Test Requested	MCL	Analysis Result	Units	MDL	Method	Date Completed	Analyst
1,4-Dichlorobenzene		<7.5	mg/L	7.5	EPA 8270	7/28/2010	CY
2,4,5-Trichlorophenol		<400	mg/L	400	EPA 8270	7/28/2010	CY
2,4,6-Trichlorophenol		<2.0	mg/L	2.0	EPA 8270	7/28/2010	CY
2,4-Dinitrotoluene		<0.13	mg/L	0.130	EPA 8270	7/28/2010	CY
Hexachlorobenzene		<0.13	mg/L	0.130	EPA 8270	7/28/2010	CY
Hexachlorobutadiene		<0.5	mg/L	0.500	EPA 8270	7/28/2010	CY
Hexachloroethane		<3.0	mg/L	3.0	EPA 8270	7/28/2010	CY
Nitrobenzene		<2.0	mg/L	2.0	EPA 8270	7/28/2010	CY
Pentachlorophenol		4.6	mg/L	1.0	EPA 8270	7/28/2010	CY
Pyridine		<5.0	mg/L	5.0	EPA 8270	7/28/2010	CY
Total Cresols		<2.0	mg/L	2.0	EPA 8270	7/28/2010	CY

MCL = Maximum Contamination Level
MDL = Method Minimum Detection Limit
UR = Unregulated

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If you have any questions about this report, or any future analytical needs. please contact your client manager:

James Hibbs

Analytical Laboratories, Inc.

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Boise, Idaho 83703
Phone (208) 342-5515

Date Report Printed: 8/3/2010 3:20:36 P
http://www.analyticallaboratories.com

Laboratory Analysis Report

Sample Number: 1021874

Attn: DEAN MORGAN
U.S. FOREST SERVICE-CHALLIS
HC 63, BOX 1669 HWY 93
CHALLIS, ID 83226

Collected By:

Submitted By: D MORGAN

Source of Sample:

PROJECT: KRASSEL CREOSOTE K-6A (1 FOOT DEPTH) (SOIL)

Time of Collection: 12:55
Date of Collection: 7/22/2010
Date Received: 7/23/2010
Report Date: 8/3/2010

PWS#:

Field Temp: Temp Rcvd in Lab: **PWS Name:**

Test Requested	MCL	Analysis Result	Units	MDL	Method	Date Completed	Analyst
1,4-Dichlorobenzene		<7.5	mg/kg	7.5	EPA 8270	7/28/2010	CY
2,4,5-Trichlorophenol		<400	mg/kg	400	EPA 8270	7/28/2010	CY
2,4,6-Trichlorophenol		<2.0	mg/kg	2.0	EPA 8270	7/28/2010	CY
2,4-Dinitrotoluene		<0.13	mg/kg	0.130	EPA 8270	7/28/2010	CY
Hexachlorobenzene		<0.13	mg/kg	0.130	EPA 8270	7/28/2010	CY
Hexachlorobutadiene		<0.5	mg/kg	0.500	EPA 8270	7/28/2010	CY
Hexachloroethane		<3.0	mg/kg	3.0	EPA 8270	7/28/2010	CY
Nitrobenzene		<2.0	mg/kg	2.0	EPA 8270	7/28/2010	CY
Pentachlorophenol		<1.0	mg/kg	1.0	EPA 8270	7/28/2010	CY
Pyridine		<5.0	mg/kg	5.0	EPA 8270	7/28/2010	CY
Total Cresols		<2.0	mg/kg	2.0	EPA 8270	7/28/2010	CY

MCL = Maximum Contamination Level
MDL = Method/Minimum Detection Limit
UR = Unregulated

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James Hibbs

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Phone (208) 342-5515

Date Report Printed: 8/3/2010 3:20:36 P
http://www.analyticallaboratories.com

Laboratory Analysis Report

Sample Number: 1021875

Attn: DEAN MORGAN
U.S. FOREST SERVICE-CHALLIS
HC 63, BOX 1669 HWY 93
CHALLIS, ID 83226

Collected By:

Submitted By: D MORGAN

Source of Sample:

PROJECT: KRASSEL CREOSOTE K-6B (3 FOOT DEPTH) (SOIL)

Time of Collection: 12:55
Date of Collection: 7/22/2010
Date Received: 7/23/2010
Report Date: 8/3/2010

PWS#:

Field Temp: Temp Rcvd in Lab: **PWS Name:**

Test Requested	MCL	Analysis Result	Units	MDL	Method	Date Completed	Analyst
1,4-Dichlorobenzene		<7.5	mg/kg	7.5	EPA 8270	7/28/2010	CY
2,4,5-Trichlorophenol		<400	mg/kg	400	EPA 8270	7/28/2010	CY
2,4,6-Trichlorophenol		<2.0	mg/kg	2.0	EPA 8270	7/28/2010	CY
2,4-Dinitrotoluene		<0.13	mg/kg	0.130	EPA 8270	7/28/2010	CY
Hexachlorobenzene		<0.13	mg/kg	0.130	EPA 8270	7/28/2010	CY
Hexachlorobutadiene		<0.5	mg/kg	0.500	EPA 8270	7/28/2010	CY
Hexachloroethane		<3.0	mg/kg	3.0	EPA 8270	7/28/2010	CY
Nitrobenzene		<2.0	mg/kg	2.0	EPA 8270	7/28/2010	CY
Pentachlorophenol		<1.0	mg/kg	1.0	EPA 8270	7/28/2010	CY
Pyridine		<5.0	mg/kg	5.0	EPA 8270	7/28/2010	CY
Total Cresols		<2.0	mg/kg	2.0	EPA 8270	7/28/2010	CY

MCL = Maximum Contamination Level
MDL = Method Minimum Detection Limit
UR = Unregulated

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Phone (208) 342-5515

Date Report Printed: 8/3/2010 3:20:36 P
http://www.analyticallaboratories.com

Laboratory Analysis Report

Sample Number: 1021876

Attn: DEAN MORGAN
U.S. FOREST SERVICE-CHALLIS
HC 63, BOX 1669 HWY 93
CHALLIS, ID 83226

Collected By:
Submitted By: D MORGAN

Source of Sample:
PROJECT: KRASSEL CREOSOTE K-7A (6" SURFACE SAMPLE) (SOIL)

Time of Collection: 13:05
Date of Collection: 7/22/2010
Date Received: 7/23/2010
Report Date: 8/3/2010

PWS#:
PWS Name:

Field Temp: Temp Rcvd in Lab:

Test Requested	MCL	Analysis Result	Units	MDL	Method	Date Completed	Analyst
1,4-Dichlorobenzene		<7.5	mg/kg	7.5	EPA 8270	7/28/2010	CY
2,4,5-Trichlorophenol		<400	mg/kg	400	EPA 8270	7/28/2010	CY
2,4,6-Trichlorophenol		<2.0	mg/kg	2.0	EPA 8270	7/28/2010	CY
2,4-Dinitrotoluene		<0.13	mg/kg	0.130	EPA 8270	7/28/2010	CY
Hexachlorobenzene		<0.13	mg/kg	0.130	EPA 8270	7/28/2010	CY
Hexachlorobutadiene		<0.5	mg/kg	0.500	EPA 8270	7/28/2010	CY
Hexachloroethane		<3.0	mg/kg	3.0	EPA 8270	7/28/2010	CY
Nitrobenzene		<2.0	mg/kg	2.0	EPA 8270	7/28/2010	CY
Pentachlorophenol		<1.0	mg/kg	1.0	EPA 8270	7/28/2010	CY
Pyridine		<5.0	mg/kg	5.0	EPA 8270	7/28/2010	CY
Total Cresols		<2.0	mg/kg	2.0	EPA 8270	7/28/2010	CY

MCL = Maximum Contamination Level
MDL = Method/Minimum Detection Limit
UR = Unregulated

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James Hibbs

CLIENT CODE= USFS-CHA

CHAIN OF CUSTODY RECORD

CLIENT INFORMATION:		PROJECT INFORMATION:	
Project Manager: Dean Morgan		**Project Name:** Kissel Creek	
Company: USFS Challis NF		**PWS Number:**	
Address: Hc 63, Box 1669, Hwy 93		**Purchase Order Number:**	
Challis, ID 83226		**Required Due Date:**	
Phone: 208.879.6058	**Fax:** 208.879.6231	**E-mail Address:** dmorgan04@fs.fed.us	
Sampled by: *(Please print)*		**Transported by:** *(Please print)*	

ANALYTICAL LABS, INC.
1804 N. 33rd Street • Boise, ID 83703
(208) 342-5515 • Fax: (208) 342-5591 • 1-800-574-5773
Website: www.analyticallaboratories.com
E-mail: ali@analyticallaboratories.com

TESTS REQUESTED

Lab ID	Date Sampled	Time Sampled	Sample Description (Source)	Sample Matrix	Remarks:
21863	7/22/10	1157	K-1a (1 foot depth)	Soil	
21864	7/22/10	1159	K-1b (3 foot depth)	Soil	
21865	7/22/10	1142	K-2a (1 foot depth)	Soil	
21866	7/22/10	1144	K-2b (3 ft depth)	Soil	
21867	7/22/10	1210	K-3a (1 foot depth)		
21868	7/22/10	1210	K-3b (3 foot depth)		
21869	7/22/10	1210	K-3c (4 foot depth)		
21870	7/22/10	1228	K-4a (1 foot depth)		
21871	7/22/10	1228	K-4b (3 foot depth)		
21872	7/22/10	1228	K-4c (4 foot depth)		

Invoice to: *(If different than above address)*

Special Instructions:

ALLOCATIONS OF RISK: Analytical Laboratories, Inc. will perform preparation and testing services, obtain findings and prepare reports in accordance with Good Laboratory Practices (GLP). If, for any reason, Analytical Laboratories, Inc. errors in the conduct of a test or procedure their liability shall be limited to the cost of the test or procedure completed in error. Under no circumstance will Analytical Laboratories, Inc. be liable for any other cost associated with obtaining a sample or use of data.

Note: Samples are discarded 21 days after results are reported. Hazardous samples will be returned to client or disposed of at client expense.

	Print Name:	Company:	Date:	Time:
Relinquished By: *(Signature)* Dean C. Morgan	Dean Morgan	USFS Challis NF	7/23/10	0915
Received By: *(Signature)*				
Relinquished By: *(Signature)*				
Received at Laboratory By: *(Signature)* Brenda Wright	Brenda Wright	**Analytical Laboratories**	7-23-10	0815
SAMPLE RECEIPT **Total # of Containers:**	**Chains of Custody Seals** Y / N / (NA)	**Intact:** Y / N / (NA) **Temperature Received:**	**Condition:**	good

REV. 2/19/10 WHITE: STAYS WITH SAMPLE(S) YELLOW: LAB PINK: SAMPLER

CLIENT CODE= USFS-CHA

CHAIN OF CUSTODY RECORD

CLIENT INFORMATION:	PROJECT INFORMATION:
Project Manager: Dean Morgan	**Project Name:** Krassel Creosote
Company: USFS Challis NF	**PWS Number:**
Address: HC 63, Box 1669, Hwy 93	**Purchase Order Number:**
Challis, ID 83226	**Required Due Date:**
Phone: 208.833.6033 **Fax:** 208.879.6239	**E-mail Address:** dmorgan04@fs.fed.us
Sampled by: *(Please print)*	**Transported by:** *(Please print)*

ANALYTICAL LABS, INC.
1804 N. 33rd Street • Boise, ID 83703
(208) 342-5515 • Fax: (208) 342-5591 • 1-800-574-5773
Website: www.analyticallaboratories.com
E-mail: ali@analyticallaboratories.com

TESTS REQUESTED

Lab ID	Date Sampled	Time Sampled	Sample Description (Source)	Sample Matrix	Remarks:
21873	7/22/10	1247	K-5 (Liquid in vault)	Liquid	
21874	7/22/10	1255	K-6a (1 foot depth)	soil	
21875	7/22/10	1255	K-6b (3 foot depth)	soil	
21876	7/22/10	1305	K-7a (6" surface Sample)	soil	

Invoice to: *(If different than above address)*

Special Instructions:

ALLOCATIONS OF RISK: Analytical Laboratories, Inc. will perform preparation and testing services, obtain findings and prepare reports in accordance with Good Laboratory Practices (GLP). If, for any reason, Analytical Laboratories, Inc. errors in the conduct of a test or procedure their liability shall be limited to the cost of the test or procedure completed in error. Under no circumstance will Analytical Laboratories, Inc. be liable for any other cost associated with obtaining a sample or use of data.

Note: Samples are discarded 21 days after results are reported. Hazardous samples will be returned to client or disposed of at client expense.

	Print Name:	Company:	Date:	Time:
Relinquished By: *(Signature)* Dean C. Morgan	Dean Morgan	USFS Challis NF	7/23/10	0815
Received By: *(Signature)*				
Relinquished By: *(Signature)*				
Received at Laboratory By: *(Signature)* Brenda Wright	Brenda Wright	**Analytical Laboratories**	7-23-10	0815

SAMPLE RECEIPT **Total # of Containers:** **Chains of Custody Seals** Y / N / NA **Intact:** Y / N / NA **Temperature Received:** **Condition:** good

REV. 2/19/10 WHITE: STAYS WITH SAMPLE(S) YELLOW: LAB PINK: SAMPLER

12065 Lebanon Rd.
Mt. Juliet, TN 37122
(615) 758-5858
1-800-767-5859
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

Dean Morgan
Environmental Science Corp.
,

Report Summary

Wednesday September 29, 2010

Report Number: L477989
Samples Received: 09/09/10
Client Project:

Description: Krassel Work Center Post Treatment Site

The analytical results in this report are based upon information supplied by you, the client, and are for your exclusive use. If you have any questions regarding this data package, please do not hesitate to call.

Entire Report Reviewed By:

Tom Mellette , ESC Representative

Laboratory Certification Numbers

A2LA - 1461-01, AIHA - 100789, AL - 40660, CA - I-2327, CT - PH-0197, FL - E87487
GA - 923, IN - C-TN-01, KY - 90010, KYUST - 0016, NC - ENV375/DW21704, ND - R-140
NJ - TN002,NJ NELAP - TN002, SC - 84004, TN - 2006, VA - 00109, WV - 233
AZ - 0612, MN - 047-999-395, NY - 11742, WI - 998093910, NV - TN000032008A,
TX - T104704245, OK-9915

Accreditation is only applicable to the test methods specified on each scope of accreditation held by ESC Lab Sciences.
Note: The use of the preparatory EPA Method 3511 is not approved or endorsed by the CA ELAP.

Where applicable, sampling conducted by ESC is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.

ESC LAB SCIENCES
YOUR LAB OF CHOICE

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Mt. Juliet, TN 37122
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Tax I.D. 62-0814289

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REPORT OF ANALYSIS

Dean Morgan
Environmental Science Corp.

September 29, 2010

,

ESC Sample # : L477989-01

Date Received : September 09, 2010
Description : Krassel Work Center Post Treatment Site

Site ID :

Sample ID : K-3A

Project # :

Collected By : Dean Morgan
Collection Date : 09/02/10 11:54

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Miscellaneous	ATTACH TO COC				09/22/10	1

BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)
Note:
The reported analytical results relate only to the sample submitted.

.
Reported: 09/29/10 11:16 Printed: 09/29/10 11:17
L477989-01 (MISC-SUB) - subcontracted to Maxxam Analytics

ESC LAB SCIENCES
YOUR LAB OF CHOICE

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Mt. Juliet, TN 37122
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1-800-767-5859
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

REPORT OF ANALYSIS

Dean Morgan
Environmental Science Corp.

September 29, 2010

,

ESC Sample # : L477989-02

Date Received : September 09, 2010
Description : Krassel Work Center Post Treatment Site

Site ID :

Sample ID : K-3B

Project # :

Collected By : Dean Morgan
Collection Date : 09/02/10 11:48

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Miscellaneous	ATTACH TO COC				09/22/10	1

BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)
Note:
The reported analytical results relate only to the sample submitted.

.
Reported: 09/29/10 11:16 Printed: 09/29/10 11:17
L477989-02 (MISC-SUB) - subcontracted to Maxxam Analytics

ESC LAB SCIENCES
YOUR LAB OF CHOICE

12065 Lebanon Rd.
Mt. Juliet, TN 37122
(615) 758-5858
1-800-767-5859
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

REPORT OF ANALYSIS

Dean Morgan
Environmental Science Corp.

September 29, 2010

,

ESC Sample # : L477989-03

Date Received : September 09, 2010
Description : Krassel Work Center Post Treatment Site

Site ID :

Sample ID : K-3C

Project # :

Collected By : Dean Morgan
Collection Date : 09/02/10 11:45

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Miscellaneous	ATTACH TO COC				09/22/10	1

BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)
Note:
The reported analytical results relate only to the sample submitted.

.
Reported: 09/29/10 11:16 Printed: 09/29/10 11:17
L477989-03 (MISC-SUB) - subcontracted to Maxxam Analytics

Summary of Remarks For Samples Printed
09/29/10 at 11:17:14

TSR Signing Reports: 690
R5 - Desired TAT

Sample: L477989-01 Account: ENVSCI Received: 09/09/10 09:00 Due Date: 09/15/10 00:00 RPT Date: 09/29/10 11:16
Subbed direct to Maxxny jlc PO#S13754 Misc-Sub for Dioxin and Furans . Client already paid with
CC per Janice Cosby
Sample: L477989-02 Account: ENVSCI Received: 09/09/10 09:00 Due Date: 09/15/10 00:00 RPT Date: 09/29/10 11:16
Subbed direct to Maxxny jlc PO#S13754 Misc-Sub for Dioxin and Furans .
Sample: L477989-03 Account: ENVSCI Received: 09/09/10 09:00 Due Date: 09/15/10 00:00 RPT Date: 09/29/10 11:16
Subbed direct to Maxxny jlc PO#S13754 Misc-Sub for Dioxin and Furans .

International Solid Sample
Heat Treat Required
High Risk material
Controlled Storage and Disposal

Billing Information:
USDA Forest Service
Salmon-Challis NF
Challis-Yankee Fork RD
HC 63, Box 1669, Hwy 93
Challis, ID 83226

Report to: Dean Morgan
Email to: dmorgan04@fs.fed.us

8-Sep-10 12:40
ANCY SEBASTIAN
B0C3787
MHO ENV-184

Chain of Custody Page 1 of 1

ESC LAB SCIENCES
12065 Lebanon Road
Mt. Juliet, TN 37122
Phone: (800) 767-5859
Phone: (615) 758-5858
Fax: (615) 758-5859

Project Description: Krassel Work Center Post Treatment Site
City/State Collected: Near McCall, ID
Phone: 208.833.6038
FAX: 208.879.6239
Client Project #:
ESC Key:
Collected by: Dean Morgan
Site/Facility ID#:
P.O.#:
Collected by (signature): Dean C. Morgan
Immediately Packed on Ice N (Y)
Rush? (Lab MUST Be Notified) ___ Same Day......200% ___ Next Day.......100% ___ Two Day........50%
Date Results Needed:
Email? __No X Yes
FAX? __No __Yes

CoCode (lab use only)
Template/Prelogin
Shipped Via:

Sample ID	Comp/Grab	Matrix*	Depth	Date	Time	No. of Cntrs	Dioxin & Furans Full List by HRMS		Remarks/Contaminant	Sample # (lab only)
K-3A	Grab	SS	2 foot	08/02/10	1154 hrs*		X	2 ft	Sample 80% saturated	L477989-01
K-3B	Grab	SS	4 foot	↓	1148 hrs*		X	4 ft	"	-02
K-3C	Grab	SS	6 foot	↓	1145 hrs*		X	6 ft	"	-03
									*Mtn Time	

*Matrix: SS - Soil/Solid GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other ________

pH ________ Temp ________
Remarks:
Flow ________ Other ________

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Samples returned via: ☐ UPS ☐ FedEx ☐ Courier ☐	Condition: (lab use only)
Dean C. Morgan	9/7/10	1000hrs			
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature) ZOFIA ZERUTA	Temp: 12.1/12.5/11.9°C / Bottles Received:	CoC Seals Intact: ___ Y ___ N ___ NA
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature) ZOFIA ZERUTA	Date: 2010/09/08 / Time: 12:40	pH Checked: / NCF:

attempt to cool

Your P.O. #: S13754

Your Project #: L477989
Site: USDA FOREST SERVICE
Your C.O.C. #: n/a

Attention: Janice Cozby
Environmental Science Corp
TN
12065 Lebanon Rd
Mt Juliet, TN
USA TN 37122

Report Date: 2010/09/29

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B0C3787
Received: 2010/09/08, 12:40

Sample Matrix: Soil
Samples Received: 3

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Dioxins/Furans in Soil (8290) (1)	1	2010/09/16	2010/09/22	BRL SOP-00406	EPA 8290 mod.
Dioxins/Furans in Soil (8290) (1)	2	2010/09/16	2010/09/23	BRL SOP-00406	EPA 8290 mod.
Moisture	3	N/A	2010/09/14	CAM SOP-00445	McKeague 2nd ed 1978

(1) Soils are reported on a dry weight basis unless otherwise specified.

Confirmatory runs for 2,3,7,8-TCDF are performed only if the primary result is greater than the RDL.

U = Undetected at the limit of quantitation.
J = Estimated concentration between the EDL & RDL.
B = Blank Contamination.
Q = One or more quality control criteria failed.

Encryption Key

Ancy Sebastian
29 Sep 2010 09:01:51 -04:00

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

ANCY SEBASTIAN, C.Tech., Senior Project Manager, Air Toxics
Email: Ancy.Sebastian@MaxxamAnalytics.com
Phone# (905) 817-5831

==========

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Total cover pages: 1

Maxxam Job #: B0C3787
Report Date: 2010/09/29

Environmental Science Corp
Client Project #: L477989
Project name: USDA FOREST SERVICE
Your P.O. #: S13754

RESULTS OF ANALYSES OF SOIL

Maxxam ID		HC0071	HC0072	HC0073		
Sampling Date		2010/09/02 11:54	2010/09/02 11:48	2010/09/02 11:45		
COC Number		n/a	n/a	n/a		
	Units	**K-3A**	**K-3B**	**K-3C**	**RDL**	**QC Batch**
Moisture	%	16	8	8	1	2265230

N/A = Not Applicable
RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Maxxam Job #: B0C3787
Report Date: 2010/09/29

Environmental Science Corp
Client Project #: L477989
Project name: USDA FOREST SERVICE
Your P.O. #: S13754

DIOXINS AND FURANS BY HRMS (SOIL)

Maxxam ID		HC0071						
Sampling Date		2010/09/02 11:54						
COC Number		n/a			TOXIC EQUIVALENCY		# of	
	Units	K-3A	EDL	RDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
2,3,7,8-Tetra CDD *	pg/g	0.293 J	0.068	2.0	1.00	0.293		2272651
1,2,3,7,8-Penta CDD	pg/g	14.6	0.050	5.0	1.00	14.6		2272651
1,2,3,4,7,8-Hexa CDD	pg/g	141 (1)	1.4	100	0.100	14.1		2272651
1,2,3,6,7,8-Hexa CDD	pg/g	2170 (1)	1.3	100	0.100	217		2272651
1,2,3,7,8,9-Hexa CDD	pg/g	312 (1)	1.3	100	0.100	31.2		2272651
1,2,3,4,6,7,8-Hepta CDD	pg/g	91000 (2)	1.0	100	0.0100	910		2272651
Octa CDD	pg/g	201000 (2)	1.3	200	0.000300	60.3		2272651
Total Tetra CDD	pg/g	8.76	0.068	N/A				2272651
Total Penta CDD	pg/g	48.6	0.050	N/A				2272651
Total Hexa CDD	pg/g	5010 (1)	1.3	N/A				2272651
Total Hepta CDD	pg/g	121000 (1)	1.0	N/A				2272651
2,3,7,8-Tetra CDF **	pg/g	0.522 J	0.068	2.0	0.100	0.0522		2272651
1,2,3,7,8-Penta CDF	pg/g	1.25 J	0.061	5.0	0.0300	0.0375		2272651
2,3,4,7,8-Penta CDF	pg/g	1.52 J	0.063	5.0	0.300	0.456		2272651
1,2,3,4,7,8-Hexa CDF	pg/g	251	0.056	5.0	0.100	25.1		2272651
1,2,3,6,7,8-Hexa CDF	pg/g	81.1	0.057	5.0	0.100	8.11		2272651
2,3,4,6,7,8-Hexa CDF	pg/g	28.1	0.064	5.0	0.100	2.81		2272651
1,2,3,7,8,9-Hexa CDF	pg/g	1.90 J	0.072	5.0	0.100	0.190		2272651
1,2,3,4,6,7,8-Hepta CDF	pg/g	10100 (1)	11	100	0.0100	101		2272651
1,2,3,4,7,8,9-Hepta CDF	pg/g	1790 (1)	14	100	0.0100	17.9		2272651
Octa CDF	pg/g	42400 (2)	2.0	200	0.000300	12.7		2272651
Total Tetra CDF	pg/g	54.8	0.068	N/A				2272651
Total Penta CDF	pg/g	116	0.062	N/A				2272651
Total Hexa CDF	pg/g	5950	0.062	N/A				2272651
Total Hepta CDF	pg/g	68500 (1)	12	N/A				2272651

N/A = Not Applicable
RDL = Reportable Detection Limit
EDL = Estimated Detection Limit
QC Batch = Quality Control Batch
* CDD = Chloro Dibenzo-p-Dioxin, ** CDF = Chloro Dibenzo-p-Furan
TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.
WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds
(1) 20X Dilution
(2) EMCL - PCDD/DF analysis - Exceeds Maximum Calibration Limit
20X Dilution

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Maxxam Job #: B0C3787
Report Date: 2010/09/29

Environmental Science Corp
Client Project #: L477989
Project name: USDA FOREST SERVICE
Your P.O. #: S13754

DIOXINS AND FURANS BY HRMS (SOIL)

Maxxam ID		HC0071						
Sampling Date		2010/09/02 11:54						
COC Number		n/a			**TOXIC EQUIVALENCY**		**# of**	
	Units	**K-3A**	**EDL**	**RDL**	**TEF (2005 WHO)**	**TEQ(DL)**	**Isomers**	**QC Batch**
TOTAL TOXIC EQUIVALENCY	pg/g					1420		
Surrogate Recovery (%)								
C13-1234678 HeptaCDD *	%	119						2272651
C13-1234678 HeptaCDF **	%	87						2272651
C13-123478 HexaCDF	%	90						2272651
C13-123678 HexaCDD	%	83						2272651
C13-12378 PentaCDD	%	61						2272651
C13-12378 PentaCDF	%	64						2272651
C13-2378 TetraCDD	%	69						2272651
C13-2378 TetraCDF	%	73						2272651
C13-OCDD	%	248 (1)						2272651

N/A = Not Applicable
RDL = Reportable Detection Limit
EDL = Estimated Detection Limit
QC Batch = Quality Control Batch
* CDD = Chloro Dibenzo-p-Dioxin, ** CDF = Chloro Dibenzo-p-Furan
TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.
WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds
(1) High level of native in sample-- isotopic ratio out. exceeds method acceptance range of method 40-140%

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Maxxam Job #: B0C3787
Report Date: 2010/09/29

Environmental Science Corp
Client Project #: L477989
Project name: USDA FOREST SERVICE
Your P.O. #: S13754

DIOXINS AND FURANS BY HRMS (SOIL)

Maxxam ID		HC0072						
Sampling Date		2010/09/02 11:48						
COC Number		n/a			TOXIC EQUIVALENCY		# of	
	Units	K-3B	EDL	RDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
2,3,7,8-Tetra CDD *	pg/g	0.13 U	0.13	2.0	1.00	0.130		2272651
1,2,3,7,8-Penta CDD	pg/g	0.53 U (1)	0.53	5.0	1.00	0.530		2272651
1,2,3,4,7,8-Hexa CDD	pg/g	6.7	0.18	5.0	0.100	0.670		2272651
1,2,3,6,7,8-Hexa CDD	pg/g	285	0.16	5.0	0.100	28.5		2272651
1,2,3,7,8,9-Hexa CDD	pg/g	17.9	0.16	5.0	0.100	1.79		2272651
1,2,3,4,6,7,8-Hepta CDD	pg/g	15600 (2)	5.2	99	0.0100	156		2272651
Octa CDD	pg/g	110000 (3)	5.5	200	0.000300	33.0		2272651
Total Tetra CDD	pg/g	0.65 U	0.65	N/A				2272651
Total Penta CDD	pg/g	0.71	0.10	N/A				2272651
Total Hexa CDD	pg/g	551	0.17	N/A				2272651
Total Hepta CDD	pg/g	20800 (2)	5.2	N/A				2272651
2,3,7,8-Tetra CDF **	pg/g	0.192 J	0.054	2.0	0.100	0.0192		2272651
1,2,3,7,8-Penta CDF	pg/g	0.10 U	0.10	5.0	0.0300	0.00300		2272651
2,3,4,7,8-Penta CDF	pg/g	0.32 J	0.11	5.0	0.300	0.0960		2272651
1,2,3,4,7,8-Hexa CDF	pg/g	35.0	0.048	5.0	0.100	3.50		2272651
1,2,3,6,7,8-Hexa CDF	pg/g	7.5	0.050	5.0	0.100	0.750		2272651
2,3,4,6,7,8-Hexa CDF	pg/g	2.28 J	0.055	5.0	0.100	0.228		2272651
1,2,3,7,8,9-Hexa CDF	pg/g	0.550 J	0.062	5.0	0.100	0.0550		2272651
1,2,3,4,6,7,8-Hepta CDF	pg/g	1500 (2)	2.2	99	0.0100	15.0		2272651
1,2,3,4,7,8,9-Hepta CDF	pg/g	307 (2)	2.9	99	0.0100	3.07		2272651
Octa CDF	pg/g	14900 (2)	2.4	200	0.000300	4.47		2272651
Total Tetra CDF	pg/g	1.83	0.054	N/A				2272651
Total Penta CDF	pg/g	11.7	0.10	N/A				2272651
Total Hexa CDF	pg/g	860	0.053	N/A				2272651

N/A = Not Applicable
RDL = Reportable Detection Limit
EDL = Estimated Detection Limit
QC Batch = Quality Control Batch
* CDD = Chloro Dibenzo-p-Dioxin, ** CDF = Chloro Dibenzo-p-Furan
TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.
WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds
(1) EMPC / NDR - Peak detected does not meet ratio criteria and has resulted in an elevated detection limit.
(2) 20X Dilution
(3) EMCL - PCDD/DF analysis - Exceeds Maximum Calibration Limit
20X Dilution

Maxxam Job #: B0C3787
Report Date: 2010/09/29

Environmental Science Corp
Client Project #: L477989
Project name: USDA FOREST SERVICE
Your P.O. #: S13754

DIOXINS AND FURANS BY HRMS (SOIL)

Maxxam ID		HC0072						
Sampling Date		2010/09/02 11:48						
COC Number		n/a			**TOXIC EQUIVALENCY**		**# of**	
	Units	**K-3B**	**EDL**	**RDL**	**TEF (2005 WHO)**	**TEQ(DL)**	**Isomers**	**QC Batch**
Total Hepta CDF **	pg/g	10100 (1)	2.5	N/A				2272651
TOTAL TOXIC EQUIVALENCY	pg/g					248		
Surrogate Recovery (%)								
C13-1234678 HeptaCDD *	%	54						2272651
C13-1234678 HeptaCDF	%	51						2272651
C13-123478 HexaCDF	%	95						2272651
C13-123678 HexaCDD	%	82						2272651
C13-12378 PentaCDD	%	82						2272651
C13-12378 PentaCDF	%	77						2272651
C13-2378 TetraCDD	%	68						2272651
C13-2378 TetraCDF	%	77						2272651
C13-OCDD	%	57						2272651

N/A = Not Applicable
RDL = Reportable Detection Limit
EDL = Estimated Detection Limit
QC Batch = Quality Control Batch
* CDD = Chloro Dibenzo-p-Dioxin, ** CDF = Chloro Dibenzo-p-Furan
TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.
WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds
(1) 20X Dilution

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Maxxam Job #: B0C3787
Report Date: 2010/09/29

Environmental Science Corp
Client Project #: L477989
Project name: USDA FOREST SERVICE
Your P.O. #: S13754

DIOXINS AND FURANS BY HRMS (SOIL)

Maxxam ID		HC0073						
Sampling Date		2010/09/02 11:45						
COC Number		n/a			TOXIC EQUIVALENCY		# of	
	Units	K-3C	EDL	RDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
2,3,7,8-Tetra CDD *	pg/g	0.10 U	0.10	2.0	1.00	0.100		2272651
1,2,3,7,8-Penta CDD	pg/g	0.27 U	0.27	5.0	1.00	0.270		2272651
1,2,3,4,7,8-Hexa CDD	pg/g	2.26 J	0.093	5.0	0.100	0.226		2272651
1,2,3,6,7,8-Hexa CDD	pg/g	24.8	0.083	5.0	0.100	2.48		2272651
1,2,3,7,8,9-Hexa CDD	pg/g	4.57 J	0.083	5.0	0.100	0.457		2272651
1,2,3,4,6,7,8-Hepta CDD	pg/g	1260 (1)	0.42	25	0.0100	12.6		2272651
Octa CDD	pg/g	10400 (2)	0.77	50	0.000300	3.12		2272651
Total Tetra CDD	pg/g	0.38	0.10	N/A				2272651
Total Penta CDD	pg/g	0.27 U	0.27	N/A				2272651
Total Hexa CDD	pg/g	62.7	0.086	N/A				2272651
Total Hepta CDD	pg/g	1720 (1)	0.42	N/A				2272651
2,3,7,8-Tetra CDF **	pg/g	0.187 J	0.069	2.0	0.100	0.0187		2272651
1,2,3,7,8-Penta CDF	pg/g	0.066 U	0.066	5.0	0.0300	0.00198		2272651
2,3,4,7,8-Penta CDF	pg/g	0.069 U	0.069	5.0	0.300	0.0207		2272651
1,2,3,4,7,8-Hexa CDF	pg/g	3.08 J	0.072	5.0	0.100	0.308		2272651
1,2,3,6,7,8-Hexa CDF	pg/g	0.722 J	0.074	5.0	0.100	0.0722		2272651
2,3,4,6,7,8-Hexa CDF	pg/g	0.373 J	0.082	5.0	0.100	0.0373		2272651
1,2,3,7,8,9-Hexa CDF	pg/g	0.092 U	0.092	5.0	0.100	0.00920		2272651
1,2,3,4,6,7,8-Hepta CDF	pg/g	123	0.18	5.0	0.0100	1.23		2272651
1,2,3,4,7,8,9-Hepta CDF	pg/g	33.3	0.24	5.0	0.0100	0.333		2272651
Octa CDF	pg/g	1130	0.69	10	0.000300	0.339		2272651
Total Tetra CDF	pg/g	1.58	0.069	N/A				2272651
Total Penta CDF	pg/g	1.23	0.068	N/A				2272651
Total Hexa CDF	pg/g	72.3	0.079	N/A				2272651
Total Hepta CDF	pg/g	764	0.20	N/A				2272651

N/A = Not Applicable
RDL = Reportable Detection Limit
EDL = Estimated Detection Limit
QC Batch = Quality Control Batch
* CDD = Chloro Dibenzo-p-Dioxin, ** CDF = Chloro Dibenzo-p-Furan
TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.
WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds
(1) 5X Dilution
(2) EMCL - PCDD/DF analysis - Exceeds Maximum Calibration Limit
5X Dilution

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Maxxam Job #: B0C3787
Report Date: 2010/09/29

Environmental Science Corp
Client Project #: L477989
Project name: USDA FOREST SERVICE
Your P.O. #: S13754

DIOXINS AND FURANS BY HRMS (SOIL)

Maxxam ID		HC0073						
Sampling Date		2010/09/02 11:45						
COC Number		n/a			**TOXIC EQUIVALENCY**		**# of**	
	Units	**K-3C**	**EDL**	**RDL**	**TEF (2005 WHO)**	**TEQ(DL)**	**Isomers**	**QC Batch**
TOTAL TOXIC EQUIVALENCY	pg/g					21.6		
Surrogate Recovery (%)								
C13-1234678 HeptaCDD *	%	57						2272651
C13-1234678 HeptaCDF **	%	68						2272651
C13-123478 HexaCDF	%	82						2272651
C13-123678 HexaCDD	%	70						2272651
C13-12378 PentaCDD	%	86						2272651
C13-12378 PentaCDF	%	67						2272651
C13-2378 TetraCDD	%	55						2272651
C13-2378 TetraCDF	%	61						2272651
C13-OCDD	%	59						2272651

N/A = Not Applicable
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EDL = Estimated Detection Limit
QC Batch = Quality Control Batch
* CDD = Chloro Dibenzo-p-Dioxin, ** CDF = Chloro Dibenzo-p-Furan
TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.
WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds

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DIOXINS AND FURANS BY HRMS (SOIL)

Maxxam ID		HC0073						
Sampling Date		2010/09/02 11:45						
COC Number		n/a			TOXIC EQUIVALENCY		# of	
	Units	K-3C Lab-Dup	EDL	RDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
2,3,7,8-Tetra CDD *	pg/g	0.088 U	0.088	2.0	1.00	0.0880		2272651
1,2,3,7,8-Penta CDD	pg/g	0.18 U	0.18	5.0	1.00	0.180		2272651
1,2,3,4,7,8-Hexa CDD	pg/g	1.11 J	0.077	5.0	0.100	0.111		2272651
1,2,3,6,7,8-Hexa CDD	pg/g	27.0	0.068	5.0	0.100	2.70		2272651
1,2,3,7,8,9-Hexa CDD	pg/g	2.61 J	0.068	5.0	0.100	0.261		2272651
1,2,3,4,6,7,8-Hepta CDD	pg/g	1430 (1)	0.33	25	0.0100	14.3		2272651
Octa CDD	pg/g	11900 (2)	0.52	50	0.000300	3.57		2272651
Total Tetra CDD	pg/g	0.444	0.088	N/A				2272651
Total Penta CDD	pg/g	0.18 U	0.18	N/A				2272651
Total Hexa CDD	pg/g	56.6	0.071	N/A				2272651
Total Hepta CDD	pg/g	1920 (1)	0.33	N/A				2272651
2,3,7,8-Tetra CDF **	pg/g	0.206 J	0.051	2.0	0.100	0.0206		2272651
1,2,3,7,8-Penta CDF	pg/g	0.083 J	0.060	5.0	0.0300	0.00249		2272651
2,3,4,7,8-Penta CDF	pg/g	0.141 J	0.062	5.0	0.300	0.0423		2272651
1,2,3,4,7,8-Hexa CDF	pg/g	3.23 J	0.14	5.0	0.100	0.323		2272651
1,2,3,6,7,8-Hexa CDF	pg/g	0.64 J	0.14	5.0	0.100	0.0640		2272651
2,3,4,6,7,8-Hexa CDF	pg/g	0.29 J	0.16	5.0	0.100	0.0290		2272651
1,2,3,7,8,9-Hexa CDF	pg/g	0.18 U	0.18	5.0	0.100	0.0180		2272651
1,2,3,4,6,7,8-Hepta CDF	pg/g	147	0.37	5.0	0.0100	1.47		2272651
1,2,3,4,7,8,9-Hepta CDF	pg/g	25.5 (3)	0.49	5.0	0.0100	0.255		2272651
Octa CDF	pg/g	1250	0.10	10	0.000300	0.375		2272651
Total Tetra CDF	pg/g	1.98	0.051	N/A				2272651
Total Penta CDF	pg/g	1.47	0.061	N/A				2272651

N/A = Not Applicable
RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate
EDL = Estimated Detection Limit
QC Batch = Quality Control Batch
* CDD = Chloro Dibenzo-p-Dioxin, ** CDF = Chloro Dibenzo-p-Furan
TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.
WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds
(1) 5X Dilution
(2) EMCL - PCDD/DF analysis - Exceeds Maximum Calibration Limit
5X Dilution
(3) Duplicate results exceeded RPD acceptance criteria. This may be due to sample heterogeneity.

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Maxxam Job #: B0C3787
Report Date: 2010/09/29

Environmental Science Corp
Client Project #: L477989
Project name: USDA FOREST SERVICE
Your P.O. #: S13754

DIOXINS AND FURANS BY HRMS (SOIL)

Maxxam ID		HC0073						
Sampling Date		2010/09/02 11:45						
COC Number		n/a			**TOXIC EQUIVALENCY**		**# of**	
	Units	**K-3C Lab-Dup**	**EDL**	**RDL**	**TEF (2005 WHO)**	**TEQ(DL)**	**Isomers**	**QC Batch**
Total Hexa CDF **	pg/g	75.2	0.15	N/A				2272651
Total Hepta CDF	pg/g	871	0.42	N/A				2272651
TOTAL TOXIC EQUIVALENCY	pg/g					23.8		
Surrogate Recovery (%)								
C13-1234678 HeptaCDD *	%	77						2272651
C13-1234678 HeptaCDF	%	89						2272651
C13-123478 HexaCDF	%	104						2272651
C13-123678 HexaCDD	%	89						2272651
C13-12378 PentaCDD	%	92						2272651
C13-12378 PentaCDF	%	85						2272651
C13-2378 TetraCDD	%	65						2272651
C13-2378 TetraCDF	%	71						2272651
C13-OCDD	%	84						2272651

N/A = Not Applicable
RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate
EDL = Estimated Detection Limit
QC Batch = Quality Control Batch
* CDD = Chloro Dibenzo-p-Dioxin, ** CDF = Chloro Dibenzo-p-Furan
TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.
WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds

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Environmental Science Corp
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Project name: USDA FOREST SERVICE
Your P.O. #: S13754

Test Summary

Maxxam ID HC0071 **Collected** 2010/09/02
Sample ID K-3A **Shipped**
Matrix Soil **Received** 2010/09/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Dioxins/Furans in Soil (8290)	HRMS/MS	2272651	2010/09/16	2010/09/22	KKS
Moisture	BAL	2265230	N/A	2010/09/14	AC

Maxxam ID HC0072 **Collected** 2010/09/02
Sample ID K-3B **Shipped**
Matrix Soil **Received** 2010/09/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Dioxins/Furans in Soil (8290)	HRMS/MS	2272651	2010/09/16	2010/09/23	KKS
Moisture	BAL	2265230	N/A	2010/09/14	AC

Maxxam ID HC0073 **Collected** 2010/09/02
Sample ID K-3C **Shipped**
Matrix Soil **Received** 2010/09/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Dioxins/Furans in Soil (8290)	HRMS/MS	2272651	2010/09/16	2010/09/23	KKS
Moisture	BAL	2265230	N/A	2010/09/14	AC

Maxxam ID HC0073 Dup **Collected** 2010/09/02
Sample ID K-3C **Shipped**
Matrix Soil **Received** 2010/09/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Dioxins/Furans in Soil (8290)	HRMS/MS	2272651	2010/09/16	2010/09/23	KKS

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Maxxam Job #: B0C3787
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GENERAL COMMENTS

Temperature up on receipt was 12 c

Results relate only to the items tested.

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Environmental Science Corp
Attention: Janice Cozby
Client Project #: L477989
P.O. #: S13754
Project name: USDA FOREST SERVICE

Quality Assurance Report

Maxxam Job Number: GB0C3787

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
2265230	GKL	RPD - Sample/Sample Dup	Moisture	2010/09/14	NC		%	20
2272651	KKS	Matrix Spike	C13-1234678 HeptaCDD	2010/09/22		61	%	40 - 135
		Matrix Spike DUP	C13-1234678 HeptaCDD	2010/09/22		71	%	40 - 135
		Matrix Spike	C13-1234678 HeptaCDF	2010/09/22		56	%	40 - 135
		Matrix Spike DUP	C13-1234678 HeptaCDF	2010/09/22		67	%	40 - 135
		Matrix Spike	C13-123478 HexaCDF	2010/09/22		96	%	40 - 135
		Matrix Spike DUP	C13-123478 HexaCDF	2010/09/22		98	%	40 - 135
		Matrix Spike	C13-123678 HexaCDD	2010/09/22		84	%	40 - 135
		Matrix Spike DUP	C13-123678 HexaCDD	2010/09/22		84	%	40 - 135
		Matrix Spike	C13-12378 PentaCDD	2010/09/22		85	%	40 - 135
		Matrix Spike DUP	C13-12378 PentaCDD	2010/09/22		86	%	40 - 135
		Matrix Spike	C13-12378 PentaCDF	2010/09/22		77	%	40 - 135
		Matrix Spike DUP	C13-12378 PentaCDF	2010/09/22		83	%	40 - 135
		Matrix Spike	C13-2378 TetraCDD	2010/09/22		71	%	40 - 135
		Matrix Spike DUP	C13-2378 TetraCDD	2010/09/22		72	%	40 - 135
		Matrix Spike	C13-2378 TetraCDF	2010/09/22		76	%	40 - 135
		Matrix Spike DUP	C13-2378 TetraCDF	2010/09/22		79	%	40 - 135
		Matrix Spike	C13-OCDD	2010/09/22		65	%	40 - 135
		Matrix Spike DUP	C13-OCDD	2010/09/22		81	%	40 - 135
		Matrix Spike (HC0072)	2,3,7,8-Tetra CDD	2010/09/22		117	%	80 - 140
		Matrix Spike DUP (HC0072)	2,3,7,8-Tetra CDD	2010/09/22		120	%	80 - 140
		MS/MSD RPD	2,3,7,8-Tetra CDD	2010/09/22	2.5		%	25
		Matrix Spike (HC0072)	1,2,3,7,8-Penta CDD	2010/09/22		107	%	80 - 140
		Matrix Spike DUP (HC0072)	1,2,3,7,8-Penta CDD	2010/09/22		109	%	80 - 140
		MS/MSD RPD	1,2,3,7,8-Penta CDD	2010/09/22	1.9		%	25
		Matrix Spike (HC0072)	1,2,3,4,7,8-Hexa CDD	2010/09/22		111	%	80 - 140
		Matrix Spike DUP (HC0072)	1,2,3,4,7,8-Hexa CDD	2010/09/22		111	%	80 - 140
		MS/MSD RPD	1,2,3,4,7,8-Hexa CDD	2010/09/22	0		%	25
		Matrix Spike (HC0072)	1,2,3,6,7,8-Hexa CDD	2010/09/22		112	%	80 - 140
		Matrix Spike DUP (HC0072)	1,2,3,6,7,8-Hexa CDD	2010/09/22		101	%	80 - 140
		MS/MSD RPD	1,2,3,6,7,8-Hexa CDD	2010/09/22	10.3		%	25
		Matrix Spike (HC0072)	1,2,3,7,8,9-Hexa CDD	2010/09/22		105	%	80 - 140
		Matrix Spike DUP (HC0072)	1,2,3,7,8,9-Hexa CDD	2010/09/22		107	%	80 - 140
		MS/MSD RPD	1,2,3,7,8,9-Hexa CDD	2010/09/22	1.9		%	25
		Matrix Spike DUP (HC0072)	1,2,3,4,6,7,8-Hepta CDD	2010/09/22		79 (1)	%	80 - 140
		MS/MSD RPD	1,2,3,4,6,7,8-Hepta CDD	2010/09/22	NC (1)		%	25
		Matrix Spike (HC0072)	Total Tetra CDD	2010/09/22		146	%	N/A
		Matrix Spike DUP (HC0072)	Total Tetra CDD	2010/09/22		150	%	N/A
		MS/MSD RPD	Total Tetra CDD	2010/09/22	3.1		%	25
		Matrix Spike (HC0072)	Total Penta CDD	2010/09/22		134	%	N/A

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Environmental Science Corp
Attention: Janice Cozby
Client Project #: L477989
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Project name: USDA FOREST SERVICE

Quality Assurance Report (Continued)

Maxxam Job Number: GB0C3787

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
2272651	KKS	Matrix Spike DUP (HC0072)	Total Penta CDD	2010/09/22		136	%	N/A
		MS/MSD RPD	Total Penta CDD	2010/09/22	1.3		%	25
		Matrix Spike (HC0072)	Total Hexa CDD	2010/09/22		973	%	N/A
		Matrix Spike DUP (HC0072)	Total Hexa CDD	2010/09/22		966	%	N/A
		MS/MSD RPD	Total Hexa CDD	2010/09/22	0.7		%	25
		Matrix Spike (HC0072)	Total Hepta CDD	2010/09/22		21300 (1)	%	N/A
		Matrix Spike DUP (HC0072)	Total Hepta CDD	2010/09/22		20900 (1)	%	N/A
		MS/MSD RPD	Total Hepta CDD	2010/09/22	1.7 (1)		%	25
		Matrix Spike (HC0072)	2,3,7,8-Tetra CDF	2010/09/22		90	%	80 - 140
		Matrix Spike DUP (HC0072)	2,3,7,8-Tetra CDF	2010/09/22		91	%	80 - 140
		MS/MSD RPD	2,3,7,8-Tetra CDF	2010/09/22	1.1		%	25
		Matrix Spike (HC0072)	1,2,3,7,8-Penta CDF	2010/09/22		99	%	80 - 140
		Matrix Spike DUP (HC0072)	1,2,3,7,8-Penta CDF	2010/09/22		98	%	80 - 140
		MS/MSD RPD	1,2,3,7,8-Penta CDF	2010/09/22	1.0		%	25
		Matrix Spike (HC0072)	2,3,4,7,8-Penta CDF	2010/09/22		109	%	80 - 140
		Matrix Spike DUP (HC0072)	2,3,4,7,8-Penta CDF	2010/09/22		107	%	80 - 140
		MS/MSD RPD	2,3,4,7,8-Penta CDF	2010/09/22	1.9		%	25
		Matrix Spike (HC0072)	1,2,3,4,7,8-Hexa CDF	2010/09/22		83	%	80 - 140
		Matrix Spike DUP (HC0072)	1,2,3,4,7,8-Hexa CDF	2010/09/22		81	%	80 - 140
		MS/MSD RPD	1,2,3,4,7,8-Hexa CDF	2010/09/22	2.4		%	25
		Matrix Spike (HC0072)	1,2,3,6,7,8-Hexa CDF	2010/09/22		83	%	80 - 140
		Matrix Spike DUP (HC0072)	1,2,3,6,7,8-Hexa CDF	2010/09/22		81	%	80 - 140
		MS/MSD RPD	1,2,3,6,7,8-Hexa CDF	2010/09/22	2.4		%	25
		Matrix Spike (HC0072)	2,3,4,6,7,8-Hexa CDF	2010/09/22		83	%	80 - 140
		Matrix Spike DUP (HC0072)	2,3,4,6,7,8-Hexa CDF	2010/09/22		84	%	80 - 140
		MS/MSD RPD	2,3,4,6,7,8-Hexa CDF	2010/09/22	1.2		%	25
		Matrix Spike (HC0072)	1,2,3,7,8,9-Hexa CDF	2010/09/22		84	%	80 - 140
		Matrix Spike DUP (HC0072)	1,2,3,7,8,9-Hexa CDF	2010/09/22		84	%	80 - 140
		MS/MSD RPD	1,2,3,7,8,9-Hexa CDF	2010/09/22	0		%	25
		Matrix Spike (HC0072)	1,2,3,4,6,7,8-Hepta CDF	2010/09/22		143 (1)	%	80 - 140
		Matrix Spike DUP (HC0072)	1,2,3,4,6,7,8-Hepta CDF	2010/09/22		71 (1)	%	80 - 140
		MS/MSD RPD	1,2,3,4,6,7,8-Hepta CDF	2010/09/22	NC (1)		%	25
		Matrix Spike (HC0072)	1,2,3,4,7,8,9-Hepta CDF	2010/09/22		106 (1)	%	80 - 140

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Environmental Science Corp
Attention: Janice Cozby
Client Project #: L477989
P.O. #: S13754
Project name: USDA FOREST SERVICE

Quality Assurance Report (Continued)

Maxxam Job Number: GB0C3787

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
2272651	KKS	Matrix Spike DUP (HC0072)	1,2,3,4,7,8,9-Hepta CDF	2010/09/22		100 (1)	%	80 - 140
		MS/MSD RPD	1,2,3,4,7,8,9-Hepta CDF	2010/09/22	NC (1)		%	25
		Matrix Spike (HC0072)	Total Tetra CDF	2010/09/22		116	%	N/A
		Matrix Spike DUP (HC0072)	Total Tetra CDF	2010/09/22		117	%	N/A
		MS/MSD RPD	Total Tetra CDF	2010/09/22	0.6		%	25
		Matrix Spike (HC0072)	Total Penta CDF	2010/09/22		270	%	N/A
		Matrix Spike DUP (HC0072)	Total Penta CDF	2010/09/22		268	%	N/A
		MS/MSD RPD	Total Penta CDF	2010/09/22	1		%	25
		Matrix Spike (HC0072)	Total Hexa CDF	2010/09/22		1310	%	N/A
		Matrix Spike DUP (HC0072)	Total Hexa CDF	2010/09/22		1270	%	N/A
		MS/MSD RPD	Total Hexa CDF	2010/09/22	3.2		%	25
		Matrix Spike (HC0072)	Total Hepta CDF	2010/09/22		10600 (1)	%	N/A
		Matrix Spike DUP (HC0072)	Total Hepta CDF	2010/09/22		9980 (1)	%	N/A
		MS/MSD RPD	Total Hepta CDF	2010/09/22	5.9 (1)		%	25
		Spiked Blank	C13-1234678 HeptaCDD	2010/09/22		94	%	40 - 135
			C13-1234678 HeptaCDF	2010/09/22		90	%	40 - 135
			C13-123478 HexaCDF	2010/09/22		103	%	40 - 135
			C13-123678 HexaCDD	2010/09/22		91	%	40 - 135
			C13-12378 PentaCDD	2010/09/22		92	%	40 - 135
			C13-12378 PentaCDF	2010/09/22		82	%	40 - 135
			C13-2378 TetraCDD	2010/09/22		61	%	40 - 135
			C13-2378 TetraCDF	2010/09/22		66	%	40 - 135
			C13-OCDD	2010/09/22		94	%	40 - 135
			2,3,7,8-Tetra CDD	2010/09/22		114	%	80 - 140
			1,2,3,7,8-Penta CDD	2010/09/22		104	%	80 - 140
			1,2,3,4,7,8-Hexa CDD	2010/09/22		107	%	80 - 140
			1,2,3,6,7,8-Hexa CDD	2010/09/22		93	%	80 - 140
			1,2,3,7,8,9-Hexa CDD	2010/09/22		100	%	80 - 140
			1,2,3,4,6,7,8-Hepta CDD	2010/09/22		93	%	80 - 140
			Octa CDD	2010/09/22		98	%	80 - 140
			2,3,7,8-Tetra CDF	2010/09/22		88	%	80 - 140
			1,2,3,7,8-Penta CDF	2010/09/22		96	%	80 - 140
			2,3,4,7,8-Penta CDF	2010/09/22		107	%	80 - 140
			1,2,3,4,7,8-Hexa CDF	2010/09/22		80	%	80 - 140
			1,2,3,6,7,8-Hexa CDF	2010/09/22		80	%	80 - 140
			2,3,4,6,7,8-Hexa CDF	2010/09/22		81	%	80 - 140
			1,2,3,7,8,9-Hexa CDF	2010/09/22		85	%	80 - 140
			1,2,3,4,6,7,8-Hepta CDF	2010/09/22		95	%	80 - 140
			1,2,3,4,7,8,9-Hepta CDF	2010/09/22		101	%	80 - 140
			Octa CDF	2010/09/22		98	%	80 - 140
		Method Blank	C13-1234678 HeptaCDD	2010/09/22		92	%	40 - 135
			C13-1234678 HeptaCDF	2010/09/22		89	%	40 - 135
			C13-123478 HexaCDF	2010/09/22		102	%	40 - 135
			C13-123678 HexaCDD	2010/09/22		87	%	40 - 135
			C13-12378 PentaCDD	2010/09/22		86	%	40 - 135
			C13-12378 PentaCDF	2010/09/22		77	%	40 - 135

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Environmental Science Corp
Attention: Janice Cozby
Client Project #: L477989
P.O. #: S13754
Project name: USDA FOREST SERVICE

Quality Assurance Report (Continued)

Maxxam Job Number: GB0C3787

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	%Recovery	Units	QC Limits
2272651	KKS	Method Blank	C13-2378 TetraCDD	2010/09/22		52	%	40 - 135
			C13-2378 TetraCDF	2010/09/22		58	%	40 - 135
			C13-OCDD	2010/09/22		92	%	40 - 135
			2,3,7,8-Tetra CDD	2010/09/22	0.056 U, EDL=0.056		pg/g	
			1,2,3,7,8-Penta CDD	2010/09/22	0.052 U, EDL=0.052		pg/g	
			1,2,3,4,7,8-Hexa CDD	2010/09/22	0.058 U, EDL=0.058		pg/g	
			1,2,3,6,7,8-Hexa CDD	2010/09/22	0.052 U, EDL=0.052		pg/g	
			1,2,3,7,8,9-Hexa CDD	2010/09/22	0.052 U, EDL=0.052		pg/g	
			1,2,3,4,6,7,8-Hepta CDD	2010/09/22	0.565 J, EDL=0.053		pg/g	
			Octa CDD	2010/09/22	2.98 J, EDL=0.11		pg/g	
			Total Tetra CDD	2010/09/22	0.056 U, EDL=0.056		pg/g	
			Total Penta CDD	2010/09/22	0.11 U, EDL=0.11 (2)		pg/g	
			Total Hexa CDD	2010/09/22	0.80 U, EDL=0.80 (2)		pg/g	
			Total Hepta CDD	2010/09/22	0.773, EDL=0.053		pg/g	
			2,3,7,8-Tetra CDF	2010/09/22	0.147 J, EDL=0.050		pg/g	
			1,2,3,7,8-Penta CDF	2010/09/22	0.051 U, EDL=0.051		pg/g	
			2,3,4,7,8-Penta CDF	2010/09/22	0.098 J, EDL=0.053		pg/g	
			1,2,3,4,7,8-Hexa CDF	2010/09/22	0.053 U, EDL=0.053		pg/g	
			1,2,3,6,7,8-Hexa CDF	2010/09/22	0.054 U, EDL=0.054		pg/g	
			2,3,4,6,7,8-Hexa CDF	2010/09/22	0.060 U, EDL=0.060		pg/g	
			1,2,3,7,8,9-Hexa CDF	2010/09/22	0.068 U, EDL=0.068		pg/g	
			1,2,3,4,6,7,8-Hepta CDF	2010/09/22	0.28 U, EDL=0.28 (2)		pg/g	
			1,2,3,4,7,8,9-Hepta CDF	2010/09/22	0.078 U, EDL=0.078		pg/g	
			Octa CDF	2010/09/22	0.40 J, EDL=0.10		pg/g	
			Total Tetra CDF	2010/09/22	0.147, EDL=0.050		pg/g	
			Total Penta CDF	2010/09/22	0.192, EDL=0.052		pg/g	
			Total Hexa CDF	2010/09/22	0.058 U, EDL=0.058		pg/g	
			Total Hepta CDF	2010/09/22	0.32 U, EDL=0.32 (3)		pg/g	
		RPD - Sample/Sample Dup	2,3,7,8-Tetra CDD	2010/09/23	NC		%	25
			1,2,3,7,8-Penta CDD	2010/09/23	NC		%	25
			1,2,3,4,7,8-Hexa CDD	2010/09/23	NC		%	25
			1,2,3,6,7,8-Hexa CDD	2010/09/23	NC		%	25
			1,2,3,7,8,9-Hexa CDD	2010/09/23	NC		%	25
			1,2,3,4,6,7,8-Hepta CDD	2010/09/23	12.6 (4)		%	25
			Octa CDD	2010/09/23	13.4 (5)		%	25
			Total Tetra CDD	2010/09/23	14.4		%	25
			Total Penta CDD	2010/09/23	NC		%	25
			Total Hexa CDD	2010/09/23	10.2		%	25
			Total Hepta CDD	2010/09/23	11.2 (4)		%	25
			2,3,7,8-Tetra CDF	2010/09/23	NC		%	25
			1,2,3,7,8-Penta CDF	2010/09/23	NC		%	25
			2,3,4,7,8-Penta CDF	2010/09/23	NC		%	25
			1,2,3,4,7,8-Hexa CDF	2010/09/23	NC		%	25
			1,2,3,6,7,8-Hexa CDF	2010/09/23	NC		%	25
			2,3,4,6,7,8-Hexa CDF	2010/09/23	NC		%	25
			1,2,3,7,8,9-Hexa CDF	2010/09/23	NC		%	25
			1,2,3,4,6,7,8-Hepta CDF	2010/09/23	18.1		%	25
			1,2,3,4,7,8,9-Hepta CDF	2010/09/23	26.3 (6)		%	25
			Octa CDF	2010/09/23	10.1		%	25
			Total Tetra CDF	2010/09/23	22.3		%	25
			Total Penta CDF	2010/09/23	17.8		%	25
			Total Hexa CDF	2010/09/23	4.0		%	25
			Total Hepta CDF	2010/09/23	13.0		%	25

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Environmental Science Corp
Attention: Janice Cozby
Client Project #: L477989
P.O. #: S13754
Project name: USDA FOREST SERVICE

Quality Assurance Report (Continued)

Maxxam Job Number: GB0C3787

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.
Spiked Blank: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.
Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.
NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was not sufficiently significant to permit a reliable recovery calculation.
NC (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.
(1) 20X Dilution
(2) EMPC / NDR - Peak detected does not meet ratio criteria and has resulted in an elevated detection limit.
(3) EMPC / NDR - Peak detected does not meet ratio criteria and has resulted in an elevated detection limit.
RT > 3 seconds - PCDD/DF analysis - Peak detected exceeds expected retention time (from internal standard) by greater than 3 seconds.
(4) 5X Dilution
(5) EMCL - PCDD/DF analysis - Exceeds Maximum Calibration Limit
5X Dilution
(6) Duplicate results exceeded RPD acceptance criteria. This may be due to sample heterogeneity.

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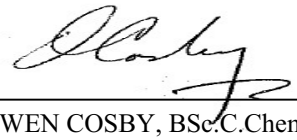
Validation Signature Page

Maxxam Job #: B0C3787

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

BRAD NEWMAN, Scientific Specialist



OWEN COSBY, BSc.C.Chem, Supervisor, HRMS Services

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Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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Environmental Science Corp
Maxxam Job #: B0C3787
Client Project #: L477989
Report Date: 2010/09/29
Project name: USDA FOREST SERVICE
Your P.O. #: S13754
Sampler Initials:

RESULTS OF ANALYSES OF SOIL

Maxxam ID		HC0071	HC0072	HC0073		
Sampling Date		40423.49583	40423.49167	40423.48958		
COC Number		n/a	n/a	n/a		
	Units	**K-3A**	**K-3B**	**K-3C**	**RDL**	**QC Batch**
Moisture	%	16	8	8	1	2265230

N/A = Not Applicable
RDL = Reportable Detection Limit
EDL = Estimated Detection Limit
QC Batch = Quality Control Batch

Maxxam Job #: B0C3787
Report Date: 2010/09/29

Environmental Science Corp
Client Project #: L477989
Project name: USDA FOREST SERVICE
Your P.O. #: S13754
Sampler Initials:

DIOXINS AND FURANS BY HRMS (SOIL)

Maxxam ID		HC0071						HC0072			
Sampling Date		9/2/2010 11:54						9/2/2010 11:48			
COC Number		n/a			**TOXIC EQUIVALENCY**	**# of**	n/a			**TOXIC EQUIVALENCY**	**# of**
	Units	**K-3A**	**EDL**	**RDL**	**TEF (2005 WHO)**	**TEQ(DL)**	**Isomers**	**K-3B**	**EDL**	**RDL**	**TEF (2005 WHO)**
2,3,7,8-Tetra CDD *	pg/g	0.293 J	0.068	2.0	1.00	0.293		0.13 U	0.13	2.0	1.00
1,2,3,7,8-Penta CDD	pg/g	14.6	0.050	5.0	1.00	14.6		0.53 U (1)	0.53	5.0	1.00
1,2,3,4,7,8-Hexa CDD	pg/g	141 (2)	1.4	100	0.100	14.1		6.7	0.18	5.0	0.100
1,2,3,6,7,8-Hexa CDD	pg/g	2170 (2)	1.3	100	0.100	217		285	0.16	5.0	0.100
1,2,3,7,8,9-Hexa CDD	pg/g	312 (2)	1.3	100	0.100	31.2		17.9	0.16	5.0	0.100
1,2,3,4,6,7,8-Hepta CDD	pg/g	91000 (3)	1.0	100	0.0100	910		15600 (2)	5.2	99	0.0100
Octa CDD	pg/g	201000 (3)	1.3	200	0.000300	60.3		110000 (3)	5.5	200	0.000300
Total Tetra CDD	pg/g	8.76	0.068	N/A				0.65 U	0.65	N/A	
Total Penta CDD	pg/g	48.6	0.050	N/A				0.71	0.10	N/A	
Total Hexa CDD	pg/g	5010 (2)	1.3	N/A				551	0.17	N/A	
Total Hepta CDD	pg/g	121000 (2)	1.0	N/A				20800 (2)	5.2	N/A	
2,3,7,8-Tetra CDF **	pg/g	0.522 J	0.068	2.0	0.100	0.0522		0.192 J	0.054	2.0	0.100
1,2,3,7,8-Penta CDF	pg/g	1.25 J	0.061	5.0	0.0300	0.0375		0.10 U	0.10	5.0	0.0300
2,3,4,7,8-Penta CDF	pg/g	1.52 J	0.063	5.0	0.300	0.456		0.32 J	0.11	5.0	0.300
1,2,3,4,7,8-Hexa CDF	pg/g	251	0.056	5.0	0.100	25.1		35.0	0.048	5.0	0.100
1,2,3,6,7,8-Hexa CDF	pg/g	81.1	0.057	5.0	0.100	8.11		7.5	0.050	5.0	0.100
2,3,4,6,7,8-Hexa CDF	pg/g	28.1	0.064	5.0	0.100	2.81		2.28 J	0.055	5.0	0.100
1,2,3,7,8,9-Hexa CDF	pg/g	1.90 J	0.072	5.0	0.100	0.190		0.550 J	0.062	5.0	0.100
1,2,3,4,6,7,8-Hepta CDF	pg/g	10100 (2)	11	100	0.0100	101		1500 (2)	2.2	99	0.0100
1,2,3,4,7,8,9-Hepta CDF	pg/g	1790 (2)	14	100	0.0100	17.9		307 (2)	2.9	99	0.0100
Octa CDF	pg/g	42400 (3)	2.0	200	0.000300	12.7		14900 (2)	2.4	200	0.000300
Total Tetra CDF	pg/g	54.8	0.068	N/A				1.83	0.054	N/A	
Total Penta CDF	pg/g	116	0.062	N/A				11.7	0.10	N/A	
Total Hexa CDF	pg/g	5950	0.062	N/A				860	0.053	N/A	
Total Hepta CDF	pg/g	68500 (2)	12	N/A				10100 (2)	2.5	N/A	
TOTAL TOXIC EQUIVALENCY	pg/g					1420					
Surrogate Recovery (%)											
C13-1234678 HeptaCDD	%	119						54			
C13-1234678 HeptaCDF	%	87						51			
C13-123478 HexaCDF	%	90						95			
C13-123678 HexaCDD	%	83						82			
C13-12378 PentaCDD	%	61						82			
C13-12378 PentaCDF	%	64						77			
C13-2378 TetraCDD	%	69						68			
C13-2378 TetraCDF	%	73						77			
C13-OCDD	%	248 (7)						57			

N/A = Not Applicable
RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate
EDL = Estimated Detection Limit
QC Batch = Quality Control Batch
* CDD = Chloro Dibenzo-p-Dioxin, ** CDF = Chloro Dibenzo-p-Furan
TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.
WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds
(1) EMPC / NDR - Peak detected does not meet ratio criteria and has resulted in an elevated detection limit.
(2) 20X Dilution
(3) EMCL - PCDD/DF analysis - Exceeds Maximum Calibration Limit
20X Dilution
(4) 5X Dilution
(5) EMCL - PCDD/DF analysis - Exceeds Maximum Calibration Limit
5X Dilution
(6) Duplicate results exceeded RPD acceptance criteria. This may be due to sample heterogeneity.
(7) High level of native in sample-- isotopic ratio out. exceeds method acceptance range of method 40-140%

		HC0073					HC0073						
		9/2/2010 11:45					9/2/2010 11:45						
n/a		**TOXIC EQUIVALENCY**	**# of**	n/a			**TOXIC EQUIVALENCY**	**# of**					
TEQ(DL)	**Isomers**	**K-3C**	**EDL**	**TEF (2005 WHO)**	**TEQ(DL)**	**Isomers**	**K-3C Lab-Dup**	**EDL**	**RDL**	**TEF (2005 WHO)**	**TEQ(DL)**	**Isomers**	**QC Batch**
0.130		0.10 U	0.10	1.00	0.100		0.088 U	0.088	2.0	1.00	0.0880		2272651
0.530		0.27 U	0.27	1.00	0.270		0.18 U	0.18	5.0	1.00	0.180		2272651
0.670		2.26 J	0.093	0.100	0.226		1.11 J	0.077	5.0	0.100	0.111		2272651
28.5		24.8	0.083	0.100	2.48		27.0	0.068	5.0	0.100	2.70		2272651
1.79		4.57 J	0.083	0.100	0.457		2.61 J	0.068	5.0	0.100	0.261		2272651
156		1260 (4)	0.42	0.0100	12.6		1430 (4)	0.33	25	0.0100	14.3		2272651
33.0		10400 (5)	0.77	0.000300	3.12		11900 (5)	0.52	50	0.000300	3.57		2272651
		0.38	0.10				0.444	0.088	N/A				2272651
		0.27 U	0.27				0.18 U	0.18	N/A				2272651
		62.7	0.086				56.6	0.071	N/A				2272651
		1720 (4)	0.42				1920 (4)	0.33	N/A				2272651
0.0192		0.187 J	0.069	0.100	0.0187		0.206 J	0.051	2.0	0.100	0.0206		2272651
0.00300		0.066 U	0.066	0.0300	0.00198		0.083 J	0.060	5.0	0.0300	0.00249		2272651
0.0960		0.069 U	0.069	0.300	0.0207		0.141 J	0.062	5.0	0.300	0.0423		2272651
3.50		3.08 J	0.072	0.100	0.308		3.23 J	0.14	5.0	0.100	0.323		2272651
0.750		0.722 J	0.074	0.100	0.0722		0.64 J	0.14	5.0	0.100	0.0640		2272651
0.228		0.373 J	0.082	0.100	0.0373		0.29 J	0.16	5.0	0.100	0.0290		2272651
0.0550		0.092 U	0.092	0.100	0.00920		0.18 U	0.18	5.0	0.100	0.0180		2272651
15.0		123	0.18	0.0100	1.23		147	0.37	5.0	0.0100	1.47		2272651
3.07		33.3	0.24	0.0100	0.333		25.5 (6)	0.49	5.0	0.0100	0.255		2272651
4.47		1130	0.69	0.000300	0.339		1250	0.10	10	0.000300	0.375		2272651
		1.58	0.069				1.98	0.051	N/A				2272651
		1.23	0.068				1.47	0.061	N/A				2272651
		72.3	0.079				75.2	0.15	N/A				2272651
		764	0.20				871	0.42	N/A				2272651
248					21.6						23.8		
		57					77						2272651
		68					89						2272651
		82					104						2272651
		70					89						2272651
		86					92						2272651
		67					85						2272651
		55					65						2272651
		61					71						2272651
		59					84						2272651

Environmental Science Corp

Maxxam Job #: B0C3787
Report Date: 2010/09/29

Client Project #: L477989
Project name: USDA FOREST SERVICE
Your P.O. #: S13754
Sampler Initials:

Test Summary

Maxxam ID	HC0071		**Collected**	9/2/2010	
Sample ID	K-3A		**Shipped**		
Matrix	Soil		**Received**	9/8/2010	
Test Desc	**Instrumen**	**Batch**	**Extracted**	**Analyzed**	**Analyst**
Dioxins/Fu	HRMS/MS	2272651	9/16/2010	9/22/2010	KKS
Moisture	BAL	2265230	**N/A**	9/14/2010	AC

Maxxam ID	HC0072		**Collected**	9/2/2010	
Sample ID	K-3B		**Shipped**		
Matrix	Soil		**Received**	9/8/2010	
Test Desc	**Instrumen**	**Batch**	**Extracted**	**Analyzed**	**Analyst**
Dioxins/Fu	HRMS/MS	2272651	9/16/2010	9/23/2010	KKS
Moisture	BAL	2265230	**N/A**	9/14/2010	AC

Maxxam ID	HC0073		**Collected**	9/2/2010	
Sample ID	K-3C		**Shipped**		
Matrix	Soil		**Received**	9/8/2010	
Test Desc	**Instrumen**	**Batch**	**Extracted**	**Analyzed**	**Analyst**
Dioxins/Fu	HRMS/MS	2272651	9/16/2010	9/23/2010	KKS
Moisture	BAL	2265230	**N/A**	9/14/2010	AC

Maxxam ID	HC0073 Dup		**Collected**	9/2/2010	
Sample ID	K-3C		**Shipped**		
Matrix	Soil		**Received**	9/8/2010	
Test Desc	**Instrumen**	**Batch**	**Extracted**	**Analyzed**	**Analyst**
Dioxins/Fu	HRMS/MS	2272651	9/16/2010	9/23/2010	KKS

GENERAL COMMENTS
Temperature up on receipt was 12 c

Results relate only to the items tested.

Environmental Science Corp
Attention: Janice Cozby
Client Project #: L477989
P.O. #: S13754
Project name: USDA FOREST SERVICE

Quality Assurance Report
Maxxam Job Number: GB0C3787

QA/QC Batch Num	Init	QC Type	Date Analyzed Parameter	yyyy/mm/dd	Value	%Recovery	Units	QC Limits
2265230	GKL	RPD - Sample/Sample Dup	Moisture	9/14/2010	NC		%	20
2272651	KKS	Matrix Spike	C13-1234678 HeptaCDD	9/22/2010		61	%	40 - 135
		Matrix Spike DUP	C13-1234678 HeptaCDD	9/22/2010		71	%	40 - 135
		Matrix Spike	C13-1234678 HeptaCDF	9/22/2010		56	%	40 - 135
		Matrix Spike DUP	C13-1234678 HeptaCDF	9/22/2010		67	%	40 - 135
		Matrix Spike	C13-123478 HexaCDF	9/22/2010		96	%	40 - 135
		Matrix Spike DUP	C13-123478 HexaCDF	9/22/2010		98	%	40 - 135
		Matrix Spike	C13-123678 HexaCDD	9/22/2010		84	%	40 - 135
		Matrix Spike DUP	C13-123678 HexaCDD	9/22/2010		84	%	40 - 135
		Matrix Spike	C13-12378 PentaCDD	9/22/2010		85	%	40 - 135
		Matrix Spike DUP	C13-12378 PentaCDD	9/22/2010		86	%	40 - 135
		Matrix Spike	C13-12378 PentaCDF	9/22/2010		77	%	40 - 135
		Matrix Spike DUP	C13-12378 PentaCDF	9/22/2010		83	%	40 - 135
		Matrix Spike	C13-2378 TetraCDD	9/22/2010		71	%	40 - 135
		Matrix Spike DUP	C13-2378 TetraCDD	9/22/2010		72	%	40 - 135
		Matrix Spike	C13-2378 TetraCDF	9/22/2010		76	%	40 - 135
		Matrix Spike DUP	C13-2378 TetraCDF	9/22/2010		79	%	40 - 135
		Matrix Spike	C13-OCDD	9/22/2010		65	%	40 - 135
		Matrix Spike DUP	C13-OCDD	9/22/2010		81	%	40 - 135
		Matrix Spike (HC0072)	2,3,7,8-Tetra CDD	9/22/2010		117	%	80 - 140
		Matrix Spike DUP (HC0072)	2,3,7,8-Tetra CDD	9/22/2010		120	%	80 - 140
		MS/MSD RPD	2,3,7,8-Tetra CDD	9/22/2010	2.5		%	25
		Matrix Spike (HC0072)	1,2,3,7,8-Penta CDD	9/22/2010		107	%	80 - 140
		Matrix Spike DUP (HC0072)	1,2,3,7,8-Penta CDD	9/22/2010		109	%	80 - 140
		MS/MSD RPD	1,2,3,7,8-Penta CDD	9/22/2010	1.9		%	25
		Matrix Spike (HC0072)	1,2,3,4,7,8-Hexa CDD	9/22/2010		111	%	80 - 140
		Matrix Spike DUP (HC0072)	1,2,3,4,7,8-Hexa CDD	9/22/2010		111	%	80 - 140
		MS/MSD RPD	1,2,3,4,7,8-Hexa CDD	9/22/2010	0		%	25
		Matrix Spike (HC0072)	1,2,3,6,7,8-Hexa CDD	9/22/2010		112	%	80 - 140
		Matrix Spike DUP (HC0072)	1,2,3,6,7,8-Hexa CDD	9/22/2010		101	%	80 - 140

MS/MSD RPD	1,2,3,6,7,8-Hexa CDD	9/22/2010	10.3		%	25
Matrix Spike (HC0072)	1,2,3,7,8,9-Hexa CDD	9/22/2010		105	%	80 - 140
Matrix Spike DUP (HC0072)	1,2,3,7,8,9-Hexa CDD	9/22/2010		107	%	80 - 140
MS/MSD RPD	1,2,3,7,8,9-Hexa CDD	9/22/2010	1.9		%	25
Matrix Spike DUP (HC0072)	1,2,3,4,6,7,8-Hepta CDD	9/22/2010		79 (1)	%	80 - 140
MS/MSD RPD	1,2,3,4,6,7,8-Hepta CDD	9/22/2010	NC (1)		%	25
Matrix Spike (HC0072)	Total Tetra CDD	9/22/2010		146	%	N/A
Matrix Spike DUP (HC0072)	Total Tetra CDD	9/22/2010		150	%	N/A
MS/MSD RPD	Total Tetra CDD	9/22/2010	3.1		%	25
Matrix Spike (HC0072)	Total Penta CDD	9/22/2010		134	%	N/A
Matrix Spike DUP (HC0072)	Total Penta CDD	9/22/2010		136	%	N/A
MS/MSD RPD	Total Penta CDD	9/22/2010	1.3		%	25
Matrix Spike (HC0072)	Total Hexa CDD	9/22/2010		973	%	N/A
Matrix Spike DUP (HC0072)	Total Hexa CDD	9/22/2010		966	%	N/A
MS/MSD RPD	Total Hexa CDD	9/22/2010	0.7		%	25
Matrix Spike (HC0072)	Total Hepta CDD	9/22/2010		21300 (1)	%	N/A
Matrix Spike DUP (HC0072)	Total Hepta CDD	9/22/2010		20900 (1)	%	N/A
MS/MSD RPD	Total Hepta CDD	9/22/2010	1.7 (1)		%	25
Matrix Spike (HC0072)	2,3,7,8-Tetra CDF	9/22/2010		90	%	80 - 140
Matrix Spike DUP (HC0072)	2,3,7,8-Tetra CDF	9/22/2010		91	%	80 - 140
MS/MSD RPD	2,3,7,8-Tetra CDF	9/22/2010	1.1		%	25
Matrix Spike (HC0072)	1,2,3,7,8-Penta CDF	9/22/2010		99	%	80 - 140
Matrix Spike DUP (HC0072)	1,2,3,7,8-Penta CDF	9/22/2010		98	%	80 - 140
MS/MSD RPD	1,2,3,7,8-Penta CDF	9/22/2010	1		%	25
Matrix Spike (HC0072)	2,3,4,7,8-Penta CDF	9/22/2010		109	%	80 - 140
Matrix Spike DUP (HC0072)	2,3,4,7,8-Penta CDF	9/22/2010		107	%	80 - 140
MS/MSD RPD	2,3,4,7,8-Penta CDF	9/22/2010	1.9		%	25
Matrix Spike (HC0072)	1,2,3,4,7,8-Hexa CDF	9/22/2010		83	%	80 - 140
Matrix Spike DUP (HC0072)	1,2,3,4,7,8-Hexa CDF	9/22/2010		81	%	80 - 140
MS/MSD RPD	1,2,3,4,7,8-Hexa CDF	9/22/2010	2.4		%	25
Matrix Spike (HC0072)	1,2,3,6,7,8-Hexa CDF	9/22/2010		83	%	80 - 140
Matrix Spike DUP (HC0072)	1,2,3,6,7,8-Hexa CDF	9/22/2010		81	%	80 - 140
MS/MSD RPD	1,2,3,6,7,8-Hexa CDF	9/22/2010	2.4		%	25
Matrix Spike (HC0072)	2,3,4,6,7,8-Hexa CDF	9/22/2010		83	%	80 - 140
Matrix Spike DUP (HC0072)	2,3,4,6,7,8-Hexa CDF	9/22/2010		84	%	80 - 140
MS/MSD RPD	2,3,4,6,7,8-Hexa CDF	9/22/2010	1.2		%	25
Matrix Spike (HC0072)	1,2,3,7,8,9-Hexa CDF	9/22/2010		84	%	80 - 140
Matrix Spike DUP (HC0072)	1,2,3,7,8,9-Hexa CDF	9/22/2010		84	%	80 - 140
MS/MSD RPD	1,2,3,7,8,9-Hexa CDF	9/22/2010	0		%	25
Matrix Spike (HC0072)	1,2,3,4,6,7,8-Hepta CDF	9/22/2010		143 (1)	%	80 - 140
Matrix Spike DUP (HC0072)	1,2,3,4,6,7,8-Hepta CDF	9/22/2010		71 (1)	%	80 - 140
MS/MSD RPD	1,2,3,4,6,7,8-Hepta CDF	9/22/2010	NC (1)		%	25
Matrix Spike (HC0072)	1,2,3,4,7,8,9-Hepta CDF	9/22/2010		106 (1)	%	80 - 140

Matrix Spike DUP (HC0072)	1,2,3,4,7,8,9-Hepta CDF	9/22/2010		100 (1)	%	80 - 140
MS/MSD RPD	1,2,3,4,7,8,9-Hepta CDF	9/22/2010	NC (1)		%	25
Matrix Spike (HC0072)	Total Tetra CDF	9/22/2010		116	%	N/A
Matrix Spike DUP (HC0072)	Total Tetra CDF	9/22/2010		117	%	N/A
MS/MSD RPD	Total Tetra CDF	9/22/2010	0.6		%	25
Matrix Spike (HC0072)	Total Penta CDF	9/22/2010		270	%	N/A
Matrix Spike DUP (HC0072)	Total Penta CDF	9/22/2010		268	%	N/A
MS/MSD RPD	Total Penta CDF	9/22/2010	1		%	25
Matrix Spike (HC0072)	Total Hexa CDF	9/22/2010		1310	%	N/A
Matrix Spike DUP (HC0072)	Total Hexa CDF	9/22/2010		1270	%	N/A
MS/MSD RPD	Total Hexa CDF	9/22/2010	3.2		%	25
Matrix Spike (HC0072)	Total Hepta CDF	9/22/2010		10600 (1)	%	N/A
Matrix Spike DUP (HC0072)	Total Hepta CDF	9/22/2010		9980 (1)	%	N/A
MS/MSD RPD	Total Hepta CDF	9/22/2010	5.9 (1)		%	25
Spiked Blank	C13-1234678 HeptaCDD	9/22/2010		94	%	40 - 135
	C13-1234678 HeptaCDF	9/22/2010		90	%	40 - 135
	C13-123478 HexaCDF	9/22/2010		103	%	40 - 135
	C13-123678 HexaCDD	9/22/2010		91	%	40 - 135
	C13-12378 PentaCDD	9/22/2010		92	%	40 - 135
	C13-12378 PentaCDF	9/22/2010		82	%	40 - 135
	C13-2378 TetraCDD	9/22/2010		61	%	40 - 135
	C13-2378 TetraCDF	9/22/2010		66	%	40 - 135
	C13-OCDD	9/22/2010		94	%	40 - 135
	2,3,7,8-Tetra CDD	9/22/2010		114	%	80 - 140
	1,2,3,7,8-Penta CDD	9/22/2010		104	%	80 - 140
	1,2,3,4,7,8-Hexa CDD	9/22/2010		107	%	80 - 140
	1,2,3,6,7,8-Hexa CDD	9/22/2010		93	%	80 - 140
	1,2,3,7,8,9-Hexa CDD	9/22/2010		100	%	80 - 140
	1,2,3,4,6,7,8-Hepta CDD	9/22/2010		93	%	80 - 140
	Octa CDD	9/22/2010		98	%	80 - 140
	2,3,7,8-Tetra CDF	9/22/2010		88	%	80 - 140
	1,2,3,7,8-Penta CDF	9/22/2010		96	%	80 - 140
	2,3,4,7,8-Penta CDF	9/22/2010		107	%	80 - 140
	1,2,3,4,7,8-Hexa CDF	9/22/2010		80	%	80 - 140
	1,2,3,6,7,8-Hexa CDF	9/22/2010		80	%	80 - 140
	2,3,4,6,7,8-Hexa CDF	9/22/2010		81	%	80 - 140
	1,2,3,7,8,9-Hexa CDF	9/22/2010		85	%	80 - 140
	1,2,3,4,6,7,8-Hepta CDF	9/22/2010		95	%	80 - 140
	1,2,3,4,7,8,9-Hepta CDF	9/22/2010		101	%	80 - 140
	Octa CDF	9/22/2010		98	%	80 - 140
Method Blank	C13-1234678 HeptaCDD	9/22/2010		92	%	40 - 135
	C13-1234678 HeptaCDF	9/22/2010		89	%	40 - 135
	C13-123478 HexaCDF	9/22/2010		102	%	40 - 135

	C13-123678 HexaCDD	9/22/2010			87	%	40 - 135
	C13-12378 PentaCDD	9/22/2010			86	%	40 - 135
	C13-12378 PentaCDF	9/22/2010			77	%	40 - 135
	C13-2378 TetraCDD	9/22/2010			52	%	40 - 135
	C13-2378 TetraCDF	9/22/2010			58	%	40 - 135
	C13-OCDD	9/22/2010			92	%	40 - 135
	2,3,7,8-Tetra CDD	9/22/2010	0.056 U	EDL=0.056		pg/g	
	1,2,3,7,8-Penta CDD	9/22/2010	0.052 U	EDL=0.052		pg/g	
	1,2,3,4,7,8-Hexa CDD	9/22/2010	0.058 U	EDL=0.058		pg/g	
	1,2,3,6,7,8-Hexa CDD	9/22/2010	0.052 U	EDL=0.052		pg/g	
	1,2,3,7,8,9-Hexa CDD	9/22/2010	0.052 U	EDL=0.052		pg/g	
	1,2,3,4,6,7,8-Hepta CDD	9/22/2010	0.565 J	EDL=0.053		pg/g	
	Octa CDD	9/22/2010	2.98 J	EDL=0.11		pg/g	
	Total Tetra CDD	9/22/2010	0.056 U	EDL=0.056		pg/g	
	Total Penta CDD	9/22/2010	0.11 U (2)	EDL=0.11		pg/g	
	Total Hexa CDD	9/22/2010	0.80 U (2)	EDL=0.80		pg/g	
	Total Hepta CDD	9/22/2010	0.773	EDL=0.053		pg/g	
	2,3,7,8-Tetra CDF	9/22/2010	0.147 J	EDL=0.050		pg/g	
	1,2,3,7,8-Penta CDF	9/22/2010	0.051 U	EDL=0.051		pg/g	
	2,3,4,7,8-Penta CDF	9/22/2010	0.098 J	EDL=0.053		pg/g	
	1,2,3,4,7,8-Hexa CDF	9/22/2010	0.053 U	EDL=0.053		pg/g	
	1,2,3,6,7,8-Hexa CDF	9/22/2010	0.054 U	EDL=0.054		pg/g	
	2,3,4,6,7,8-Hexa CDF	9/22/2010	0.060 U	EDL=0.060		pg/g	
	1,2,3,7,8,9-Hexa CDF	9/22/2010	0.068 U	EDL=0.068		pg/g	
	1,2,3,4,6,7,8-Hepta CDF	9/22/2010	0.28 U (2)	EDL=0.28		pg/g	
	1,2,3,4,7,8,9-Hepta CDF	9/22/2010	0.078 U	EDL=0.078		pg/g	
	Octa CDF	9/22/2010	0.40 J	EDL=0.10		pg/g	
	Total Tetra CDF	9/22/2010	0.147	EDL=0.050		pg/g	
	Total Penta CDF	9/22/2010	0.192	EDL=0.052		pg/g	
	Total Hexa CDF	9/22/2010	0.058 U	EDL=0.058		pg/g	
	Total Hepta CDF	9/22/2010	0.32 U (3)	EDL=0.32		pg/g	
RPD - Sample/Sample Dup	2,3,7,8-Tetra CDD	9/23/2010	NC			%	25
	1,2,3,7,8-Penta CDD	9/23/2010	NC			%	25
	1,2,3,4,7,8-Hexa CDD	9/23/2010	NC			%	25
	1,2,3,6,7,8-Hexa CDD	9/23/2010	NC			%	25
	1,2,3,7,8,9-Hexa CDD	9/23/2010	NC			%	25
	1,2,3,4,6,7,8-Hepta CDD	9/23/2010	12.6 (4)			%	25
	Octa CDD	9/23/2010	13.4 (5)			%	25
	Total Tetra CDD	9/23/2010	14.4			%	25
	Total Penta CDD	9/23/2010	NC			%	25
	Total Hexa CDD	9/23/2010	10.2			%	25
	Total Hepta CDD	9/23/2010	11.2 (4)			%	25
	2,3,7,8-Tetra CDF	9/23/2010	NC			%	25

	1,2,3,7,8-Penta CDF	9/23/2010	NC	%	25
	2,3,4,7,8-Penta CDF	9/23/2010	NC	%	25
	1,2,3,4,7,8-Hexa CDF	9/23/2010	NC	%	25
	1,2,3,6,7,8-Hexa CDF	9/23/2010	NC	%	25
	2,3,4,6,7,8-Hexa CDF	9/23/2010	NC	%	25
	1,2,3,7,8,9-Hexa CDF	9/23/2010	NC	%	25
	1,2,3,4,6,7,8-Hepta CDF	9/23/2010	18.1	%	25
	1,2,3,4,7,8,9-Hepta CDF	9/23/2010	26.3 (6)	%	25
	Octa CDF	9/23/2010	10.1	%	25
	Total Tetra CDF	9/23/2010	22.3	%	25
	Total Penta CDF	9/23/2010	17.8	%	25
	Total Hexa CDF	9/23/2010	4	%	25
	Total Hepta CDF	9/23/2010	13	%	25

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.
Spiked Blank: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.
Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.
NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was not sufficiently significant to permit a reliable recovery calculation.
NC (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.
(1) 20X Dilution
(2) EMPC / NDR - Peak detected does not meet ratio criteria and has resulted in an elevated detection limit.
(3) EMPC / NDR - Peak detected does not meet ratio criteria and has resulted in an elevated detection limit.
RT > 3 seconds - PCDD/DF analysis - Peak detected exceeds expected retention time (from internal standard) by greater than 3 seconds.
(4) 5X Dilution
(5) EMCL - PCDD/DF analysis - Exceeds Maximum Calibration Limit
5X Dilution
(6) Duplicate results exceeded RPD acceptance criteria. This may be due to sample heterogeneity.

Sys_sampl	sample_typ	sample_ma	sample_da	sample_tim	sys_loc_co	Lab_Name	Lab_Anl_M	analysis_da	analysis_ti	Test_Type	ESC_Samp	Lab_Samp	Basis	Lab_Prep_	prep_date
K-3A	N	SO	9/2/2010	11:54		MAXX	SW8290	9/22/2010	23:15	initial	: EMCL - P	HC0071-01	DRY	SW8290	9/16/2010
K-3A	N	SO	9/2/2010	11:54		MAXX	SW8290	9/22/2010	23:15	initial	: 20X Diluti	HC0071-01	DRY	SW8290	9/16/2010
K-3A	N	SO	9/2/2010	11:54		MAXX	SW8290	9/22/2010	23:15	initial	: 20X Diluti	HC0071-01	DRY	SW8290	9/16/2010
K-3A	N	SO	9/2/2010	11:54		MAXX	SW8290	9/22/2010	23:15	initial	: 20X Diluti	HC0071-01	DRY	SW8290	9/16/2010
K-3A	N	SO	9/2/2010	11:54		MAXX	SW8290	9/22/2010	23:15	initial		HC0071-01	DRY	SW8290	9/16/2010
K-3A	N	SO	9/2/2010	11:54		MAXX	SW8290	9/22/2010	23:15	initial	: 20X Diluti	HC0071-01	DRY	SW8290	9/16/2010
K-3A	N	SO	9/2/2010	11:54		MAXX	SW8290	9/22/2010	23:15	initial		HC0071-01	DRY	SW8290	9/16/2010
K-3A	N	SO	9/2/2010	11:54		MAXX	SW8290	9/22/2010	23:15	initial	: 20X Diluti	HC0071-01	DRY	SW8290	9/16/2010
K-3A	N	SO	9/2/2010	11:54		MAXX	SW8290	9/22/2010	23:15	initial		HC0071-01	DRY	SW8290	9/16/2010
K-3A	N	SO	9/2/2010	11:54		MAXX	SW8290	9/22/2010	23:15	initial		HC0071-01	DRY	SW8290	9/16/2010
K-3A	N	SO	9/2/2010	11:54		MAXX	SW8290	9/22/2010	23:15	initial		HC0071-01	DRY	SW8290	9/16/2010
K-3A	N	SO	9/2/2010	11:54		MAXX	SW8290	9/22/2010	23:15	initial		HC0071-01	DRY	SW8290	9/16/2010
K-3A	N	SO	9/2/2010	11:54		MAXX	SW8290	9/22/2010	23:15	initial		HC0071-01	DRY	SW8290	9/16/2010
K-3A	N	SO	9/2/2010	11:54		MAXX	SW8290	9/22/2010	23:15	initial		HC0071-01	DRY	SW8290	9/16/2010
K-3A	N	SO	9/2/2010	11:54		MAXX	SW8290	9/22/2010	23:15	initial		HC0071-01	DRY	SW8290	9/16/2010
K-3A	N	SO	9/2/2010	11:54		MAXX	SW8290	9/22/2010	23:15	initial		HC0071-01	DRY	SW8290	9/16/2010
K-3A	N	SO	9/2/2010	11:54		MAXX	SW8290	9/22/2010	23:15	initial		HC0071-01	DRY	SW8290	9/16/2010
K-3A	N	SO	9/2/2010	11:54		MAXX	SW8290	9/22/2010	23:15	initial		HC0071-01	DRY	SW8290	9/16/2010
K-3A	N	SO	9/2/2010	11:54		MAXX	SW8290	9/22/2010	23:15	initial		HC0071-01	DRY	SW8290	9/16/2010
K-3A	N	SO	9/2/2010	11:54		MAXX	SW8290	9/22/2010	23:15	initial		HC0071-01	DRY	SW8290	9/16/2010
K-3A	N	SO	9/2/2010	11:54		MAXX	SW8290	9/22/2010	23:15	initial		HC0071-01	DRY	SW8290	9/16/2010
K-3A	N	SO	9/2/2010	11:54		MAXX	SW8290	9/22/2010	23:15	initial		HC0071-01	DRY	SW8290	9/16/2010
K-3A	N	SO	9/2/2010	11:54		MAXX	SW8290	9/22/2010	23:15	initial		HC0071-01	DRY	SW8290	9/16/2010
K-3A	N	SO	9/2/2010	11:54		MAXX	SW8290	9/22/2010	23:15	initial	: High level	HC0071-01	DRY	SW8290	9/16/2010
K-3A	N	SO	9/2/2010	11:54		MAXX	SW8290	9/22/2010	23:15	initial	: EMCL - P	HC0071-01	DRY	SW8290	9/16/2010
K-3A	N	SO	9/2/2010	11:54		MAXX	SW8290	9/22/2010	23:15	initial	: EMCL - P	HC0071-01	DRY	SW8290	9/16/2010
K-3A	N	SO	9/2/2010	11:54		MAXX	SW8290	9/22/2010	23:15	initial	: 20X Diluti	HC0071-01	DRY	SW8290	9/16/2010
K-3A	N	SO	9/2/2010	11:54		MAXX	SW8290	9/22/2010	23:15	initial	: 20X Diluti	HC0071-01	DRY	SW8290	9/16/2010
K-3A	N	SO	9/2/2010	11:54		MAXX	SW8290	9/22/2010	23:15	initial	: 20X Diluti	HC0071-01	DRY	SW8290	9/16/2010
K-3A	N	SO	9/2/2010	11:54		MAXX	SW8290	9/22/2010	23:15	initial		HC0071-01	DRY	SW8290	9/16/2010
K-3A	N	SO	9/2/2010	11:54		MAXX	SW8290	9/22/2010	23:15	initial		HC0071-01	DRY	SW8290	9/16/2010
K-3A	N	SO	9/2/2010	11:54		MAXX	SW8290	9/22/2010	23:15	initial		HC0071-01	DRY	SW8290	9/16/2010
K-3A	N	SO	9/2/2010	11:54		MAXX	SW8290	9/22/2010	23:15	initial		HC0071-01	DRY	SW8290	9/16/2010
K-3A	N	SO	9/2/2010	11:54		MAXX	SW8290	9/22/2010	23:15	initial		HC0071-01	DRY	SW8290	9/16/2010
K-3A	N	SO	9/2/2010	11:54		MAXX	SW8290	9/22/2010	23:15	initial		HC0071-01	DRY	SW8290	9/16/2010
K-3B	N	SO	9/2/2010	11:48		MAXX	SW8290	9/23/2010	0:06	initial	: 20X Diluti	HC0072-01	DRY	SW8290	9/16/2010
K-3B	N	SO	9/2/2010	11:48		MAXX	SW8290	9/23/2010	0:06	initial	: 20X Diluti	HC0072-01	DRY	SW8290	9/16/2010
K-3B	N	SO	9/2/2010	11:48		MAXX	SW8290	9/23/2010	0:06	initial	: 20X Diluti	HC0072-01	DRY	SW8290	9/16/2010
K-3B	N	SO	9/2/2010	11:48		MAXX	SW8290	9/23/2010	0:06	initial		HC0072-01	DRY	SW8290	9/16/2010
K-3B	N	SO	9/2/2010	11:48		MAXX	SW8290	9/23/2010	0:06	initial		HC0072-01	DRY	SW8290	9/16/2010
K-3B	N	SO	9/2/2010	11:48		MAXX	SW8290	9/23/2010	0:06	initial		HC0072-01	DRY	SW8290	9/16/2010
K-3B	N	SO	9/2/2010	11:48		MAXX	SW8290	9/23/2010	0:06	initial		HC0072-01	DRY	SW8290	9/16/2010
K-3B	N	SO	9/2/2010	11:48		MAXX	SW8290	9/23/2010	0:06	initial		HC0072-01	DRY	SW8290	9/16/2010
K-3B	N	SO	9/2/2010	11:48		MAXX	SW8290	9/23/2010	0:06	initial		HC0072-01	DRY	SW8290	9/16/2010
K-3B	N	SO	9/2/2010	11:48		MAXX	SW8290	9/23/2010	0:06	initial	: EMPC / N	HC0072-01	DRY	SW8290	9/16/2010

K-3B	N	SO	9/2/2010	11:48	MAXX	SW8290	9/23/2010	0:06	initial		HC0072-01	DRY	SW8290	9/16/2010
K-3B	N	SO	9/2/2010	11:48	MAXX	SW8290	9/23/2010	0:06	initial		HC0072-01	DRY	SW8290	9/16/2010
K-3B	N	SO	9/2/2010	11:48	MAXX	SW8290	9/23/2010	0:06	initial		HC0072-01	DRY	SW8290	9/16/2010
K-3B	N	SO	9/2/2010	11:48	MAXX	SW8290	9/23/2010	0:06	initial		HC0072-01	DRY	SW8290	9/16/2010
K-3B	N	SO	9/2/2010	11:48	MAXX	SW8290	9/23/2010	0:06	initial		HC0072-01	DRY	SW8290	9/16/2010
K-3B	N	SO	9/2/2010	11:48	MAXX	SW8290	9/23/2010	0:06	initial		HC0072-01	DRY	SW8290	9/16/2010
K-3B	N	SO	9/2/2010	11:48	MAXX	SW8290	9/23/2010	0:06	initial		HC0072-01	DRY	SW8290	9/16/2010
K-3B	N	SO	9/2/2010	11:48	MAXX	SW8290	9/23/2010	0:06	initial		HC0072-01	DRY	SW8290	9/16/2010
K-3B	N	SO	9/2/2010	11:48	MAXX	SW8290	9/23/2010	0:06	initial		HC0072-01	DRY	SW8290	9/16/2010
K-3B	N	SO	9/2/2010	11:48	MAXX	SW8290	9/23/2010	0:06	initial		HC0072-01	DRY	SW8290	9/16/2010
K-3B	N	SO	9/2/2010	11:48	MAXX	SW8290	9/23/2010	0:06	initial		HC0072-01	DRY	SW8290	9/16/2010
K-3B	N	SO	9/2/2010	11:48	MAXX	SW8290	9/23/2010	0:06	initial		HC0072-01	DRY	SW8290	9/16/2010
K-3B	N	SO	9/2/2010	11:48	MAXX	SW8290	9/23/2010	0:06	initial		HC0072-01	DRY	SW8290	9/16/2010
K-3B	N	SO	9/2/2010	11:48	MAXX	SW8290	9/23/2010	0:06	initial		HC0072-01	DRY	SW8290	9/16/2010
K-3B	N	SO	9/2/2010	11:48	MAXX	SW8290	9/23/2010	0:06	initial	: EMCL - P	HC0072-01	DRY	SW8290	9/16/2010
K-3B	N	SO	9/2/2010	11:48	MAXX	SW8290	9/23/2010	0:06	initial	: 20X Diluti	HC0072-01	DRY	SW8290	9/16/2010
K-3B	N	SO	9/2/2010	11:48	MAXX	SW8290	9/23/2010	0:06	initial	: 20X Diluti	HC0072-01	DRY	SW8290	9/16/2010
K-3B	N	SO	9/2/2010	11:48	MAXX	SW8290	9/23/2010	0:06	initial	: 20X Diluti	HC0072-01	DRY	SW8290	9/16/2010
K-3B	N	SO	9/2/2010	11:48	MAXX	SW8290	9/23/2010	0:06	initial		HC0072-01	DRY	SW8290	9/16/2010
K-3B	N	SO	9/2/2010	11:48	MAXX	SW8290	9/23/2010	0:06	initial		HC0072-01	DRY	SW8290	9/16/2010
K-3B	N	SO	9/2/2010	11:48	MAXX	SW8290	9/23/2010	0:06	initial		HC0072-01	DRY	SW8290	9/16/2010
K-3B	N	SO	9/2/2010	11:48	MAXX	SW8290	9/23/2010	0:06	initial		HC0072-01	DRY	SW8290	9/16/2010
K-3B	N	SO	9/2/2010	11:48	MAXX	SW8290	9/23/2010	0:06	initial		HC0072-01	DRY	SW8290	9/16/2010
K-3B	N	SO	9/2/2010	11:48	MAXX	SW8290	9/23/2010	0:06	initial		HC0072-01	DRY	SW8290	9/16/2010
K-3B	N	SO	9/2/2010	11:48	MAXX	SW8290	9/23/2010	0:06	initial		HC0072-01	DRY	SW8290	9/16/2010
K-3C	N	SO	9/2/2010	11:45	MAXX	SW8290	9/23/2010	0:56	initial	: 5X Dilutio	HC0073-01	DRY	SW8290	9/16/2010
K-3C	N	SO	9/2/2010	11:45	MAXX	SW8290	9/23/2010	0:56	initial		HC0073-01	DRY	SW8290	9/16/2010
K-3C	N	SO	9/2/2010	11:45	MAXX	SW8290	9/23/2010	0:56	initial		HC0073-01	DRY	SW8290	9/16/2010
K-3C	N	SO	9/2/2010	11:45	MAXX	SW8290	9/23/2010	0:56	initial		HC0073-01	DRY	SW8290	9/16/2010
K-3C	N	SO	9/2/2010	11:45	MAXX	SW8290	9/23/2010	0:56	initial		HC0073-01	DRY	SW8290	9/16/2010
K-3C	N	SO	9/2/2010	11:45	MAXX	SW8290	9/23/2010	0:56	initial		HC0073-01	DRY	SW8290	9/16/2010
K-3C	N	SO	9/2/2010	11:45	MAXX	SW8290	9/23/2010	0:56	initial		HC0073-01	DRY	SW8290	9/16/2010
K-3C	N	SO	9/2/2010	11:45	MAXX	SW8290	9/23/2010	0:56	initial		HC0073-01	DRY	SW8290	9/16/2010
K-3C	N	SO	9/2/2010	11:45	MAXX	SW8290	9/23/2010	0:56	initial		HC0073-01	DRY	SW8290	9/16/2010
K-3C	N	SO	9/2/2010	11:45	MAXX	SW8290	9/23/2010	0:56	initial		HC0073-01	DRY	SW8290	9/16/2010
K-3C	N	SO	9/2/2010	11:45	MAXX	SW8290	9/23/2010	0:56	initial		HC0073-01	DRY	SW8290	9/16/2010
K-3C	N	SO	9/2/2010	11:45	MAXX	SW8290	9/23/2010	0:56	initial		HC0073-01	DRY	SW8290	9/16/2010
K-3C	N	SO	9/2/2010	11:45	MAXX	SW8290	9/23/2010	0:56	initial		HC0073-01	DRY	SW8290	9/16/2010
K-3C	N	SO	9/2/2010	11:45	MAXX	SW8290	9/23/2010	0:56	initial		HC0073-01	DRY	SW8290	9/16/2010
K-3C	N	SO	9/2/2010	11:45	MAXX	SW8290	9/23/2010	0:56	initial		HC0073-01	DRY	SW8290	9/16/2010
K-3C	N	SO	9/2/2010	11:45	MAXX	SW8290	9/23/2010	0:56	initial		HC0073-01	DRY	SW8290	9/16/2010
K-3C	N	SO	9/2/2010	11:45	MAXX	SW8290	9/23/2010	0:56	initial		HC0073-01	DRY	SW8290	9/16/2010
K-3C	N	SO	9/2/2010	11:45	MAXX	SW8290	9/23/2010	0:56	initial		HC0073-01	DRY	SW8290	9/16/2010
K-3C	N	SO	9/2/2010	11:45	MAXX	SW8290	9/23/2010	0:56	initial		HC0073-01	DRY	SW8290	9/16/2010
K-3C	N	SO	9/2/2010	11:45	MAXX	SW8290	9/23/2010	0:56	initial		HC0073-01	DRY	SW8290	9/16/2010

K-3C	N	SO	9/2/2010	11:45	MAXX	SW8290	9/23/2010	0:56	initial		HC0073-01	DRY	SW8290	9/16/2010
K-3C	N	SO	9/2/2010	11:45	MAXX	SW8290	9/23/2010	0:56	initial		HC0073-01	DRY	SW8290	9/16/2010
K-3C	N	SO	9/2/2010	11:45	MAXX	SW8290	9/23/2010	0:56	initial		HC0073-01	DRY	SW8290	9/16/2010
K-3C	N	SO	9/2/2010	11:45	MAXX	SW8290	9/23/2010	0:56	initial	: EMCL - P	HC0073-01	DRY	SW8290	9/16/2010
K-3C	N	SO	9/2/2010	11:45	MAXX	SW8290	9/23/2010	0:56	initial		HC0073-01	DRY	SW8290	9/16/2010
K-3C	N	SO	9/2/2010	11:45	MAXX	SW8290	9/23/2010	0:56	initial	: 5X Dilutio	HC0073-01	DRY	SW8290	9/16/2010
K-3C	N	SO	9/2/2010	11:45	MAXX	SW8290	9/23/2010	0:56	initial		HC0073-01	DRY	SW8290	9/16/2010
K-3C	N	SO	9/2/2010	11:45	MAXX	SW8290	9/23/2010	0:56	initial		HC0073-01	DRY	SW8290	9/16/2010
K-3C	N	SO	9/2/2010	11:45	MAXX	SW8290	9/23/2010	0:56	initial		HC0073-01	DRY	SW8290	9/16/2010
K-3C	N	SO	9/2/2010	11:45	MAXX	SW8290	9/23/2010	0:56	initial		HC0073-01	DRY	SW8290	9/16/2010
K-3C	N	SO	9/2/2010	11:45	MAXX	SW8290	9/23/2010	0:56	initial		HC0073-01	DRY	SW8290	9/16/2010
K-3C	N	SO	9/2/2010	11:45	MAXX	SW8290	9/23/2010	0:56	initial		HC0073-01	DRY	SW8290	9/16/2010
K-3C	N	SO	9/2/2010	11:45	MAXX	SW8290	9/23/2010	0:56	initial		HC0073-01	DRY	SW8290	9/16/2010
K-3C	N	SO	9/2/2010	11:45	MAXX	SW8290	9/23/2010	0:56	initial		HC0073-01	DRY	SW8290	9/16/2010
K-3C-LR	LR	SO	9/2/2010	11:45	MAXX	SW8290	9/23/2010	1:47	initial	: 5X Dilutio	HC0073-01	DRY	SW8290	9/16/2010
K-3C-LR	LR	SO	9/2/2010	11:45	MAXX	SW8290	9/23/2010	1:47	initial		HC0073-01	DRY	SW8290	9/16/2010
K-3C-LR	LR	SO	9/2/2010	11:45	MAXX	SW8290	9/23/2010	1:47	initial	: Duplicate	HC0073-01	DRY	SW8290	9/16/2010
K-3C-LR	LR	SO	9/2/2010	11:45	MAXX	SW8290	9/23/2010	1:47	initial		HC0073-01	DRY	SW8290	9/16/2010
K-3C-LR	LR	SO	9/2/2010	11:45	MAXX	SW8290	9/23/2010	1:47	initial		HC0073-01	DRY	SW8290	9/16/2010
K-3C-LR	LR	SO	9/2/2010	11:45	MAXX	SW8290	9/23/2010	1:47	initial		HC0073-01	DRY	SW8290	9/16/2010
K-3C-LR	LR	SO	9/2/2010	11:45	MAXX	SW8290	9/23/2010	1:47	initial		HC0073-01	DRY	SW8290	9/16/2010
K-3C-LR	LR	SO	9/2/2010	11:45	MAXX	SW8290	9/23/2010	1:47	initial		HC0073-01	DRY	SW8290	9/16/2010
K-3C-LR	LR	SO	9/2/2010	11:45	MAXX	SW8290	9/23/2010	1:47	initial		HC0073-01	DRY	SW8290	9/16/2010
K-3C-LR	LR	SO	9/2/2010	11:45	MAXX	SW8290	9/23/2010	1:47	initial		HC0073-01	DRY	SW8290	9/16/2010
K-3C-LR	LR	SO	9/2/2010	11:45	MAXX	SW8290	9/23/2010	1:47	initial		HC0073-01	DRY	SW8290	9/16/2010
K-3C-LR	LR	SO	9/2/2010	11:45	MAXX	SW8290	9/23/2010	1:47	initial		HC0073-01	DRY	SW8290	9/16/2010
K-3C-LR	LR	SO	9/2/2010	11:45	MAXX	SW8290	9/23/2010	1:47	initial		HC0073-01	DRY	SW8290	9/16/2010
K-3C-LR	LR	SO	9/2/2010	11:45	MAXX	SW8290	9/23/2010	1:47	initial		HC0073-01	DRY	SW8290	9/16/2010
K-3C-LR	LR	SO	9/2/2010	11:45	MAXX	SW8290	9/23/2010	1:47	initial		HC0073-01	DRY	SW8290	9/16/2010
K-3C-LR	LR	SO	9/2/2010	11:45	MAXX	SW8290	9/23/2010	1:47	initial		HC0073-01	DRY	SW8290	9/16/2010
K-3C-LR	LR	SO	9/2/2010	11:45	MAXX	SW8290	9/23/2010	1:47	initial		HC0073-01	DRY	SW8290	9/16/2010
K-3C-LR	LR	SO	9/2/2010	11:45	MAXX	SW8290	9/23/2010	1:47	initial		HC0073-01	DRY	SW8290	9/16/2010
K-3C-LR	LR	SO	9/2/2010	11:45	MAXX	SW8290	9/23/2010	1:47	initial		HC0073-01	DRY	SW8290	9/16/2010
K-3C-LR	LR	SO	9/2/2010	11:45	MAXX	SW8290	9/23/2010	1:47	initial		HC0073-01	DRY	SW8290	9/16/2010
K-3C-LR	LR	SO	9/2/2010	11:45	MAXX	SW8290	9/23/2010	1:47	initial		HC0073-01	DRY	SW8290	9/16/2010
K-3C-LR	LR	SO	9/2/2010	11:45	MAXX	SW8290	9/23/2010	1:47	initial		HC0073-01	DRY	SW8290	9/16/2010
K-3C-LR	LR	SO	9/2/2010	11:45	MAXX	SW8290	9/23/2010	1:47	initial		HC0073-01	DRY	SW8290	9/16/2010
K-3C-LR	LR	SO	9/2/2010	11:45	MAXX	SW8290	9/23/2010	1:47	initial	: EMCL - P	HC0073-01	DRY	SW8290	9/16/2010
K-3C-LR	LR	SO	9/2/2010	11:45	MAXX	SW8290	9/23/2010	1:47	initial		HC0073-01	DRY	SW8290	9/16/2010
K-3C-LR	LR	SO	9/2/2010	11:45	MAXX	SW8290	9/23/2010	1:47	initial	: 5X Dilutio	HC0073-01	DRY	SW8290	9/16/2010
K-3C-LR	LR	SO	9/2/2010	11:45	MAXX	SW8290	9/23/2010	1:47	initial		HC0073-01	DRY	SW8290	9/16/2010
K-3C-LR	LR	SO	9/2/2010	11:45	MAXX	SW8290	9/23/2010	1:47	initial		HC0073-01	DRY	SW8290	9/16/2010
K-3C-LR	LR	SO	9/2/2010	11:45	MAXX	SW8290	9/23/2010	1:47	initial		HC0073-01	DRY	SW8290	9/16/2010
K-3C-LR	LR	SO	9/2/2010	11:45	MAXX	SW8290	9/23/2010	1:47	initial		HC0073-01	DRY	SW8290	9/16/2010
K-3C-LR	LR	SO	9/2/2010	11:45	MAXX	SW8290	9/23/2010	1:47	initial		HC0073-01	DRY	SW8290	9/16/2010

K-3C-LR	LR	SO	9/2/2010	11:45	MAXX	SW8290	9/23/2010	1:47	initial		HC0073-01	DRY	SW8290	9/16/2010
K-3C-LR	LR	SO	9/2/2010	11:45	MAXX	SW8290	9/23/2010	1:47	initial		HC0073-01	DRY	SW8290	9/16/2010
2272651-M	MS	SO			MAXX	SW8290	9/22/2010	18:13	initial	2272651-M	2272651-M	DRY	SW8290	9/16/2010
2272651-M	MS	SO			MAXX	SW8290	9/22/2010	18:13	initial	2272651-M	2272651-M	DRY	SW8290	9/16/2010
2272651-M	MS	SO			MAXX	SW8290	9/22/2010	18:13	initial	2272651-M	2272651-M	DRY	SW8290	9/16/2010
2272651-M	MS	SO			MAXX	SW8290	9/22/2010	18:13	initial	2272651-M	2272651-M	DRY	SW8290	9/16/2010
2272651-M	MS	SO			MAXX	SW8290	9/22/2010	18:13	initial	2272651-M	2272651-M	DRY	SW8290	9/16/2010
2272651-M	MS	SO			MAXX	SW8290	9/22/2010	18:13	initial	2272651-M	2272651-M	DRY	SW8290	9/16/2010
2272651-M	MS	SO			MAXX	SW8290	9/22/2010	18:13	initial	2272651-M	2272651-M	DRY	SW8290	9/16/2010
2272651-M	MS	SO			MAXX	SW8290	9/22/2010	18:13	initial	2272651-M	2272651-M	DRY	SW8290	9/16/2010
2272651-M	MS	SO			MAXX	SW8290	9/22/2010	18:13	initial	2272651-M	2272651-M	DRY	SW8290	9/16/2010
2272651-M	MS	SO			MAXX	SW8290	9/22/2010	18:13	initial	2272651-M	2272651-M	DRY	SW8290	9/16/2010
2272651-M	MS	SO			MAXX	SW8290	9/22/2010	18:13	initial	2272651-M	2272651-M	DRY	SW8290	9/16/2010
2272651-M	MS	SO			MAXX	SW8290	9/22/2010	18:13	initial	2272651-M	2272651-M	DRY	SW8290	9/16/2010
2272651-M	MS	SO			MAXX	SW8290	9/22/2010	18:13	initial	2272651-M	2272651-M	DRY	SW8290	9/16/2010
2272651-M	MS	SO			MAXX	SW8290	9/22/2010	18:13	initial	2272651-M	2272651-M	DRY	SW8290	9/16/2010
2272651-M	MS	SO			MAXX	SW8290	9/22/2010	18:13	initial	2272651-M	2272651-M	DRY	SW8290	9/16/2010
2272651-M	MS	SO			MAXX	SW8290	9/22/2010	18:13	initial	2272651-M	2272651-M	DRY	SW8290	9/16/2010
2272651-M	MS	SO			MAXX	SW8290	9/22/2010	18:13	initial	2272651-M	2272651-M	DRY	SW8290	9/16/2010
2272651-M	MS	SO			MAXX	SW8290	9/22/2010	18:13	initial	2272651-M	2272651-M	DRY	SW8290	9/16/2010
2272651-M	MS	SO			MAXX	SW8290	9/22/2010	18:13	initial	2272651-M	2272651-M	DRY	SW8290	9/16/2010
2272651-M	MS	SO			MAXX	SW8290	9/22/2010	18:13	initial	2272651-M	2272651-M	DRY	SW8290	9/16/2010
2272651-M	MS	SO			MAXX	SW8290	9/22/2010	18:13	initial	2272651-M	2272651-M	DRY	SW8290	9/16/2010
2272651-M	MS	SO			MAXX	SW8290	9/22/2010	18:13	initial	2272651-M	2272651-M	DRY	SW8290	9/16/2010
2272651-M	MS	SO			MAXX	SW8290	9/22/2010	18:13	initial	2272651-M	2272651-M	DRY	SW8290	9/16/2010
2272651-M	MS	SO			MAXX	SW8290	9/22/2010	18:13	initial	2272651-M	2272651-M	DRY	SW8290	9/16/2010
2272651-M	MS	SO			MAXX	SW8290	9/22/2010	18:13	initial	2272651-M	2272651-M	DRY	SW8290	9/16/2010
2272651-M	MS	SO			MAXX	SW8290	9/22/2010	18:13	initial	2272651-M	2272651-M	DRY	SW8290	9/16/2010
2272651-M	MS	SO			MAXX	SW8290	9/22/2010	18:13	initial	2272651-M	2272651-M	DRY	SW8290	9/16/2010
2272651-M	MS	SO			MAXX	SW8290	9/22/2010	18:13	initial	2272651-M	2272651-M	DRY	SW8290	9/16/2010
2272651-M	MS	SO			MAXX	SW8290	9/22/2010	18:13	initial	2272651-M	2272651-M	DRY	SW8290	9/16/2010
2272651-M	MS	SO			MAXX	SW8290	9/22/2010	18:13	initial	2272651-M	2272651-M	DRY	SW8290	9/16/2010
2272651-M	MSD	SO			MAXX	SW8290	9/22/2010	19:03	initial	2272651-M	2272651-M	DRY	SW8290	9/16/2010
2272651-M	MSD	SO			MAXX	SW8290	9/22/2010	19:03	initial	2272651-M	2272651-M	DRY	SW8290	9/16/2010
2272651-M	MSD	SO			MAXX	SW8290	9/22/2010	19:03	initial	2272651-M	2272651-M	DRY	SW8290	9/16/2010
2272651-M	MSD	SO			MAXX	SW8290	9/22/2010	19:03	initial	2272651-M	2272651-M	DRY	SW8290	9/16/2010
2272651-M	MSD	SO			MAXX	SW8290	9/22/2010	19:03	initial	2272651-M	2272651-M	DRY	SW8290	9/16/2010
2272651-M	MSD	SO			MAXX	SW8290	9/22/2010	19:03	initial	2272651-M	2272651-M	DRY	SW8290	9/16/2010
2272651-M	MSD	SO			MAXX	SW8290	9/22/2010	19:03	initial	2272651-M	2272651-M	DRY	SW8290	9/16/2010
2272651-M	MSD	SO			MAXX	SW8290	9/22/2010	19:03	initial	2272651-M	2272651-M	DRY	SW8290	9/16/2010
2272651-M	MSD	SO			MAXX	SW8290	9/22/2010	19:03	initial	2272651-M	2272651-M	DRY	SW8290	9/16/2010
2272651-M	MSD	SO			MAXX	SW8290	9/22/2010	19:03	initial	2272651-M	2272651-M	DRY	SW8290	9/16/2010
2272651-M	MSD	SO			MAXX	SW8290	9/22/2010	19:03	initial	2272651-M	2272651-M	DRY	SW8290	9/16/2010
2272651-M	MSD	SO			MAXX	SW8290	9/22/2010	19:03	initial	2272651-M	2272651-M	DRY	SW8290	9/16/2010
2272651-M	MSD	SO			MAXX	SW8290	9/22/2010	19:03	initial	2272651-M	2272651-M	DRY	SW8290	9/16/2010

2272651-N	MSD	SO	MAXX	SW8290	9/22/2010	19:03	initial	2272651-N	2272651-N	DRY	SW8290	9/16/2010
2272651-N	MSD	SO	MAXX	SW8290	9/22/2010	19:03	initial	2272651-N	2272651-N	DRY	SW8290	9/16/2010
2272651-N	MSD	SO	MAXX	SW8290	9/22/2010	19:03	initial	2272651-N	2272651-N	DRY	SW8290	9/16/2010
2272651-N	MSD	SO	MAXX	SW8290	9/22/2010	19:03	initial	2272651-N	2272651-N	DRY	SW8290	9/16/2010
2272651-N	MSD	SO	MAXX	SW8290	9/22/2010	19:03	initial	2272651-N	2272651-N	DRY	SW8290	9/16/2010
2272651-N	MSD	SO	MAXX	SW8290	9/22/2010	19:03	initial	2272651-N	2272651-N	DRY	SW8290	9/16/2010
2272651-N	MSD	SO	MAXX	SW8290	9/22/2010	19:03	initial	2272651-N	2272651-N	DRY	SW8290	9/16/2010
2272651-N	MSD	SO	MAXX	SW8290	9/22/2010	19:03	initial	2272651-N	2272651-N	DRY	SW8290	9/16/2010
2272651-N	MSD	SO	MAXX	SW8290	9/22/2010	19:03	initial	2272651-N	2272651-N	DRY	SW8290	9/16/2010
2272651-N	MSD	SO	MAXX	SW8290	9/22/2010	19:03	initial	2272651-N	2272651-N	DRY	SW8290	9/16/2010
2272651-N	MSD	SO	MAXX	SW8290	9/22/2010	19:03	initial	2272651-N	2272651-N	DRY	SW8290	9/16/2010
2272651-N	MSD	SO	MAXX	SW8290	9/22/2010	19:03	initial	2272651-N	2272651-N	DRY	SW8290	9/16/2010
2272651-N	MSD	SO	MAXX	SW8290	9/22/2010	19:03	initial	2272651-N	2272651-N	DRY	SW8290	9/16/2010
2272651-N	MSD	SO	MAXX	SW8290	9/22/2010	19:03	initial	2272651-N	2272651-N	DRY	SW8290	9/16/2010
2272651-N	MSD	SO	MAXX	SW8290	9/22/2010	19:03	initial	2272651-N	2272651-N	DRY	SW8290	9/16/2010
2272651-N	MSD	SO	MAXX	SW8290	9/22/2010	19:03	initial	2272651-N	2272651-N	DRY	SW8290	9/16/2010
2272651-N	MSD	SO	MAXX	SW8290	9/22/2010	19:03	initial	2272651-N	2272651-N	DRY	SW8290	9/16/2010
2272651-N	MSD	SO	MAXX	SW8290	9/22/2010	19:03	initial	2272651-N	2272651-N	DRY	SW8290	9/16/2010
2272651-N	MSD	SO	MAXX	SW8290	9/22/2010	19:03	initial	2272651-N	2272651-N	DRY	SW8290	9/16/2010
2272651-B	BS	SO	MAXX	SW8290	9/22/2010	17:22	initial	2272651-B	2272651-B	DRY	SW8290	9/16/2010
2272651-B	BS	SO	MAXX	SW8290	9/22/2010	17:22	initial	2272651-B	2272651-B	DRY	SW8290	9/16/2010
2272651-B	BS	SO	MAXX	SW8290	9/22/2010	17:22	initial	2272651-B	2272651-B	DRY	SW8290	9/16/2010
2272651-B	BS	SO	MAXX	SW8290	9/22/2010	17:22	initial	2272651-B	2272651-B	DRY	SW8290	9/16/2010
2272651-B	BS	SO	MAXX	SW8290	9/22/2010	17:22	initial	2272651-B	2272651-B	DRY	SW8290	9/16/2010
2272651-B	BS	SO	MAXX	SW8290	9/22/2010	17:22	initial	2272651-B	2272651-B	DRY	SW8290	9/16/2010
2272651-B	BS	SO	MAXX	SW8290	9/22/2010	17:22	initial	2272651-B	2272651-B	DRY	SW8290	9/16/2010
2272651-B	BS	SO	MAXX	SW8290	9/22/2010	17:22	initial	2272651-B	2272651-B	DRY	SW8290	9/16/2010
2272651-B	BS	SO	MAXX	SW8290	9/22/2010	17:22	initial	2272651-B	2272651-B	DRY	SW8290	9/16/2010
2272651-B	BS	SO	MAXX	SW8290	9/22/2010	17:22	initial	2272651-B	2272651-B	DRY	SW8290	9/16/2010
2272651-B	BS	SO	MAXX	SW8290	9/22/2010	17:22	initial	2272651-B	2272651-B	DRY	SW8290	9/16/2010
2272651-B	BS	SO	MAXX	SW8290	9/22/2010	17:22	initial	2272651-B	2272651-B	DRY	SW8290	9/16/2010
2272651-B	BS	SO	MAXX	SW8290	9/22/2010	17:22	initial	2272651-B	2272651-B	DRY	SW8290	9/16/2010
2272651-B	BS	SO	MAXX	SW8290	9/22/2010	17:22	initial	2272651-B	2272651-B	DRY	SW8290	9/16/2010
2272651-B	BS	SO	MAXX	SW8290	9/22/2010	17:22	initial	2272651-B	2272651-B	DRY	SW8290	9/16/2010
2272651-B	BS	SO	MAXX	SW8290	9/22/2010	17:22	initial	2272651-B	2272651-B	DRY	SW8290	9/16/2010
2272651-B	BS	SO	MAXX	SW8290	9/22/2010	17:22	initial	2272651-B	2272651-B	DRY	SW8290	9/16/2010
2272651-B	BS	SO	MAXX	SW8290	9/22/2010	17:22	initial	2272651-B	2272651-B	DRY	SW8290	9/16/2010
2272651-B	BS	SO	MAXX	SW8290	9/22/2010	17:22	initial	2272651-B	2272651-B	DRY	SW8290	9/16/2010
2272651-B	BS	SO	MAXX	SW8290	9/22/2010	17:22	initial	2272651-B	2272651-B	DRY	SW8290	9/16/2010
2272651-B	BS	SO	MAXX	SW8290	9/22/2010	17:22	initial	2272651-B	2272651-B	DRY	SW8290	9/16/2010
2272651-B	BS	SO	MAXX	SW8290	9/22/2010	17:22	initial	2272651-B	2272651-B	DRY	SW8290	9/16/2010
2272651-B	BS	SO	MAXX	SW8290	9/22/2010	17:22	initial	2272651-B	2272651-B	DRY	SW8290	9/16/2010
2272651-B	BS	SO	MAXX	SW8290	9/22/2010	17:22	initial	2272651-B	2272651-B	DRY	SW8290	9/16/2010
2272651-B	BS	SO	MAXX	SW8290	9/22/2010	17:22	initial	2272651-B	2272651-B	DRY	SW8290	9/16/2010
2272651-B	BS	SO	MAXX	SW8290	9/22/2010	17:22	initial	2272651-B	2272651-B	DRY	SW8290	9/16/2010
2272651-L	LB	SO	MAXX	SW8290	9/22/2010	21:34	initial	2272651-L	2272651-L	DRY	SW8290	9/16/2010

2272651-L	LB	SO	MAXX	SW8290	9/22/2010	21:34	initial	2272651-L	2272651-L	DRY	SW8290	9/16/2010
2272651-L	LB	SO	MAXX	SW8290	9/22/2010	21:34	initial	2272651-L	2272651-L	DRY	SW8290	9/16/2010
2272651-L	LB	SO	MAXX	SW8290	9/22/2010	21:34	initial	2272651-L	2272651-L	DRY	SW8290	9/16/2010
2272651-L	LB	SO	MAXX	SW8290	9/22/2010	21:34	initial	2272651-L	2272651-L	DRY	SW8290	9/16/2010
2272651-L	LB	SO	MAXX	SW8290	9/22/2010	21:34	initial	2272651-L	2272651-L	DRY	SW8290	9/16/2010
2272651-L	LB	SO	MAXX	SW8290	9/22/2010	21:34	initial	2272651-L	2272651-L	DRY	SW8290	9/16/2010
2272651-L	LB	SO	MAXX	SW8290	9/22/2010	21:34	initial	2272651-L	2272651-L	DRY	SW8290	9/16/2010
2272651-L	LB	SO	MAXX	SW8290	9/22/2010	21:34	initial	2272651-L	2272651-L	DRY	SW8290	9/16/2010
2272651-L	LB	SO	MAXX	SW8290	9/22/2010	21:34	initial	2272651-L	2272651-L	DRY	SW8290	9/16/2010
2272651-L	LB	SO	MAXX	SW8290	9/22/2010	21:34	initial	2272651-L	2272651-L	DRY	SW8290	9/16/2010
2272651-L	LB	SO	MAXX	SW8290	9/22/2010	21:34	initial	2272651-L	2272651-L	DRY	SW8290	9/16/2010
2272651-L	LB	SO	MAXX	SW8290	9/22/2010	21:34	initial	2272651-L	2272651-L	DRY	SW8290	9/16/2010
2272651-L	LB	SO	MAXX	SW8290	9/22/2010	21:34	initial	2272651-L	2272651-L	DRY	SW8290	9/16/2010
2272651-L	LB	SO	MAXX	SW8290	9/22/2010	21:34	initial	2272651-L	2272651-L	DRY	SW8290	9/16/2010
2272651-L	LB	SO	MAXX	SW8290	9/22/2010	21:34	initial	2272651-L	2272651-L	DRY	SW8290	9/16/2010
2272651-L	LB	SO	MAXX	SW8290	9/22/2010	21:34	initial	2272651-L	2272651-L	DRY	SW8290	9/16/2010
2272651-L	LB	SO	MAXX	SW8290	9/22/2010	21:34	initial	2272651-L	2272651-L	DRY	SW8290	9/16/2010
2272651-L	LB	SO	MAXX	SW8290	9/22/2010	21:34	initial	2272651-L	2272651-L	DRY	SW8290	9/16/2010
2272651-L	LB	SO	MAXX	SW8290	9/22/2010	21:34	initial	2272651-L	2272651-L	DRY	SW8290	9/16/2010
2272651-L	LB	SO	MAXX	SW8290	9/22/2010	21:34	initial	2272651-L	2272651-L	DRY	SW8290	9/16/2010
2272651-L	LB	SO	MAXX	SW8290	9/22/2010	21:34	initial	2272651-L	2272651-L	DRY	SW8290	9/16/2010
2272651-L	LB	SO	MAXX	SW8290	9/22/2010	21:34	initial	2272651-L	2272651-L	DRY	SW8290	9/16/2010
2272651-L	LB	SO	MAXX	SW8290	9/22/2010	21:34	initial	2272651-L	2272651-L	DRY	SW8290	9/16/2010
2272651-L	LB	SO	MAXX	SW8290	9/22/2010	21:34	initial	2272651-L	2272651-L	DRY	SW8290	9/16/2010
2272651-L	LB	SO	MAXX	SW8290	9/22/2010	21:34	initial	2272651-L	2272651-L	DRY	SW8290	9/16/2010
2272651-L	LB	SO	MAXX	SW8290	9/22/2010	21:34	initial	2272651-L	2272651-L	DRY	SW8290	9/16/2010
2272651-L	LB	SO	MAXX	SW8290	9/22/2010	21:34	initial	2272651-L	2272651-L	DRY	SW8290	9/16/2010
2272651-L	LB	SO	MAXX	SW8290	9/22/2010	21:34	initial	2272651-L	2272651-L	DRY	SW8290	9/16/2010
2272651-L	LB	SO	MAXX	SW8290	9/22/2010	21:34	initial	2272651-L	2272651-L	DRY	SW8290	9/16/2010
2272651-L	LB	SO	MAXX	SW8290	9/22/2010	21:34	initial	2272651-L	2272651-L	DRY	SW8290	9/16/2010
2272651-L	LB	SO	MAXX	SW8290	9/22/2010	21:34	initial	2272651-L	2272651-L	DRY	SW8290	9/16/2010
2272651-L	LB	SO	MAXX	SW8290	9/22/2010	21:34	initial	2272651-L	2272651-L	DRY	SW8290	9/16/2010
2272651-L	LB	SO	MAXX	SW8290	9/22/2010	21:34	initial	2272651-L	2272651-L	DRY	SW8290	9/16/2010

prep_time	Cas_Rn	Chemical_I	Result_Val	Result_Uni	Detect_Fla	Detection_	Lab_Qualif	Test_batch	Validator_C	Reportable	Fraction	Dilution_Fa	Method_De	Composite_	Field_sdg
0:00	35822-46-9	1,2,3,4,6,7,	91000	PG/G	Y	100		2272651		Yes	N	1	1	N	B0C3787
0:00	67562-39-4	1,2,3,4,6,7,	10100	PG/G	Y	100		2272651		Yes	N	1	11	N	B0C3787
0:00	55673-89-7	1,2,3,4,7,8,	1790	PG/G	Y	100		2272651		Yes	N	1	14	N	B0C3787
0:00	39227-28-6	1,2,3,4,7,8-	141	PG/G	Y	100		2272651		Yes	N	1	1.4	N	B0C3787
0:00	70648-26-9	1,2,3,4,7,8-	251	PG/G	Y	5		2272651		Yes	N	1	0.056	N	B0C3787
0:00	57653-85-7	1,2,3,6,7,8-	2170	PG/G	Y	100		2272651		Yes	N	1	1.3	N	B0C3787
0:00	57117-44-9	1,2,3,6,7,8-	81.1	PG/G	Y	5		2272651		Yes	N	1	0.057	N	B0C3787
0:00	19408-74-3	1,2,3,7,8,9-	312	PG/G	Y	100		2272651		Yes	N	1	1.3	N	B0C3787
0:00	72918-21-9	1,2,3,7,8,9-	1.9	PG/G	Y	5	J	2272651		Yes	N	1	0.072	N	B0C3787
0:00	40321-76-4	1,2,3,7,8-P	14.6	PG/G	Y	5		2272651		Yes	N	1	0.05	N	B0C3787
0:00	57117-41-6	1,2,3,7,8-P	1.25	PG/G	Y	5	J	2272651		Yes	N	1	0.061	N	B0C3787
0:00	60851-34-5	2,3,4,6,7,8-	28.1	PG/G	Y	5		2272651		Yes	N	1	0.064	N	B0C3787
0:00	57117-31-4	2,3,4,7,8-P	1.52	PG/G	Y	5	J	2272651		Yes	N	1	0.063	N	B0C3787
0:00	1746-01-6	2,3,7,8-Tet	0.293	PG/G	Y	2	J	2272651		Yes	N	1	0.068	N	B0C3787
0:00	51207-31-9	2,3,7,8-Tet	0.522	PG/G	Y	2	J	2272651		Yes	N	1	0.068	N	B0C3787
0:00	109719-83-	C13-12346	119	PERCENT	Y			2272651		Yes	N	1		N	B0C3787
0:00	109719-84-	C13-12346	87	PERCENT	Y			2272651		Yes	N	1		N	B0C3787
0:00	114423-98-	C13-12347	90	PERCENT	Y			2272651		Yes	N	1		N	B0C3787
0:00	109719-81-	C13-12367	83	PERCENT	Y			2272651		Yes	N	1		N	B0C3787
0:00	109719-79-	C13-12378	61	PERCENT	Y			2272651		Yes	N	1		N	B0C3787
0:00	109719-77-	C13-12378	64	PERCENT	Y			2272651		Yes	N	1		N	B0C3787
0:00	76523-40-5	C13-2378 T	69	PERCENT	Y			2272651		Yes	N	1		N	B0C3787
0:00	89059-46-1	C13-2378 T	73	PERCENT	Y			2272651		Yes	N	1		N	B0C3787
0:00	114423-97-	C13-OCDD	248	PERCENT	Y			2272651		Yes	N	1		N	B0C3787
0:00	3268-87-9	Octa CDD	201000	PG/G	Y	200		2272651		Yes	N	1	1.3	N	B0C3787
0:00	39001-02-0	Octa CDF	42400	PG/G	Y	200		2272651		Yes	N	1	2	N	B0C3787
0:00	37871-00-4	Total Hepta	121000	PG/G	Y	N/A		2272651		Yes	N	1	1	N	B0C3787
0:00	38998-75-3	Total Hepta	68500	PG/G	Y	N/A		2272651		Yes	N	1	12	N	B0C3787
0:00	34465-46-8	Total Hexa	5010	PG/G	Y	N/A		2272651		Yes	N	1	1.3	N	B0C3787
0:00	55684-94-1	Total Hexa	5950	PG/G	Y	N/A		2272651		Yes	N	1	0.062	N	B0C3787
0:00	36088-22-9	Total Penta	48.6	PG/G	Y	N/A		2272651		Yes	N	1	0.05	N	B0C3787
0:00	30402-15-4	Total Penta	116	PG/G	Y	N/A		2272651		Yes	N	1	0.062	N	B0C3787
0:00	41903-57-5	Total Tetra	8.76	PG/G	Y	N/A		2272651		Yes	N	1	0.068	N	B0C3787
0:00	55722-27-5	Total Tetra	54.8	PG/G	Y	N/A		2272651		Yes	N	1	0.068	N	B0C3787
0:00	TCDD-TEQ	2378-TCDD	1420	PG/G	Y					Yes	N	1		N	B0C3787
0:00	35822-46-9	1,2,3,4,6,7,	15600	PG/G	Y	99		2272651		Yes	N	1	5.2	N	B0C3787
0:00	67562-39-4	1,2,3,4,6,7,	1500	PG/G	Y	99		2272651		Yes	N	1	2.2	N	B0C3787
0:00	55673-89-7	1,2,3,4,7,8,	307	PG/G	Y	99		2272651		Yes	N	1	2.9	N	B0C3787
0:00	39227-28-6	1,2,3,4,7,8-	6.7	PG/G	Y	5		2272651		Yes	N	1	0.18	N	B0C3787
0:00	70648-26-9	1,2,3,4,7,8-	35	PG/G	Y	5		2272651		Yes	N	1	0.048	N	B0C3787
0:00	57653-85-7	1,2,3,6,7,8-	285	PG/G	Y	5		2272651		Yes	N	1	0.16	N	B0C3787
0:00	57117-44-9	1,2,3,6,7,8-	7.5	PG/G	Y	5		2272651		Yes	N	1	0.05	N	B0C3787
0:00	19408-74-3	1,2,3,7,8,9-	17.9	PG/G	Y	5		2272651		Yes	N	1	0.16	N	B0C3787
0:00	72918-21-9	1,2,3,7,8,9-	0.55	PG/G	Y	5	J	2272651		Yes	N	1	0.062	N	B0C3787
0:00	40321-76-4	1,2,3,7,8-P	0.53	PG/G	N	5	U	2272651		Yes	N	1	0.53	N	B0C3787

0:00	57117-41-6	1,2,3,7,8-P	0.1	PG/G	N		5	U	2272651	Yes	N		1	0.1	N	B0C3787
0:00	60851-34-5	2,3,4,6,7,8-	2.28	PG/G	Y		5	J	2272651	Yes	N		1	0.055	N	B0C3787
0:00	57117-31-4	2,3,4,7,8-P	0.32	PG/G	Y		5	J	2272651	Yes	N		1	0.11	N	B0C3787
0:00	1746-01-6	2,3,7,8-Tet	0.13	PG/G	N		2	U	2272651	Yes	N		1	0.13	N	B0C3787
0:00	51207-31-9	2,3,7,8-Tet	0.192	PG/G	Y		2	J	2272651	Yes	N		1	0.054	N	B0C3787
0:00	109719-83-	C13-12346	54	PERCENT	Y				2272651	Yes	N		1		N	B0C3787
0:00	109719-84-	C13-12346	51	PERCENT	Y				2272651	Yes	N		1		N	B0C3787
0:00	114423-98-	C13-12347	95	PERCENT	Y				2272651	Yes	N		1		N	B0C3787
0:00	109719-81-	C13-12367	82	PERCENT	Y				2272651	Yes	N		1		N	B0C3787
0:00	109719-79-	C13-12378	82	PERCENT	Y				2272651	Yes	N		1		N	B0C3787
0:00	109719-77-	C13-12378	77	PERCENT	Y				2272651	Yes	N		1		N	B0C3787
0:00	76523-40-5	C13-2378 T	68	PERCENT	Y				2272651	Yes	N		1		N	B0C3787
0:00	89059-46-1	C13-2378 T	77	PERCENT	Y				2272651	Yes	N		1		N	B0C3787
0:00	114423-97-	C13-OCDD	57	PERCENT	Y				2272651	Yes	N		1		N	B0C3787
0:00	3268-87-9	Octa CDD	110000	PG/G	Y		200		2272651	Yes	N		1	5.5	N	B0C3787
0:00	39001-02-0	Octa CDF	14900	PG/G	Y		200		2272651	Yes	N		1	2.4	N	B0C3787
0:00	37871-00-4	Total Hepta	20800	PG/G	Y	N/A			2272651	Yes	N		1	5.2	N	B0C3787
0:00	38998-75-3	Total Hepta	10100	PG/G	Y	N/A			2272651	Yes	N		1	2.5	N	B0C3787
0:00	34465-46-8	Total Hexa	551	PG/G	Y	N/A			2272651	Yes	N		1	0.17	N	B0C3787
0:00	55684-94-1	Total Hexa	860	PG/G	Y	N/A			2272651	Yes	N		1	0.053	N	B0C3787
0:00	36088-22-9	Total Penta	0.71	PG/G	Y	N/A			2272651	Yes	N		1	0.1	N	B0C3787
0:00	30402-15-4	Total Penta	11.7	PG/G	Y	N/A			2272651	Yes	N		1	0.1	N	B0C3787
0:00	41903-57-5	Total Tetra	0.65	PG/G	Y	N/A		U	2272651	Yes	N		1	0.65	N	B0C3787
0:00	55722-27-5	Total Tetra	1.83	PG/G	Y	N/A			2272651	Yes	N		1	0.054	N	B0C3787
0:00	TCDD-TEQ	2378-TCDD	248	PG/G	Y					Yes	N		1		N	B0C3787
0:00	35822-46-9	1,2,3,4,6,7,	1260	PG/G	Y		25		2272651	Yes	N		1	0.42	N	B0C3787
0:00	67562-39-4	1,2,3,4,6,7,	123	PG/G	Y		5		2272651	Yes	N		1	0.18	N	B0C3787
0:00	55673-89-7	1,2,3,4,7,8,	33.3	PG/G	Y		5		2272651	Yes	N		1	0.24	N	B0C3787
0:00	39227-28-6	1,2,3,4,7,8-	2.26	PG/G	Y		5	J	2272651	Yes	N		1	0.093	N	B0C3787
0:00	70648-26-9	1,2,3,4,7,8-	3.08	PG/G	Y		5	J	2272651	Yes	N		1	0.072	N	B0C3787
0:00	57653-85-7	1,2,3,6,7,8-	24.8	PG/G	Y		5		2272651	Yes	N		1	0.083	N	B0C3787
0:00	57117-44-9	1,2,3,6,7,8-	0.722	PG/G	Y		5	J	2272651	Yes	N		1	0.074	N	B0C3787
0:00	19408-74-3	1,2,3,7,8,9-	4.57	PG/G	Y		5	J	2272651	Yes	N		1	0.083	N	B0C3787
0:00	72918-21-9	1,2,3,7,8,9-	0.092	PG/G	N		5	U	2272651	Yes	N		1	0.092	N	B0C3787
0:00	40321-76-4	1,2,3,7,8-P	0.27	PG/G	N		5	U	2272651	Yes	N		1	0.27	N	B0C3787
0:00	57117-41-6	1,2,3,7,8-P	0.066	PG/G	N		5	U	2272651	Yes	N		1	0.066	N	B0C3787
0:00	60851-34-5	2,3,4,6,7,8-	0.373	PG/G	Y		5	J	2272651	Yes	N		1	0.082	N	B0C3787
0:00	57117-31-4	2,3,4,7,8-P	0.069	PG/G	N		5	U	2272651	Yes	N		1	0.069	N	B0C3787
0:00	1746-01-6	2,3,7,8-Tet	0.1	PG/G	N		2	U	2272651	Yes	N		1	0.1	N	B0C3787
0:00	51207-31-9	2,3,7,8-Tet	0.187	PG/G	Y		2	J	2272651	Yes	N		1	0.069	N	B0C3787
0:00	109719-83-	C13-12346	57	PERCENT	Y				2272651	Yes	N		1		N	B0C3787
0:00	109719-84-	C13-12346	68	PERCENT	Y				2272651	Yes	N		1		N	B0C3787
0:00	114423-98-	C13-12347	82	PERCENT	Y				2272651	Yes	N		1		N	B0C3787
0:00	109719-81-	C13-12367	70	PERCENT	Y				2272651	Yes	N		1		N	B0C3787
0:00	109719-79-	C13-12378	86	PERCENT	Y				2272651	Yes	N		1		N	B0C3787
0:00	109719-77-	C13-12378	67	PERCENT	Y				2272651	Yes	N		1		N	B0C3787

0:00	76523-40-5	C13-2378	55	PERCENT	Y			2272651	Yes	N	1		N	B0C3787
0:00	89059-46-1	C13-2378	61	PERCENT	Y			2272651	Yes	N	1		N	B0C3787
0:00	114423-97	C13-OCDD	59	PERCENT	Y			2272651	Yes	N	1		N	B0C3787
0:00	3268-87-9	Octa CDD	10400	PG/G	Y		50	2272651	Yes	N	1	0.77	N	B0C3787
0:00	39001-02-(	Octa CDF	1130	PG/G	Y		10	2272651	Yes	N	1	0.69	N	B0C3787
0:00	37871-00-4	Total Hepta	1720	PG/G	Y	N/A		2272651	Yes	N	1	0.42	N	B0C3787
0:00	38998-75-3	Total Hepta	764	PG/G	Y	N/A		2272651	Yes	N	1	0.2	N	B0C3787
0:00	34465-46-8	Total Hexa	62.7	PG/G	Y	N/A		2272651	Yes	N	1	0.086	N	B0C3787
0:00	55684-94-1	Total Hexa	72.3	PG/G	Y	N/A		2272651	Yes	N	1	0.079	N	B0C3787
0:00	36088-22-9	Total Penta	0.27	PG/G	Y	N/A	U	2272651	Yes	N	1	0.27	N	B0C3787
0:00	30402-15-4	Total Penta	1.23	PG/G	Y	N/A		2272651	Yes	N	1	0.068	N	B0C3787
0:00	41903-57-5	Total Tetra	0.38	PG/G	Y	N/A		2272651	Yes	N	1	0.1	N	B0C3787
0:00	55722-27-5	Total Tetra	1.58	PG/G	Y	N/A		2272651	Yes	N	1	0.069	N	B0C3787
0:00	TCDD-TEQ	2378-TCDD	21.6	PG/G	Y				Yes	N	1		N	B0C3787
0:00	35822-46-9	1,2,3,4,6,7,	1430	PG/G	Y		25	2272651	Yes	N	1	0.33	N	B0C3787
0:00	67562-39-4	1,2,3,4,6,7,	147	PG/G	Y		5	2272651	Yes	N	1	0.37	N	B0C3787
0:00	55673-89-7	1,2,3,4,7,8,	25.5	PG/G	Y		5	2272651	Yes	N	1	0.49	N	B0C3787
0:00	39227-28-6	1,2,3,4,7,8-	1.11	PG/G	Y		5 J	2272651	Yes	N	1	0.077	N	B0C3787
0:00	70648-26-9	1,2,3,4,7,8-	3.23	PG/G	Y		5 J	2272651	Yes	N	1	0.14	N	B0C3787
0:00	57653-85-7	1,2,3,6,7,8-	27	PG/G	Y		5	2272651	Yes	N	1	0.068	N	B0C3787
0:00	57117-44-9	1,2,3,6,7,8-	0.64	PG/G	Y		5 J	2272651	Yes	N	1	0.14	N	B0C3787
0:00	19408-74-3	1,2,3,7,8,9-	2.61	PG/G	Y		5 J	2272651	Yes	N	1	0.068	N	B0C3787
0:00	72918-21-9	1,2,3,7,8,9-	0.18	PG/G	N		5 U	2272651	Yes	N	1	0.18	N	B0C3787
0:00	40321-76-4	1,2,3,7,8-P	0.18	PG/G	N		5 U	2272651	Yes	N	1	0.18	N	B0C3787
0:00	57117-41-6	1,2,3,7,8-P	0.083	PG/G	Y		5 J	2272651	Yes	N	1	0.06	N	B0C3787
0:00	60851-34-5	2,3,4,6,7,8-	0.29	PG/G	Y		5 J	2272651	Yes	N	1	0.16	N	B0C3787
0:00	57117-31-4	2,3,4,7,8-P	0.141	PG/G	Y		5 J	2272651	Yes	N	1	0.062	N	B0C3787
0:00	1746-01-6	2,3,7,8-Tet	0.088	PG/G	N		2 U	2272651	Yes	N	1	0.088	N	B0C3787
0:00	51207-31-9	2,3,7,8-Tet	0.206	PG/G	Y		2 J	2272651	Yes	N	1	0.051	N	B0C3787
0:00	109719-83	C13-12346	77	PERCENT	Y			2272651	Yes	N	1		N	B0C3787
0:00	109719-84	C13-12346	89	PERCENT	Y			2272651	Yes	N	1		N	B0C3787
0:00	114423-98	C13-12347	104	PERCENT	Y			2272651	Yes	N	1		N	B0C3787
0:00	109719-81	C13-12367	89	PERCENT	Y			2272651	Yes	N	1		N	B0C3787
0:00	109719-79	C13-12378	92	PERCENT	Y			2272651	Yes	N	1		N	B0C3787
0:00	109719-77	C13-12378	85	PERCENT	Y			2272651	Yes	N	1		N	B0C3787
0:00	76523-40-5	C13-2378	65	PERCENT	Y			2272651	Yes	N	1		N	B0C3787
0:00	89059-46-1	C13-2378	71	PERCENT	Y			2272651	Yes	N	1		N	B0C3787
0:00	114423-97	C13-OCDD	84	PERCENT	Y			2272651	Yes	N	1		N	B0C3787
0:00	3268-87-9	Octa CDD	11900	PG/G	Y		50	2272651	Yes	N	1	0.52	N	B0C3787
0:00	39001-02-(	Octa CDF	1250	PG/G	Y		10	2272651	Yes	N	1	0.1	N	B0C3787
0:00	37871-00-4	Total Hepta	1920	PG/G	Y	N/A		2272651	Yes	N	1	0.33	N	B0C3787
0:00	38998-75-3	Total Hepta	871	PG/G	Y	N/A		2272651	Yes	N	1	0.42	N	B0C3787
0:00	34465-46-8	Total Hexa	56.6	PG/G	Y	N/A		2272651	Yes	N	1	0.071	N	B0C3787
0:00	55684-94-1	Total Hexa	75.2	PG/G	Y	N/A		2272651	Yes	N	1	0.15	N	B0C3787
0:00	36088-22-9	Total Penta	0.18	PG/G	Y	N/A	U	2272651	Yes	N	1	0.18	N	B0C3787
0:00	30402-15-4	Total Penta	1.47	PG/G	Y	N/A		2272651	Yes	N	1	0.061	N	B0C3787

0:00	41903-57-5	Total Tetra	0.444	PG/G	Y	N/A		2272651	Yes	N	1	0.088	N	B0C3787
0:00	55722-27-5	Total Tetra	1.98	PG/G	Y	N/A		2272651	Yes	N	1	0.051	N	B0C3787
0:00	67562-39-4	1,2,3,4,6,7,	143	PERCENT	Y		99	2272651	Yes	N	1	2.1	N	B0C3787
0:00	55673-89-7	1,2,3,4,7,8,	106	PERCENT	Y		99	2272651	Yes	N	1	2.7	N	B0C3787
0:00	39227-28-6	1,2,3,4,7,8-	111	PERCENT	Y		5	2272651	Yes	N	1	0.059	N	B0C3787
0:00	70648-26-9	1,2,3,4,7,8-	83	PERCENT	Y		5	2272651	Yes	N	1	0.05	N	B0C3787
0:00	57653-85-7	1,2,3,6,7,8-	112	PERCENT	Y		5	2272651	Yes	N	1	0.052	N	B0C3787
0:00	57117-44-9	1,2,3,6,7,8-	83	PERCENT	Y		5	2272651	Yes	N	1	0.051	N	B0C3787
0:00	19408-74-3	1,2,3,7,8,9-	105	PERCENT	Y		5	2272651	Yes	N	1	0.052	N	B0C3787
0:00	72918-21-9	1,2,3,7,8,9-	84	PERCENT	Y		5	2272651	Yes	N	1	0.065	N	B0C3787
0:00	40321-76-4	1,2,3,7,8-P	107	PERCENT	Y		5	2272651	Yes	N	1	0.064	N	B0C3787
0:00	57117-41-6	1,2,3,7,8-P	99	PERCENT	Y		5	2272651	Yes	N	1	0.059	N	B0C3787
0:00	60851-34-5	2,3,4,6,7,8-	83	PERCENT	Y		5	2272651	Yes	N	1	0.057	N	B0C3787
0:00	57117-31-4	2,3,4,7,8-P	109	PERCENT	Y		5	2272651	Yes	N	1	0.061	N	B0C3787
0:00	1746-01-6	2,3,7,8-Tet	117	PERCENT	Y		2	2272651	Yes	N	1	0.054	N	B0C3787
0:00	51207-31-9	2,3,7,8-Tet	90	PERCENT	Y		2	2272651	Yes	N	1	0.051	N	B0C3787
0:00	109719-83-	C13-12346	61	PERCENT	Y			2272651	Yes	N	1		N	B0C3787
0:00	109719-84-	C13-12346	56	PERCENT	Y			2272651	Yes	N	1		N	B0C3787
0:00	114423-98-	C13-12347	96	PERCENT	Y			2272651	Yes	N	1		N	B0C3787
0:00	109719-81-	C13-12367	84	PERCENT	Y			2272651	Yes	N	1		N	B0C3787
0:00	109719-79-	C13-12378	85	PERCENT	Y			2272651	Yes	N	1		N	B0C3787
0:00	109719-77-	C13-12378	77	PERCENT	Y			2272651	Yes	N	1		N	B0C3787
0:00	76523-40-5	C13-2378	71	PERCENT	Y			2272651	Yes	N	1		N	B0C3787
0:00	89059-46-1	C13-2378	76	PERCENT	Y			2272651	Yes	N	1		N	B0C3787
0:00	114423-97-	C13-OCDD	65	PERCENT	Y			2272651	Yes	N	1		N	B0C3787
0:00	37871-00-4	Total Hepta	21300	PERCENT	Y	N/A		2272651	Yes	N	1	2.7	N	B0C3787
0:00	38998-75-3	Total Hepta	10600	PERCENT	Y	N/A		2272651	Yes	N	1	2.3	N	B0C3787
0:00	34465-46-8	Total Hexa	973	PERCENT	Y	N/A		2272651	Yes	N	1	0.054	N	B0C3787
0:00	55684-94-1	Total Hexa	1310	PERCENT	Y	N/A		2272651	Yes	N	1	0.055	N	B0C3787
0:00	36088-22-9	Total Penta	134	PERCENT	Y	N/A		2272651	Yes	N	1	0.064	N	B0C3787
0:00	30402-15-4	Total Penta	270	PERCENT	Y	N/A		2272651	Yes	N	1	0.06	N	B0C3787
0:00	41903-57-5	Total Tetra	146	PERCENT	Y	N/A		2272651	Yes	N	1	0.054	N	B0C3787
0:00	55722-27-5	Total Tetra	116	PERCENT	Y	N/A		2272651	Yes	N	1	0.051	N	B0C3787
0:00	35822-46-9	1,2,3,4,6,7,	79	PERCENT	N		99	2272651	Yes	N	1	1.6	N	B0C3787
0:00	67562-39-4	1,2,3,4,6,7,	71	PERCENT	N		99	2272651	Yes	N	1	1.3	N	B0C3787
0:00	55673-89-7	1,2,3,4,7,8,	100	PERCENT	Y		99	2272651	Yes	N	1	1.7	N	B0C3787
0:00	39227-28-6	1,2,3,4,7,8-	111	PERCENT	Y		5	2272651	Yes	N	1	0.068	N	B0C3787
0:00	70648-26-9	1,2,3,4,7,8-	81	PERCENT	Y		5	2272651	Yes	N	1	0.062	N	B0C3787
0:00	57653-85-7	1,2,3,6,7,8-	101	PERCENT	Y		5	2272651	Yes	N	1	0.061	N	B0C3787
0:00	57117-44-9	1,2,3,6,7,8-	81	PERCENT	Y		5	2272651	Yes	N	1	0.064	N	B0C3787
0:00	19408-74-3	1,2,3,7,8,9-	107	PERCENT	Y		5	2272651	Yes	N	1	0.061	N	B0C3787
0:00	72918-21-9	1,2,3,7,8,9-	84	PERCENT	Y		5	2272651	Yes	N	1	0.08	N	B0C3787
0:00	40321-76-4	1,2,3,7,8-P	109	PERCENT	Y		5	2272651	Yes	N	1	0.067	N	B0C3787
0:00	57117-41-6	1,2,3,7,8-P	98	PERCENT	Y		5	2272651	Yes	N	1	0.061	N	B0C3787
0:00	60851-34-5	2,3,4,6,7,8-	84	PERCENT	Y		5	2272651	Yes	N	1	0.071	N	B0C3787
0:00	57117-31-4	2,3,4,7,8-P	107	PERCENT	Y		5	2272651	Yes	N	1	0.063	N	B0C3787

0:00	1746-01-6	2,3,7,8-Tet	120	PERCENT	Y		2		2272651	Yes	N		1	0.054	N	B0C3787
0:00	51207-31-9	2,3,7,8-Tet	91	PERCENT	Y		2		2272651	Yes	N		1	0.058	N	B0C3787
0:00	109719-83	C13-12346	71	PERCENT	Y				2272651	Yes	N		1		N	B0C3787
0:00	109719-84	C13-12346	67	PERCENT	Y				2272651	Yes	N		1		N	B0C3787
0:00	114423-98	C13-12347	98	PERCENT	Y				2272651	Yes	N		1		N	B0C3787
0:00	109719-81	C13-12367	84	PERCENT	Y				2272651	Yes	N		1		N	B0C3787
0:00	109719-79	C13-12378	86	PERCENT	Y				2272651	Yes	N		1		N	B0C3787
0:00	109719-77	C13-12378	83	PERCENT	Y				2272651	Yes	N		1		N	B0C3787
0:00	76523-40-5	C13-2378 T	72	PERCENT	Y				2272651	Yes	N		1		N	B0C3787
0:00	89059-46-1	C13-2378 T	79	PERCENT	Y				2272651	Yes	N		1		N	B0C3787
0:00	114423-97	C13-OCDD	81	PERCENT	Y				2272651	Yes	N		1		N	B0C3787
0:00	37871-00-4	Total Hepta	20900	PERCENT	Y	N/A			2272651	Yes	N		1	1.6	N	B0C3787
0:00	38998-75-3	Total Hepta	9980	PERCENT	Y	N/A			2272651	Yes	N		1	1.5	N	B0C3787
0:00	34465-46-8	Total Hexa	966	PERCENT	Y	N/A			2272651	Yes	N		1	0.063	N	B0C3787
0:00	55684-94-1	Total Hexa	1270	PERCENT	Y	N/A			2272651	Yes	N		1	0.068	N	B0C3787
0:00	36088-22-9	Total Penta	136	PERCENT	Y	N/A			2272651	Yes	N		1	0.067	N	B0C3787
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0:00	41903-57-5	Total Tetra	150	PERCENT	Y	N/A			2272651	Yes	N		1	0.054	N	B0C3787
0:00	55722-27-5	Total Tetra	117	PERCENT	Y	N/A			2272651	Yes	N		1	0.058	N	B0C3787
0:00	35822-46-9	1,2,3,4,6,7,	93	PERCENT	Y		5		2272651	Yes	N		1	0.053	N	B0C3787
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0:00	55673-89-7	1,2,3,4,7,8,	101	PERCENT	Y		5		2272651	Yes	N		1	0.058	N	B0C3787
0:00	39227-28-6	1,2,3,4,7,8-	107	PERCENT	Y		5		2272651	Yes	N		1	0.059	N	B0C3787
0:00	70648-26-9	1,2,3,4,7,8-	80	PERCENT	Y		5		2272651	Yes	N		1	0.049	N	B0C3787
0:00	57653-85-7	1,2,3,6,7,8-	93	PERCENT	Y		5		2272651	Yes	N		1	0.053	N	B0C3787
0:00	57117-44-9	1,2,3,6,7,8-	80	PERCENT	Y		5		2272651	Yes	N		1	0.05	N	B0C3787
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0:00	72918-21-9	1,2,3,7,8,9-	85	PERCENT	Y		5		2272651	Yes	N		1	0.063	N	B0C3787
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0:00	60851-34-5	2,3,4,6,7,8-	81	PERCENT	Y		5		2272651	Yes	N		1	0.056	N	B0C3787
0:00	57117-31-4	2,3,4,7,8-P	107	PERCENT	Y		5		2272651	Yes	N		1	0.051	N	B0C3787
0:00	1746-01-6	2,3,7,8-Tet	114	PERCENT	Y		2		2272651	Yes	N		1	0.066	N	B0C3787
0:00	51207-31-9	2,3,7,8-Tet	88	PERCENT	Y		2		2272651	Yes	N		1	0.066	N	B0C3787
0:00	109719-83	C13-12346	94	PERCENT	Y				2272651	Yes	N		1		N	B0C3787
0:00	109719-84	C13-12346	90	PERCENT	Y				2272651	Yes	N		1		N	B0C3787
0:00	114423-98	C13-12347	103	PERCENT	Y				2272651	Yes	N		1		N	B0C3787
0:00	109719-81	C13-12367	91	PERCENT	Y				2272651	Yes	N		1		N	B0C3787
0:00	109719-79	C13-12378	92	PERCENT	Y				2272651	Yes	N		1		N	B0C3787
0:00	109719-77	C13-12378	82	PERCENT	Y				2272651	Yes	N		1		N	B0C3787
0:00	76523-40-5	C13-2378 T	61	PERCENT	Y				2272651	Yes	N		1		N	B0C3787
0:00	89059-46-1	C13-2378 T	66	PERCENT	Y				2272651	Yes	N		1		N	B0C3787
0:00	114423-97	C13-OCDD	94	PERCENT	Y				2272651	Yes	N		1		N	B0C3787
0:00	3268-87-9	Octa CDD	98	PERCENT	Y		10		2272651	Yes	N		1	0.11	N	B0C3787
0:00	39001-02-0	Octa CDF	98	PERCENT	Y		10		2272651	Yes	N		1	0.11	N	B0C3787
0:00	35822-46-9	1,2,3,4,6,7,	0.565	PG/G	Y		5	J	2272651	Yes	N		1	0.053	N	B0C3787

0:00	67562-39-4	1,2,3,4,6,7,	0.28	PG/G	N		5	U	2272651	Yes	N	1	0.28	N	B0C3787
0:00	55673-89-7	1,2,3,4,7,8,	0.078	PG/G	N		5	U	2272651	Yes	N	1	0.078	N	B0C3787
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0:00	70648-26-9	1,2,3,4,7,8-	0.053	PG/G	N		5	U	2272651	Yes	N	1	0.053	N	B0C3787
0:00	57653-85-7	1,2,3,6,7,8-	0.052	PG/G	N		5	U	2272651	Yes	N	1	0.052	N	B0C3787
0:00	57117-44-9	1,2,3,6,7,8-	0.054	PG/G	N		5	U	2272651	Yes	N	1	0.054	N	B0C3787
0:00	19408-74-3	1,2,3,7,8,9-	0.052	PG/G	N		5	U	2272651	Yes	N	1	0.052	N	B0C3787
0:00	72918-21-9	1,2,3,7,8,9-	0.068	PG/G	N		5	U	2272651	Yes	N	1	0.068	N	B0C3787
0:00	40321-76-4	1,2,3,7,8-P	0.052	PG/G	N		5	U	2272651	Yes	N	1	0.052	N	B0C3787
0:00	57117-41-6	1,2,3,7,8-P	0.051	PG/G	N		5	U	2272651	Yes	N	1	0.051	N	B0C3787
0:00	60851-34-5	2,3,4,6,7,8-	0.06	PG/G	N		5	U	2272651	Yes	N	1	0.06	N	B0C3787
0:00	57117-31-4	2,3,4,7,8-P	0.098	PG/G	Y		5	J	2272651	Yes	N	1	0.053	N	B0C3787
0:00	1746-01-6	2,3,7,8-Tet	0.056	PG/G	N		2	U	2272651	Yes	N	1	0.056	N	B0C3787
0:00	51207-31-9	2,3,7,8-Tet	0.147	PG/G	Y		2	J	2272651	Yes	N	1	0.05	N	B0C3787
0:00	109719-83-	C13-12346	92	PERCENT	Y				2272651	Yes	N	1		N	B0C3787
0:00	109719-84-	C13-12346	89	PERCENT	Y				2272651	Yes	N	1		N	B0C3787
0:00	114423-98-	C13-12347	102	PERCENT	Y				2272651	Yes	N	1		N	B0C3787
0:00	109719-81-	C13-12367	87	PERCENT	Y				2272651	Yes	N	1		N	B0C3787
0:00	109719-79-	C13-12378	86	PERCENT	Y				2272651	Yes	N	1		N	B0C3787
0:00	109719-77-	C13-12378	77	PERCENT	Y				2272651	Yes	N	1		N	B0C3787
0:00	76523-40-5	C13-2378 T	52	PERCENT	Y				2272651	Yes	N	1		N	B0C3787
0:00	89059-46-1	C13-2378 T	58	PERCENT	Y				2272651	Yes	N	1		N	B0C3787
0:00	114423-97-	C13-OCDD	92	PERCENT	Y				2272651	Yes	N	1		N	B0C3787
0:00	3268-87-9	Octa CDD	2.98	PG/G	Y		10	J	2272651	Yes	N	1	0.11	N	B0C3787
0:00	39001-02-0	Octa CDF	0.4	PG/G	Y		10	J	2272651	Yes	N	1	0.1	N	B0C3787
0:00	37871-00-4	Total Hepta	0.773	PG/G	Y	N/A			2272651	Yes	N	1	0.053	N	B0C3787
0:00	38998-75-3	Total Hepta	0.32	PG/G	Y	N/A		U	2272651	Yes	N	1	0.32	N	B0C3787
0:00	34465-46-8	Total Hexa	0.8	PG/G	Y	N/A		U	2272651	Yes	N	1	0.8	N	B0C3787
0:00	55684-94-1	Total Hexa	0.058	PG/G	Y	N/A		U	2272651	Yes	N	1	0.058	N	B0C3787
0:00	36088-22-9	Total Penta	0.11	PG/G	Y	N/A		U	2272651	Yes	N	1	0.11	N	B0C3787
0:00	30402-15-4	Total Penta	0.192	PG/G	Y	N/A			2272651	Yes	N	1	0.052	N	B0C3787
0:00	41903-57-5	Total Tetra	0.056	PG/G	Y	N/A		U	2272651	Yes	N	1	0.056	N	B0C3787
0:00	55722-27-5	Total Tetra	0.147	PG/G	Y	N/A			2272651	Yes	N	1	0.05	N	B0C3787

Appendix 2 - Quality Assurance Manual by ESC Lab Sciences

APPENDIX 3 – HEALTH AND SAFETY PLAN

E W WELLS-MSE

ENVIRONMENTAL | CONSTRUCTION | MEC SERVICES

HEALTH AND SAFETY PLAN

Krassel Wood Treatment Site

October 2012

PAYETTE NATIONAL FOREST, IDAHO

Submitted to:
USDA Forest Service
Region 4
HC 63, Box 1669, Hwy 93
Challis, Idaho 83226

Submitted by:
E W Wells Group - MSE
1555 Shoreline Drive, Suite 150
Boise, ID 83702
(208) 345-8292

Location:
Krassel Wood Treatment Site
T 19 N, R 6 E, Section 21 NE ¼
Krassel District
Payette National Forest
Valley County, Idaho

Client Contract Number:
0610-12-211123
AG-0261-P-12-0183

Author:
Rolf V. Lange, P.G.
Senior Project Manager

Reviewer:
Chris Lammer, PE
Senior Program Manager

Boise Health & Safety Officer:
Scott Kirkland

HEALTH AND SAFETY PLAN
Krassel Wood Treatment Site
Payette National Forest, Idaho

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APPENDICES

1.0 GENERAL

This site Health and Safety Plan (HSP) has been prepared to address potential health and safety concerns associated with a Preliminary Assessment/Site Inspection (PA/SI) of a wood treatment facility at the Krassel Wood Treatment Site in the Payette National Forest, Idaho. The Krassel Wood Treatment Site is located approximately 4 miles north and 18 miles east of McCall. It is located in the NE ¼ of Section 21, T19N, R6E with approximate coordinates of latitude 44°58'30"N, longitude 115°43'41"W (44.975, -115.78) and approximate elevation of 3960 feet. Access to the site is via Forest Road 674.

This section provides a discussion of the applicability of the HSP, and a general description of the project. Work activities that are addressed under this HSP will consist of field testing and sampling soils. Chemical and physical hazards requiring worker awareness and protection are also discussed. Worker safety must be maintained during all phases of the work. Contaminants of primary concern include: Poly Aromatic Hydrocarbons (PAHs), Pentachlorophenol (PCP), Creosote, Dioxins and Petroleum Products.

The following definitions shall apply to this HSP:

Established: in the context of work zones, "established" applies to any area in, adjacent to, and/or removed from the site, which has been prepared or is utilized for the purpose of performing project activities and is restricted posted, marked, labeled or otherwise identified with appropriate warnings.

Project: all activities conducted by E W Wells Group, LLC (Wells) personnel, subcontractors, client employees, and visitors which require direct access to on-site materials. This includes, but may not be limited to inspection, sampling, waste management, maintenance, construction, trenching and excavation, and direct-push sampling.

Site: the area where project activities are conducted, including secured areas and work zones established during performance of project activities.

Secured: any area within the boundaries of the Forest Service property that physically prevents access by unauthorized personnel through the use of coverings, fencing, gates, and/or locks.

Visitor: any person not directly employed by Forest Service, Wells, or their subcontractors who are authorized to observe, document, or perform project activities or who enter secured or established work zones.

Work Zones: areas established for the purpose of performing project activities in, adjacent to, and/or removed from the site. Work zones include but may not be limited to the exclusion zone, contaminant reduction zone, support zone, and remote decontamination areas.

Equipment: A list of work, waste handling and personal protective equipment (PPE) is provided in Appendix 2.

1.1 Scope and Applicability of the Site Health and Safety Plan

This HSP designates procedures to be followed and assigns duties during onsite activities associated with a hazardous waste removal action. Applicability extends to all Wells personnel,

Forest Service employees, subcontractors, and visitors who enter established work zones. This HSP has been prepared based on currently available information relating to hazards, both chemical and physical, potentially present at the site.

The objective of this HSP is to provide the necessary guidance to project management and site personnel to assure safe working conditions during all phases of the project. This plan has been developed to comply with the requirements of the NCP (40 CFR 300.150), USFS Manual handbook, and guidance (FSM 2160 and 6700, FSH 6709.11 & 12, and USFS guide to CERCLA), as well as U.S. Department of Labor, Occupational Health and Safety Administration (OSHA) set forth in 29 CFR 19210 and 29 CFR 1926. All project fieldwork shall be conducted in accordance with the requirements of this HSP.

1.2 Project Description

The PA/SI will further characterize the site and determine whether further action is warranted under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) or required by Idaho Department of Environmental Quality (IDEQ). Contaminants associated with wood treatment formulations include creosote, pentachlorophenol (PCP) and other phenol compounds, poly aromatic hydrocarbons (PAHs), metals (chromium and arsenic). Petroleum fuels such as diesel are also commonly associated with wood treatment formulations. There is a potential for dioxins and furans to be associated with this waste classification. Field monitoring and testing will focus on PCP as an indicator compound to assess the extents of contaminated soils requiring removal. Laboratory analysis of PCP and PAHs in soil samples will be performed to confirm the extent of contamination. Specific on-site activities will require the use of personal protective equipment. Table 5-1 defines personal protective equipment requirements for specific tasks.

2.0 CONTACTS

The following contacts provide key personnel, sources of emergency response, first aid and nearest medical facilities.

2.1 Key Personnel

The following key personnel and companies are involved in this project:

- Owner/Owner's Representative:
  USDA Forest Service, Region 4 – Dean Morgan, COR
- Idaho Department of Environmental Quality:
  Mark Jeffers
- Wells Program Manager:
  Richard Kelsey P.E.
- Wells Project Manager:
  Rolf Lange, P.G.
- Wells Project/Field Personnel:
  Eric Hieb, E.I.T.
- Analytical Laboratory:
  ESC Lab Sciences – Jared Willis

2.2 Trained Medical Response Personnel Contacts

Trained Medical Response Personnel (First Aid and CPR Training) will be available to support the project on site, if possible.

2.3 Emergencies

In the event of an emergency, a satellite phone and cellular phone will be available onsite to notify the appropriate authorities and/or emergency medical services. Personnel may dial 911 and/or notify the nearest hospital directly. It may be necessary to drive to the vicinity of McCall (nearest hospital) to reach an area with cellular phone service.

2.4 Nearest Hospital

St. Luke's McCall Medical Center
1000 State Street
McCall, Idaho 83638
Phone: (208) 634-2221

- Hospital staff includes family practice doctors and an on-call trauma surgeon.
- Able to treat burns, hypothermia, snake bites and provide chemical burn, eye washing and surgical intervention for more serious injuries.
- Antivenin and rabies vaccine in stock.
- Life flight to additional medical facilities in Boise, if necessary.

For Ambulance Service - Dial 911.

The figure provided in Appendix 1 shows the approximate site location and emergency route to the hospital in McCall, Idaho.

3.0 WORK ZONE DESIGNATIONS AND DECONTAMINATION PROCEDURES

This section describes procedures for work zone designation and personal and equipment decontamination. These site control procedures are essential for preventing on-site personnel from being exposed to hazardous conditions and substances.

3.1 Work Zones

Access to the site will be restricted during site investigation activities. During on-site operations, work zones will be established around or adjacent to the site and communicated to all essential site personnel by the Site Health and Safety Officer, Project Manager or their representatives. Work zone locations will be specifically established for each individual task. The zones generically include:

Exclusion Zone ("Hot Zone"): Area where contamination does or could occur. All personnel entering the exclusion zone must wear the prescribed level of protection;

Support Zone: Outermost part of the work area which is considered non-contaminated or "clean". Support equipment is located in this zone; contaminated personnel, samples or equipment are not;

Contamination Reduction Zone: Links the exclusion and support zones. The zone where decontamination of personnel and equipment takes place; and

Remote Decontamination Area: An area established for the purpose of decontaminating materials, equipment, and clothing that is not within or adjacent to the work zones described above and may be removed from the site by some distance.

Access to both exclusion and contamination reduction zones will be strictly controlled. Only personnel who are essential to the completion of the task will be allowed access to these areas, provided they are wearing the prescribed level of protection. Non-essential personnel will be asked to leave the area.

3.2 Personal Decontamination

No personal protective equipment worn in an exclusion zone that has become contaminated shall be worn outside the contamination reduction zone without prior decontamination or removal. All personnel leaving an exclusion zone shall pass through the contamination reduction zone that is removed from the work area.

The following steps shall be followed during personal decontamination:

- Place tools and equipment on plastic sheets in the contamination reduction zone for subsequent re-use or decontamination;
- Brush off dust or soils adhering to clothing, boots, eye ware, or other personal protective attire in the contamination reduction zone;
- Wash and rinse boots that cannot be cleaned by other means, in the contamination reduction zone;
- Remove protective clothing, if necessary, by "peeling" it inside-out in the contamination reduction zone. Place it in a plastic-lined container; and
- Wash hands and faces at decontamination station at the end of the work shift.

3.3 Equipment Decontamination

All equipment that is to be removed from an exclusion zone and a contamination reduction zone shall be evaluated for decontamination prior to removal. Any equipment that is visibly contaminated shall require decontamination. Decontamination of sensitive instrumentation which requires disassembly of the instrument shall follow the procedures described by the manufacturer in the instrument manual.

At a minimum, tools and machinery that are visibly contaminated must be manually cleaned or pressure washed so that they are visibly clean. The decontamination fluid will be collected and transferred to a 55-gallon steel drum for future proper disposal.

When all direct push or drilling activities have been completed, the heavy equipment will be decontaminated. Partial decontamination efforts will be conducted in the exclusion zone. As much mud, dirt, rocks, etc. as possible will be mechanically removed from the tires, tracks, or

outside of the equipment. Washing or rinsing of the equipment will not take place in the exclusion zone. Any equipment that has contacted contaminated soil will be taken to a designated decontamination pad away from the work area and thoroughly washed.

4.0 SITE HAZARD ANALYSIS

Drilling (direct push), soil sampling, and hazardous waste management activities may expose personnel to chemical hazards associated with contaminated materials. Potential physical hazards may also be present during performance of these activities. In addition, temperature extremes may create potential hazards for personnel wearing protective clothing and equipment. The following subsections discuss specific site hazards that may be present at the project site.

4.1 Potential Chemical Hazards

Characteristics of the identified contaminants of greatest concern are discussed in the following sections.

4.1.1 Pentachlorophenol (CAS 87-86-5, DOT UN2020, NFPA 3-0-0)

Pentachlorophenol (Penta, PCP, pentachlorophenate) was widely used as a wood preservative and fungicide. Degradation products have fewer chlorine atoms per molecule. Pentachlorophenol is a colorless to white non–combustible crystalline solid with a benzene–like odor. It was commonly applied as a solution in diesel fuel or other flammable hydrocarbon mixtures. The PEL for skin absorption is 0.5 mg/m^3, and the IDLH concentration is 2.5 mg/m^3. The primary exposure route for penta adsorbed to soils is expected to be though skin or eye contact. Inhalation of vapors can irritate the eyes, nose and throat. Skin absorption can result in sneezing, coughing or weakness. Ingestion can lead to anorexia, low body weight or sweating. Contact with eyes or skin can produce headaches, dizziness, nausea, vomiting, dyspepsia, chest pain, high fever or dermatitis. In case of contact with eyes, rinse immediately. If skin is exposed wash affected areas with soap and water. Provide respiratory support if inhaled. In case of swallowing, medical attention is required. Material Safety Data Sheets (MSDSs) are provided in Appendix 3.

4.1.2 Creosote (CAS 65996-93-2)

The kind of creosote made from coal tar is a commonly used fungicidal wood preservative. EPA classifies it as a restricted use pesticide, for sale and application only by certified applicators. Creosote is a complex mixture of perhaps 10,000 different compounds. The most important components which may cause adverse health effects are polycyclic aromatic hydrocarbons (PAHs), phenol and cresols. Coal–tar creosote is a heavy, oily liquid with a sharp, smoky odor and a burning taste. It is typically amber to brown in color when fresh, but is often black at hazardous waste sites. Creosote is flammable, and reacts with strong oxidizers. It is sparingly soluble in water. The PEL is 0.2 mg/m^3, and the IDLH concentration is 80 mg/m^3. The major exposure routes are inhalation and contact.

Symptoms: NIOSH considers creosote to be a potential occupational carcinogen. Exposure can result in dermatitis; bronchitis; damage to eyes, skin, nervous system and kidneys; and cancer.

First Aid: In case of contact, irrigate eyes immediately, and wash affected skin with soap and water. Provide respiratory support in case of inhalation. If swallowed, immediate medical attention is required.

Sources: *NIOSH Pocket Guide* entry for Coal tar pitch volatiles

4.1.3 Polycyclic Aromatic Hydrocarbons (CAS 65996-93-2)

Polycyclic aromatic hydrocarbons (PAHs, formerly called polynuclear aromatic compounds, or PNAs, and listed in the *NIOSH Pocket Guide* as "Coal tar pitch volatiles") are a class of relatively non–volatile organic compounds found in petroleum products, creosote and combustion products. PAHs form an amorphous brown–black residue, and their specific properties vary by compound. The PAHs include such compounds as: naphthalene, anthracene, phenanthrene, acenaphthene, fluorene, fluoranthene, pyrene, chrysene, perylene, benzo[*a*]pyrene, benzo[*b*]fluoranthene, benzo[*k*]fluoranthene, benzo[*a*]anthracene, dibenz[*a,h*]anthracene, benzo[*g,h,i*]perylene and indeno[*1,2,3–cd*]pyrene. NIOSH considers coal tar pitch volatiles to be potential occupational carcinogens, and has established a 10–hour REL of 0.1 mg/m^3. The OSHA 8–hour PEL is 0.1 mg/m^3.

Symptoms: The usual exposure routes are inhalation (especially on particles) and contact. Symptoms of exposure may include: dermatitis, bronchitis, and cancer. Some PAHs (*e.g.*, benzo[*a*]pyrene) are carcinogens, while others are not.
First Aid: Eyes should be irrigated immediately with clean water. Wash exposed skin with soapy water. Respiratory support should be provided in case of breathing difficulty, and immediate medical attention is required in case of swallowing.
NIOSH usually recommends that occupational exposures to carcinogens be limited to the lowest feasible concentration, and recommends the use of a self–contained breathing apparatus (SCBA) or supplied–air respirator (SAR) at all concentrations. For details, consult Appendices A and C in the *NIOSH Pocket Guide to Chemical Hazards*.

Source: *NIOSH Pocket Guide to Chemical Hazards.*

4.1.4 Diesel fuel (CAS 68-4763-46, DOT NA1993, NFPA 0-2-0)

Diesel fuel is representative of a refined petroleum fraction known as middle distillates. This category includes diesel fuel no. 2, many fuel oils and kerosene. Middle distillates are pale yellow liquids with a typical specific gravity of 0.8 and which are insoluble in water. They are Class II combustible liquids (flash point 125°F, explosive range 0.6–4.7%). The primary exposure route is vapor inhalation. Inhalation may produce irritation to the eyes, skin, nose and throat and a burning sensation in the chest. Prolonged breathing can cause headache, dizziness, appetite loss, weakness, nausea, confusion, drowsiness or loss of coordination. Ingestion may lead to vomiting, diarrhea or chemical pneumonia (by aspiration of fluid into the lungs). Skin contact may result in moderate dermatitis. Skin absorption is not expected to result in significant toxicity to internal organs. NIOSH usually recommends that occupational exposures to carcinogens be limited to the lowest feasible concentration. Based on its possible use as a PCP carrier, diesel constituents are expected to be encountered.

Sources: *Chevron MSDS #002916: Diesel fuel (generic) and the NIOSH Pocket Guide entry for kerosene.*

4.1.5 Dioxins (CAS 1746-01-06)

Dioxins have been associated with wood treatment formulations. Dioxin is a colorless to white, crystalline solid. Dioxins can undergo slow photochemical degradation (UV light) and slow bacterial degradation. Exposure routes include: inhalation, skin adsorption, ingestion, skin and/or eye contact. Vapors may cause drowsiness and dizziness. Skin adsorption can result in redness and pain; affected skin should be gently washed with soap and water. If swallowed, do not induce vomiting; seek medical advice immediately. In case of contact with eyes, rinse immediately. NIOSH usually recommends that occupational exposures to dioxin be limited to lowest feasible concentration.

Source: *NIOSH Pocket Guide to Chemical Hazards.*

4.2 Physical Hazards

Field personnel may be exposed to a number of physical hazards when working within secured areas or established work zones at the site, including:

- fire and explosion;
- industrial hazards: lifting, hand tools, falls and slips;
- electrical hazards: power tools; electrical pumps, and electrical motors;
- heat or cold stress;
- drilling and heavy equipment hazards; and
- noise.

4.3 Biological Hazards

Field personnel may be exposed to a number of biological hazards when working within secured areas or established work zones at the site, including:

- poisonous snakes;
- biting and stinging insects; and
- transmitted diseases.

5.0 CONTROL MEASURES

This section defines appropriate control measures for chemical and physical hazards identified in Section 4.

5.1 Chemical Hazard Controls

Where feasible, the primary method of controlling chemical exposure to personnel during all site work will be the use of engineering controls (i.e., dust suppression, working upwind, physical barriers, etc.) to minimize reliance on the use of personal protective equipment. However, during on-site operations, these protective measures are often unavailable. Thus, personal protective equipment (PPE) will be required during specific phases of onsite activities. The levels of protection potentially required for onsite activities are outlined in following subsection.

The PPE requirements will vary depending on the job tasks being performed as well as ambient conditions. PPE Level C modified or Level C will be required primarily in the Exclusion Zones

or in the immediate vicinity of those work activities most likely to generate dust or encounter organic vapors. As more information about the hazards and conditions at the site become available, the Site Health and Safety Officer can make decisions to up-grade or down-grade the level of PPE protection.

On-site operations conducted in Level B Personal Protection is not within the scope of the work plan. If site conditions indicate that Level B Personal Protection is required, work will be suspended at that location until such time that an expanded scope of work can be developed.

5.1.1 Levels of Chemical Hazard Protection

Levels of personal chemical hazard protection potentially required for onsite activities are outlined in Table 5-1 below.

Table 5-1
Specific Levels of Protection Planned for the
Task Assignments at the Site

Tasks	PPE Level	Requirements	Material
Excavation and work in exclusion zones where there is low source concentrations	Level C (Modified)	coveralls gloves boots hard hat	cotton or chemical resistant Vinyl and/or leather leather or rubber steel toe impact resistant plastic
Excavation & handling soils and containers, transferring fluids, air monitoring indicates low exposure potential or low source concentrations	Level C	full face or half face respirator coveralls (inner) coveralls (outer) gloves (inner) gloves (outer) boots glasses hard hat	combination organic vapor/pesticide/high efficiency particulate filter cotton chemical resistant, Tyvec Vinyl or nitrile leather rubber steel toe impact resistant glass or plastic impact resistant plastic
Used for the initial and ongoing evaluation of conditions exhibiting the potential for the inhalation of hazardous vapor exceeding the PEL within a work zone (Used only if site conditions deem necessary)	Level B	NIOSH-approved full face positive pressure supplied air respirator or SCBA coveralls (inner) coveralls (outer) gloves boots hard hat with face shield	cotton Tychem 9400 Silver shield or Viton rubber steel toe impact resistant plastic

5.2 Physical Hazard Controls

Methods for controlling and preventing potential harm due to physical hazards are discussed in the following sections.

5.2.1 Drilling Physical Hazard Controls

Drilling (direct push) activities have a significant potential to create physical hazards. Control measures implemented to minimize potential physical hazards are presented below.

- Drill rig and any other machinery must be inspected prior to each use. Deficiencies shall be repaired and defective parts replaced before use is continued.
- Only trained and experienced equipment operators shall be employed.
- Equipment must be checked daily for defects prior to use. These checks shall include inspection of hydraulic or pneumatic systems, fuel reservoirs, electrical connections, chains, wire cables, straps and hooks.
- Audible backup signals shall be required on hauling equipment.
- Roll-over protective systems shall be required on all construction equipment.
- Damaged equipment shall be removed or tagged as out of service.
- Fuel containers and equipment fuel tanks should be inspected for structural integrity and remain sealed, except during fueling activities.
- Electrical connections should be inspected to ensure wires and plugs are not exposed. Ground-fault interceptors should be utilized, when appropriate.
- Foot traffic shall be restricted in areas where heavy equipment is in use.
- Equipment operators and people in the immediate vicinity shall wear hearing protection as necessary.
- There shall be no riding of the equipment unless a seat is provided for this purpose.
- Where site personnel are assisting equipment operators, hand signals shall be established beforehand. Only one person shall give these hand signals.
- At a minimum hard hats and boots with steel toes shall be worn by all personnel in heavy equipment operating areas. No personnel are permitted within the swing radius of an excavator without notifying the operator.
- Drill rigs shall maintain at least a 20 foot clearance from electrical transmission lines.

Prior to drilling, an effort shall be made to determine whether underground installations, i.e., sewer, water, fuel, electric lines, etc., will be encountered (the Forest Service shall assist in this effort) and if so, where such underground installations are located. Utility companies serving the area, if any, shall be contacted prior to the start of drilling, and shall be requested to mark buried lines.

5.2.2 Confined Spaces

Completion of the scope of work is not anticipated to require confined space entry. Confined space entry is not authorized for this project by Wells personnel or its subcontractors. If an excavation represents a confined space, Wells and/or subcontractors are not authorized to enter the excavation. If work within a confined space becomes necessary the work will be stopped until such time that the space can be made unconfined or accessed by remote device. Only properly qualified and equipped personnel may enter a confined space.

5.2.3 Traffic Control

Pedestrian and automobile traffic will be controlled using appropriate methods. Methods of traffic control and unauthorized access include signs, hazard/caution tape, traffic cones, barricades, fences, or traffic control personnel, as needed.

All contaminated or potentially contaminated equipment or supplies are to be stored in secured areas at night to prevent accidental contact by unauthorized individuals. Gates (if present) to the

work area are to be securely locked at the end of the day, and the person performing this function will enter his/her actions in a log book. Signs shall be posted at work areas to alert site personnel and visitors to potential hazards.

5.2.4 Fire Protection

Portable fire extinguishers shall be provided in each Wells, contractor and subcontractor vehicle required to be at the site to support project activities. These fire extinguishers will be inspected and maintained in accordance with National Fire Protection Agency Regulation 10, *Portable Fire Extinguishers*.

5.2.5 Heat Stress

Heat stress is caused by various factors which include environmental conditions, clothing (including PPE), workload, and a person's physical condition. Susceptibility to heat stress can vary between individuals depending on factors such as lack of physical fitness, obesity, alcohol and drug use, age, rest and others. Preventive measures and proper training will help avoid serious heat stress related illness. To avoid heat stress the following steps will be taken.

- Adjust work schedules and activity levels to minimize stress due to ambient environmental conditions.
- Provide shelter or shaded areas for the protection of site workers during rest periods.
- Minimize dehydration. A person's fluid intake must proximately equal the amount of water and electrolytes lost in sweat and respiration. The following steps are recommended to accomplish this.
- Supply a source of drinking water to the work site and maintain water temperature at 50 to 60 degree F.
- Have workers drink 10 ounces of water or diluted drinks (e.g., electrolyte solutions such as Gatorade) prior to commencing work activities.
- Encourage workers to drink eight ounces of plain water or dilute drinks at each rest period.
- Encourage workers to maintain an optimal level of physical fitness.
- Acclimatize workers to work conditions where indicated.

Site personnel should be trained to recognize the signs and symptoms of heat stress and then be able to take appropriate action. Many of these signs and symptoms are covered in the OSHA/NIOSH/EPA/USCG Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities. Some of the signs and symptoms of heat stress and appropriate corrective measures are described below.

Heat Exhaustion:

Signs and Symptoms

- Pale, cool, and moist skin
- Heavy sweating
- Light headedness
- Slurred speech
- Weakness (fatigue)
- Confusion
- Fainting

- Nausea

Corrective Action

- Remove victim to a cool and uncontaminated area
- Remove PPE
- Cool the victim with water and/or fanning
- Give water to drink as soon as reasonably possible
- Allow victim to rest

Heat Stroke:

Signs and Symptoms

- Red, hot, usually dry skin
- Lack of or reduced perspiration
- Incoherent, delirious
- Mental confusion and dizziness
- Unconsciousness
- Staggering gait

Corrective Action

- Heat Stroke is a medical emergency , cool the victim as soon as possible
- Transport the victim to medical facility for treatment immediately

5.2.6 Cold Stress:

The effects of extreme cold exposure (low temperatures and when the wind chill factors is sufficiently high) are frostbite, hypothermia and impaired ability to perform work. Some of the control measures include the use of appropriate clothing, the availability of warm shelter, and the careful scheduling of work/rest periods. These control measures should be taken to help prevent the worker's deep body temperature from falling below 96.8 degrees F.

An early warning to the danger of cold stress is pain in the extremities. During prolonged cold exposure, maximum severe shivering develops when the body temperature has fallen to 95 degrees F. This must be taken as a danger sign and exposure to cold should be immediately terminated.

Signs and Symptoms

- Cold skin
- Shivering
- Mental confusion
- Pain
- Staggering gait

Corrective Action

- Move the victim to a heated area and cover
- Provide warm fluids
- If hypothermia or frost bite becomes apparent transport the victim to the closest medical facility for proper treatment

5.3 Biological Hazard Controls

The job site is located in Payette National Forest, and encountering wildlife in these areas may occur. All wildlife should be treated with respect and not provoked in any way. Some specific concerns include the following:

5.3.1 Poisonous Snakes

Poisonous snakes are indigenous to the area including the prairie rattlesnake. This Western rattlesnake lives in grasslands, shrublands, rocky areas, pine and juniper forests throughout Idaho. As adults these snakes can range from 26 to 48 inches length. Their coloring ranges, but is generally grayish brown, with darker brown blotches down the back and sides. The snake also has a wide head, a narrow neck, a stout body and keeled scales. In case of a snakebite the most important thing is for the victim to stay calm. Then the following first aid steps should be taken. First wash the bite with soap and water, second immobilize the bite area and keep it below the heart and third get medical attention as soon as possible. The quicker medical attention is obtained the more effective the treatment. If an extended period of time will be required to reach the nearest medical facility, an additional step should be taken. This step is to wrap a bandage around the extremity two to four inches above the bite to help slow the venom. The bandage should be snug but it should not cut off blood flow. The bandage should be loose enough to allow a finger to be able to be slipped underneath it.

5.3.2 Biting or stinging insects

Ticks: The Rocky Mountain wood tick and the American dog tick are the most common ticks associated with people in the Mountain West. Most tick bites are harmless but ticks can be carriers of illnesses such as Lyme disease, Rocky Mountain spotted fever and Colorado tick fever. The most common disease associated with ticks is Colorado tick fever. Rocky Mountain spotted fever is rare but can occur in this area. Although uncommon in the area Lyme disease is also a potential concern. Ticks are most active in the spring and early summer, then they go dormant during the heat of the summer until the following spring. They poise themselves on top of vegetation then cling to passing animals. They are usually found along paths in bushy areas, edges of fields and woodlands, grassy areas and shrublands. The best repellents for ticks are repellents that have DEET (N,N-diethyl-metatolamide). The repellent should be applied directly to the skin and clothes especially around the lower body. Wearing long sleeves and pants also helps keeps ticks from attaching to skin. Even though it can take several hours for a tick to attach to your skin, you should remove ticks promptly and carefully by grasping the tick with a pair of tweezers as close to the skin as possible and gently pulling the whole tick out. If symptoms such as a rash, fever, muscle aches, joint pain and swelling occur seek medical attention.

Black Widow Spiders: Black Widow Spiders have a shiny, black, globular abdomen with a reddish or yellowish hourglass marking on the underside of the spider. Most of the time these spiders are not aggressive but they will bite if bothered or cornered. Their webs are usually built outdoors close to the ground in trash, rubbish piles and under or around buildings. Symptoms from Black Widow bites start with slight swelling with two faint red spots around the bite area. One to three hours after being bitten pain intensifies and travels up or down the arm or leg and

localizing in the abdomen and back with rigid abdominal muscles and cramping. Other symptoms may include pain in the muscles and soles of the feet, swollen eye lids, nausea, vomiting, tremors, labored breathing, profuse perspiration, a feeble pulse, cold clammy skin, unconsciousness, convulsions and in rare cases death. First aid is washing and putting antiseptic on the bite area and getting medical attention as soon as possible. Recovery usually occurs in 2 to 5 days.

Paper Wasps: Wasps can be a serious problem throughout Idaho particularly in the late summer when their nests are the largest. Paper Wasps include Yellowjackets, Hornets and Polistes wasps. They usually feed on insects but some species (e.g. Yellowjackets) are also scavengers and are attracted by garbage and food. All of these wasps are capable of producing a painful sting but most won't sting unless provoked. If a nest is encountered the best thing to do is leave it alone, it will be abandoned by winter and not reused. If the nest needs to be removed then insecticides containing carbyl, diazinon, chlorpyrifos or propoxur are effective for killing nests. When approaching the nest wear light colored clothing and apply the insecticide directly to the entrance of the nest. One application should work. If stung, symptoms include swelling and pain that gradually disappear in a few hours. They can be treated with antiseptic, cool compresses and crushed aspirin to help relieve the pain and swelling. In extreme cases a severe allergic reaction may occur which includes difficulty in breathing, dizziness, nausea and development of hives. In these cases, immediate medical attention is required.

5.3.3 Transmitted Diseases

Colorado Tick Fever: The Rocky Mountain wood tick and the American dog tick are the most common carriers of this disease. Symptoms include aching, fever, chills and fatigue which lasts 1 to 3 days. Most cases are not reported due to similarity to flu symptoms.

Rocky Mountain Fever: Rocky Mountain spotted fever is rare but has been documented. The Rocky Mountain wood tick and the American dog tick are commonly associated with this disease. Symptoms include a general feeling of malaise and/or aching and a high fever. A rash also develops starting on the wrists and ankles, later the rash spreads to the rest of the body including the palms and the soles of the feet. Medical attention is required.

6.0 EMERGENCY RESPONSE AND CONTINGENCY PLAN

During the site briefings held periodically, all on-site personnel will be trained in and reminded of the emergency response procedures. Personnel should be familiar with techniques of hazard recognition, and be able to take proper emergency response actions. The Site Manager is responsible for ensuring that emergency response devices or equipment are available to personnel.

The following items will be located on-site at all times:

- Industrial first-aid kit and First aid manual;
- Copy of this HSP;
- Cell Phone;
- Emergency phone number list; and
- List of chemicals which could potentially be encountered.

Emergencies that involve injuries, fires, or spills may require implementation of a contingency plan. The Project Manager or Site Manager shall be responsible for implementation of contingency plans. The Site Health and Safety Officer shall play a key role in responding to major emergencies and shall be responsible for providing technical assistance. This will include determining immediate medical response requirements and identifying potential chemical exposures.

All injuries must be reported to the Site Health and Safety Officer and Project Manager immediately following first aid treatment. Those injuries will be noted on the appropriate logs. If necessary, the employee will be referred to an emergency room or an occupational physician for further treatment. In the event of serious trauma or unknown chemical exposure, the employee should be stabilized while emergency medical assistance is requested. Phone numbers for the police, ambulance dispatch and nearest medical facility are listed below.

911 Ambulance
911 Police

The identification and location of nearest medical and emergency service facilities to each of the project sites will be illustrated on maps provided at the end of this plan.

All incidents involving personal injury shall be investigated and properly documented so that preventive measures may be taken to avoid similar incidents in the future. If an employee is injured within a contamination zone, the primary objective shall be to remove the employee from the contamination zone and administer first aid. The personnel who administer first aid should be properly trained and be familiar with 29 CFR 1910.1030, Occupational Exposure to Bloodborne Pathogens. If necessary, an emergency decontamination shall be performed by the person who administers first aid.

Any person being transported to a clinic or hospital for treatment should take with them information on the chemicals they have been potentially exposed to at the site. Any vehicle used to transport contaminated personnel shall be treated and cleaned as necessary.

In the event of an uncontrolled fire or explosion, the local fire department should be summoned immediately. Upon their arrival, the Site Supervisor or designated alternate shall advise the fire commander of the location, nature, and identification of the hazardous materials on-site.

If it is safe to do so, site personnel may:

- Use fire fighting equipment available on-site to control or extinguish the fire; and
- Remove or isolate flammable or hazardous materials which may contribute to the fire.

In the event of a spill or a leak, site personnel shall:

- Inform their supervisor immediately;
- Acquire appropriate PPE;
- Locate the source of the spillage and stop the flow, if it can be done safely; and begin containment and recovery of the spilled materials.

7.0 GENERAL HEALTH AND SAFETY HAZARDS AND GUIDELINES

Acceptance of the following general concepts of personal health and safety are essential to reduce personal exposure to chemical and physical hazards. All site personnel, subcontractors and visitors who enter secured areas or established work zones will be required to acknowledge, in writing, having read, understood, and agreed to the following:

- The site contains potential chemical hazards including identified chemicals which could expose unprotected or improperly protected personnel to unnecessary health risks;
- The site may pose potential physical hazards to site personnel if proper engineering controls and personnel protection measures are not observed. These hazards may include fire, explosion, industrial hazards, electrical hazards, drilling hazards, noise and temperature extremes;
- Eating, drinking, smoking, and chewing gum or tobacco are strictly prohibited during field work involving potential exposure to hazardous substances;
- All required respiratory devices and protective clothing must be worn by all personnel during field work as determined by field monitoring and plan requirements;
- Unnecessary contact with contaminated surfaces or waste materials is to be avoided;
- Medicine and alcohol can exaggerate the effects of some chemical and physical agents. Prescribed drugs should not be taken by field personnel unless specifically approved by an occupational physician;
- Alcoholic beverage or unauthorized drug intake is strictly forbidden during work operations;
- All personnel should be familiar with standard safety procedures and additional instructions contained in the HSP;
- No one may work alone in the field (i.e., out of earshot or visual contact of other workers);
- Horseplay is absolutely forbidden. Good judgment and common sense are requisite;
- All employees have the obligation to correct or report unsafe work conditions; and
- Personnel should thoroughly wash their hands and faces before eating, drinking, or smoking following field activities.

Daily tailgate site safety briefings will be conducted to assure that all personnel working on-site maintain awareness of health and safety issues associated with project tasks. Tailgate safety briefing topics, and attendance will be documented in the field log book, and on a tailgate safety briefing form (Appendix 4).

8.0 PERSONNEL TRAINING REQUIREMENTS

Consistent with OSHA's 29 CFR 1910.120 regulation covering Hazardous Waste Operations and Emergency Response, all site personnel are required to be trained and certified in accordance with the regulations. Verification of current OSHA training certification for all employees shall be required prior to allowing work on-site. At a minimum, all on-site personnel are required to be trained to work in compliance with the provisions of this HSP.

8.1 Pre-assignment and Annual Refresher Training

Prior to arrival on-site, each employer will be responsible for certifying that his/her employees meet the requirements of pre-assignment training. Consistent with OSHA 29 CFR 1910.120

paragraph (e)(3), on-site personnel should be able to provide a document certifying dates of 24 hours training for workers occasionally on-site for a specific task, or 40 hours of training for general site workers. Personnel must receive 8 hours of annual refresher training.

8.2 Site Supervisors Training

Consistent with OSHA 29 CFR 1910.120 paragraph (e)(8), personnel designated as site supervisors require an additional 8 hours of training.

8.3 Site Training and Debriefing Topics

Those topics found in Table 8.3 will be discussed by a qualified individual at the site pre-entry briefing(s), as well as daily or periodic site briefings (i.e., prior to commencement of, or change in site tasks). Site training, briefing issues, and attendance will be documented the field log book, and on a tailgate safety briefing form.

Table 8-3
Training Topics and Frequency of Presentation

TRAINING	FREQUENCY
Air Monitoring	Pre-entry
Drum & Container Handling	Pre-entry
Emergency Response	Pre-entry
HAZWOPER	Pre-entry
Heavy Machinery	Pre-entry
Medical Surveillance	Pre-entry
Respiratory Protection	Pre-entry
Training Requirements	Pre-entry
Chemical Hazards	Pre-entry, periodic
Physical Hazards	Pre-entry, periodic
Engineering Controls & Work Practices	Pre-entry, periodic
Decontamination Requirements	Pre-entry, Periodic
General Safety & Health	Pre-entry, periodic
Personal Protective Equipment	Pre-entry, periodic
Task Hazards	Pre-entry, periodic
Site Control	Pre-entry, periodic

9.0 MEDICAL SURVEILLANCE REQUIREMENTS

Medical monitoring programs are designed to track physical conditions of Wells employees on a regular basis as well as to evaluate potential exposures by comparing pre-employment or baseline conditions to post-job conditions. The medical surveillance program is a part of each employer's health and safety program.

9.1 Baseline or Pre-employment Monitoring

Prior to being assigned to a hazardous or a potentially hazardous activity involving exposure to toxic materials, each employee must receive a baseline or pre-employment physical. The physical shall evaluate the employees' fitness for duty and the ability to wear respiratory protection. The contents of the physical is to be determined by the employer's medical

consultant. As suggested by NIOSH/OSHA/USCG/EPA's Occupational Safety & Health Guidance Manual for Hazardous Waste Site Activities, the minimum medical monitoring requirements for work at the site is as follows:

- Complete medical and work histories;
- Physical examination within the last 12 months;
- Pulmonary function tests (FVC and FEV1);
- Eye examination and visual acuity;
- Urinalysis; and
- Blood chemistry, including hematology, serum analyses, and heavy metals toxicology.

9.2 Periodic Monitoring

In addition to the baseline or pre-employment physical, all employees require a periodic physical within the last 12 months unless the advising physician believes a shorter interval is appropriate. The employer's medical consultant should prescribe an adequate list of medical tests that fulfills OSHA 29 CFR 1910.120 requirements. The baseline or pre-employment medical tests outlined above may be applicable.

9.3 Site Specific Medical Monitoring

Potential chemical hazards for the site have been identified during the initial investigative phase. The types and levels of chemicals found at the site indicate that additional medical monitoring beyond current baseline and annual physicals is not warranted. Therefore, for activities at the site, no site specific tests will be required prior to individuals entering the Exclusion Zones or Contamination Reduction Zones.

9.4 Exposure/Injury/Medical Support

As a follow-up to an injury or possible exposure above established exposure limits, all employees are entitled to and encouraged to seek medical attention and physical testing. Depending on the type of exposure, it is critical to perform follow-up testing within 24-48 hours. It will be up to the employer's medical consultant to advise the type of test required to accurately monitor for exposure effects.

9.5 Exit Physical

At termination of employment or re-assignment to an activity or location which does not represent a risk of exposure to hazardous conditions, an employee shall not require an exit physical unless an exposure to a hazardous chemical or a physical injury has been documented while working on this project. The advising medical consultant has the right to determine adequacy and necessity of the exit exam.

10.0 SPILL CONTAINMENT PROGRAM

The procedures defined in this section comprise the spill containment program in place for activities at the site.

- All drums and containers used at the site for storage of the generated waste shall meet the appropriate UN, DOT, OSHA, and EPA regulations.
- Drums and containers shall be inspected and their integrity assured prior to being moved.
- The storage of drums at the site shall be organized to minimize the drum or container movement.
- Personnel involved in drum and container handling at the site should be warned of the hazards associated with the drums.
- Where spills, leaks, or ruptures may occur spill containment equipment sufficient to contain and isolate the entire volume of hazardous substances being transferred.
- Drums or containers that cannot be moved without failure, shall be emptied into a sound container.

11.0 AUTHORIZATION

11.1 Site Health and Safety Officer

The Site Health and Safety Officer and the OSC has the authority to enforce all rules and regulations applicable to this project and to ensure the appropriate policies and procedures are followed.

Stop-work authority is authorized for violations of this SHSP. If work is stopped due to a SHSP violation, work will be resumed only with approval of the OSC.

11.2 Project Manager

The Project Manager and the Site Health and Safety Officer have the responsibility for making sure that all aspects of the HSP are reviewed prior to starting field activities.

11.3 Contractors and Subcontractors

All contractors and visitors entering secured areas or established work zones at the site shall provide their own Health and Safety Plan and personal protective equipment (PPE). Any other Health and Safety Plan(s) provided by contractors or others shall be consistent with this plan. This plan shall take precedence over other plans that are less stringent, or specific.

11.4 Signatures

The undersigned acknowledge having read, understood and agreed to the general safety guidelines presented in this Site Health and Safety Plan. Site health and safety hazards identified in this plan have been communicated. This record shall be maintained for all site activities performed under the supervision of Wells and shall become a permanent part of the project record.

Client Representatives:

Subcontractor Representatives:

Wells Representatives:

Visitors:

APPENDIX 1

Nearest Medical Facility (Figure 1)

St. Luke's McCall Medical Center
1000 State Street
McCall, Idaho 83638
Phone: (208) 634-2221

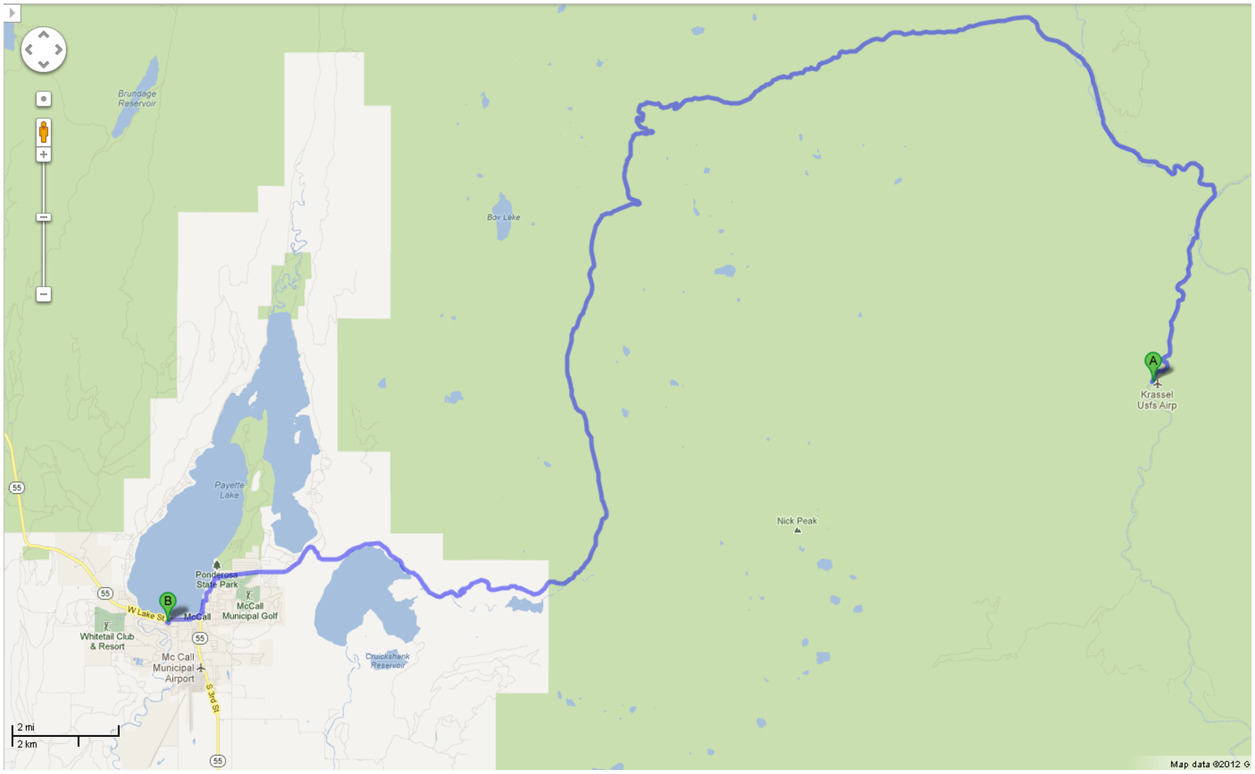
Directions:

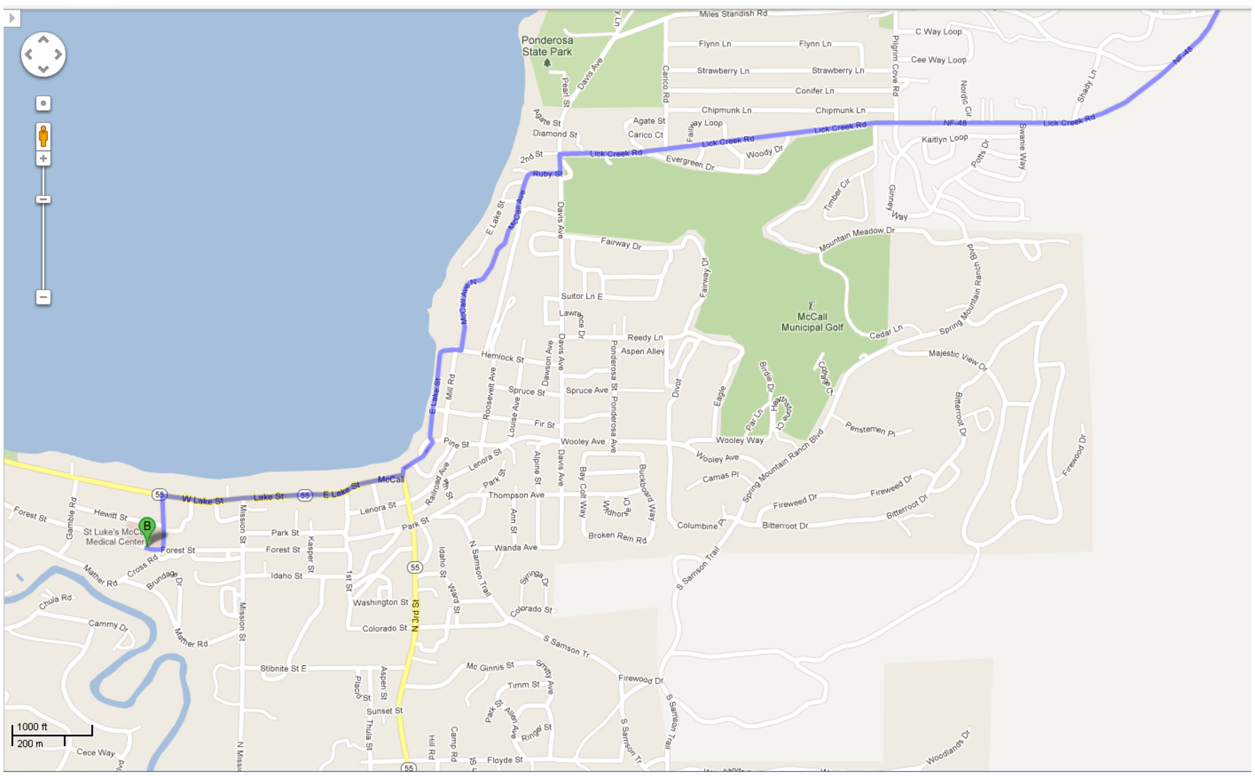
A **Krassel Usfs Airp**
Yellow Pine, ID 83677

1.	Head **northeast** on **Nf 674** About 13 mins	go 3.3 mi total 3.3 mi
2.	Turn left onto **E Fork Rd** About 4 mins	go 0.9 mi total 4.2 mi
3.	Continue onto **Lick Creek Rd** About 2 hours 0 mins	go 32.9 mi total 37.1 mi
4.	Turn left onto **Davis Ave**	go 246 ft total 37.2 mi
5.	Take the 1st right onto **Ruby St**	go 397 ft total 37.2 mi
6.	Turn left onto **McCall Ave N** About 1 min	go 0.5 mi total 37.7 mi
7.	Turn right onto **Hemlock St**	go 217 ft total 37.8 mi
8.	**Hemlock St** turns slightly left and becomes **E Lake St** About 45 secs	go 0.2 mi total 38.0 mi
9.	Turn right to stay on **E Lake St**	go 0.1 mi total 38.1 mi
10.	Take the 2nd right to stay on **E Lake St** About 2 mins	go 0.6 mi total 38.7 mi
11.	Turn left onto **State St** About 1 min	go 0.1 mi total 38.8 mi
12.	Turn right onto **Forest St** Destination will be on the right	go 190 ft total 38.8 mi

B **St. Luke's McCall Medical Center**
1000 State Street, McCall, ID 83638

Figure 1


Brundage Reservoir
Box Lake
Payette Lake
Ponderosa State Park
McCall Municipal Golf
Whitetail Club & Resort
Mc Call Municipal Airport
Cruickshank Reservoir
Nick Peak
Krassel Usfs Airp
W Lake St
McCall
S 3rd St
2 mi
2 km
Map data ©2012


Ponderosa State Park
Miles Standish Rd
Flynn Ln
Strawberry Ln
Conifer Ln
Chipmunk Ln
Lick Creek Rd
NF-48
Evergreen Dr
Ruby St
Davis Ave
Fairway Dr
Mountain Meadow Dr
McCall Municipal Golf
Hemlock St
Spruce St
Wooley Ave
Thompson Ave
E Lake St
W Lake St
McCall
St Luke's McCall Medical Center
Forest St
Park St
Idaho St
Washington St
Colorado St
Stibnite St E
Sunset St
Mission St
S Samson Tr
Firewood Dr
Woodlands Dr
1000 ft
200 m

APPENDIX 2

List of Equipment/Safety Equipment:

General Equipment:

Wet Box/ Dry Box - Decon and Sampling Equipment, 1 ea
Fire Extinguisher 2ea
First Aid Kit with Manual, 1ea
Cones and Caution Tape

Personal Protective Equipment (PPE):

Gloves, Vinyl
Gloves, Work
Goggles
Hard Hats
Rubber Boots with Steel Toes/Steel Toe work boots

APPENDIX 3

Primary Contaminants of Concern Present On-site (MSDS & ToxFAQ sheets):

Pentachlorophenol (PCP, CAS 87-86-5)
Creosote (CAS 65996-93-2)
Selected PAHs
Petroleum Products
Dioxins (CAS 1746-01-06)

ATSDR
AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY

PENTACHLOROPHENOL

CAS #87-86-5

Division of Toxicology ToxFAQs™ **September 2001**

This fact sheet answers the most frequently asked health questions (FAQs) about pentachlorophenol. For more information, call the ATSDR Information Center at 1-888-422-8737. This fact sheet is one in a series of summaries about hazardous substances and their health effects. It is important you understand this information because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

HIGHLIGHTS: Pentachlorophenol is a manufactured chemical which is a restricted use pesticide and is used industrially as a wood preservative for utility poles, railroad ties, and wharf pilings. Exposure to high levels of pentachlorophenol can cause increases in body temperature, liver effects, damage to the immune system, reproductive effects, and developmental effects. This substance has been found in at least 313 of the 1,585 National Priorities List sites identified by the Environmental Protection Agency (EPA).

What is pentachlorophenol?

Pentachlorophenol is a manufactured chemical that does not occur naturally. Pure pentachlorophenol exists as colorless crystals. Impure pentachlorophenol (the form usually found at hazardous waste sites) is dark gray to brown and exists as dust, beads, or flakes. Humans are usually exposed to impure pentachlorophenol (also called technical grade pentachlorophenol).

Pentachlorophenol was widely used as a pesticide and wood preservative. Since 1984, the purchase and use of pentachlorophenol has been restricted to certified applicators. It is no longer available to the general public. It is still used industrially as a wood preservative for utility poles, railroad ties, and wharf pilings.

What happens to pentachlorophenol when it enters the environment?

❏ Pentachlorophenol can be found in the air, water, and soil. It enters the environment through evaporation from treated wood surfaces, industrial spills, and disposal at uncontrolled hazardous waste sites.
❏ Pentachlorophenol is broken down by sunlight, other chemicals, and microorganisms to other chemicals within a couple of days to months.
❏ Pentachlorophenol is found in fish and other foods, but tissue levels are usually low.

How might I be exposed to pentachlorophenol?

❏ The general populations can be exposed to very low levels of pentachlorophenol in contaminated indoor and outdoor air, food, drinking water and soil.
❏ People who work or live near a wood treatment facility or in the production of utility poles, railroad ties, or wharf pilings may be exposed to pentachlorophenol in the air or by coming in contact with the treated wood.
❏ People living near hazardous waste sites may also be exposed to higher than usual levels of pentachlorophenol.

How can pentachlorophenol affect my health?

Studies in workers show that exposure to high levels of pentachlorophenol can cause the cells in the body to produce excess heat. When this occurs, a person may experience a very high fever, profuse sweating, and difficulty breathing. The body temperature can increase to dangerous levels, causing injury to various organs and tissues, and even death. Liver effects and damage to the immune system have also been observed in humans exposed to high levels of pentachlorophenol for a long time. Damage to the thyroid and reproductive system has been observed in laboratory animals exposed to high doses of pentachlorophenol. Some of the harmful effects of pentachlorophenol are caused by the other chemicals present in technical grade pentachlorophenol.

PENTACHLOROPHENOL
CAS #87-86-5

ToxFAQs™ Internet address is http://www.atsdr.cdc.gov/toxfaq.html

How likely is pentachlorophenol to cause cancer?

Some studies have found an increase in cancer risk in workers exposed to high levels of technical grade pentachlorophenol for a long time, but other studies have not found this. Increases in liver, adrenal gland, and nasal tumors have been found in laboratory animals exposed to high doses of pentachlorophenol.

The EPA has determined that pentachlorophenol is a probable human carcinogen and the International Agency for Cancer Research (IARC) considers it possibly carcinogenic to humans.

How can pentachlorophenol affect children?

Infants who were exposed to diapers and bedding which was accidentally contaminated with pentachlorophenol had high fevers, a large amount of sweating, difficulty breathing, and harmful effects on the nervous system and liver, and some died. Although these effects are similar to effects seen in adults exposed to pentachlorophenol, we do not know whether children and adults differ in their susceptibility to pentachlorophenol.

We do not know if exposure to pentachlorophenol will result in birth defects or other developmental effects in people. Death, low body weights, decreased growth, and skeletal effects have been observed in laboratory animals exposed to high levels of pentachlorophenol during development.

How can families reduce the risk of exposure to pentachlorophenol?

Pentachlorophenol was a widely used pesticide for a long time. Today its use is restricted and it can only be used by certified applicators. You may have old containers of pesticides in your attic, basement, or garage that contain pentachlorophenol. Removing these old containers will reduce your family's risk of exposure to pentachlorophenol.

If you live near utility poles and railroad tracks, you should prevent your children from playing, climbing, or sitting on them especially in the hot summer months.

Though pentachlorophenol has been found in some food, its levels are low. You can minimize the risk of your family's exposure by peeling and thoroughly washing fruits and vegetables before cooking.

Children should avoid playing in soils near hazardous waste sites where pentachlorophenol may have been discarded.

Is there a medical test to show whether I've been exposed to pentachlorophenol?

Tests are available to measure pentachlorophenol and its breakdown product in blood, urine, and body tissues. These tests cannot be performed in the doctor's office because they require the use of special equipment. Because pentachlorophenol leaves the body fairly quickly, these tests are best for finding exposures that occurred within the last several days. These tests do not tell you how much pentachlorophenol you have been exposed to and cannot be used to predict the occurrence, nature, or severity of toxic effects.

Has the federal government made recommendations to protect human health?

The EPA has set a limit for drinking water of 1 part of pentachlorophenol per billion parts of water (1 ppb).

The Occupational Safety and Health Administration (OSHA) has set a limit of 0.5 milligrams of pentachlorophenol per cubic meter of workplace air (0.5 mg/m^3) for 8 hour shifts and 40 hour work weeks.

References

Agency for Toxic Substances and Disease Registry (ATSDR). 2001. Toxicological Profile for Pentachlorophenol Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service. Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service.

Where can I get more information? For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology, 1600 Clifton Road NE, Mailstop F-32, Atlanta, GA 30333. Phone: 1-888-422-8737, FAX: 770-488-4178. ToxFAQs Internet address via WWW is http://www.atsdr.cdc.gov/toxfaq.html. ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.

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CREOSOTE

CAS # 8021-39-4, 8001-58-9, 8007-45-2

Division of Toxicology ToxFAQs™ **September 2002**

This fact sheet answers the most frequently asked health questions (FAQs) about creosote. For more information, call the ATSDR Information Center at 1-888-422-8737. This fact sheet is one in a series of summaries about hazardous substances and their health effects. It is important you understand this information because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

HIGHLIGHTS: Creosote is a mixture of many chemicals. Eating food or drinking water with high levels of creosote may cause burning in the mouth and throat, and stomach pain. Long-term contact with creosote has been associated with increased risk of contracting cancer. Creosote has been found in at least 46 of the 1,613 National Priorities List sites identified by the Environmental Protection Agency (EPA).

What is creosote?

Creosote is the name used for a variety of products: wood creosote, coal tar creosote, coal tar, coal tar pitch, and coal tar pitch volatiles. These products are mixtures of many chemicals created by burning of beech and other woods, coal, or from the resin of the creosote bush.

Wood creosote is a colorless to yellowish greasy liquid with a smoky odor and burned taste. Coal tar creosote is a thick, oily liquid typically amber to black in color. Coal tar and coal tar pitch are usually thick, black, or dark-brown liquids or semi-solids, with a smoky odor.

Wood creosote has been used as a disinfectant, a laxative, and a cough treatment, but has since been replaced by better medicines. Coal tar products are used in medicines to treat skin diseases such as psoriasis, and also as animal and bird repellents, insecticides, animal dips, and fungicides. Coal tar creosote is the most widely used wood preservative in the United States. Coal tar, coal tar pitch, and coal tar pitch volatiles are used for roofing, aluminum smelting, and coking.

What happens to creosote when it enters the environment?

❑ Coal tar creosote is released to water and soil mainly as a result of its use in the wood preservation industry.
❑ Components of creosote that do not dissolve in water will remain in place in a tar-like mass.
❑ Some components of coal tar creosote dissolve in water and may move through the soil to groundwater.
❑ Once in groundwater, it may take years for it to break down.
❑ Coal tar creosote can build up in plants and animals.
❑ We do not know what happens to wood creosote when it enters the environment.

How might I be exposed to creosote?

❑ Using products that contain creosote to improve skin problems such as eczema or psoriasis.
❑ Eating herbal remedies containing the leaves from the creosote bush, which are sold as dietary supplements.
❑ Working in the wood preservative, coke-producing, or asphalt industries.
❑ Using creosote-treated wood in building fences, bridges, or railroad tracks, or installing telephone poles.
❑ Living in treated-wood houses that may result in air or skin contact with creosote.
❑ Drinking water contaminated by a hazardous waste site.

How can creosote affect my health?

Eating food or drinking water contaminated with high levels of creosotes may cause a burning in the mouth and throat, and stomach pains. Taking large amounts of herbal remedies containing creosote bush leaves may cause damage to the liver or kidney.

Brief direct contact with large amounts of coal tar creosote may result in a rash or severe irritation of the skin, chemical burns of the surfaces of the eyes, convulsions and mental confusion, kidney or liver problems, unconsciousness, and even death. Longer direct skin contact with low levels of

creosote mixtures or their vapors can result in increased light sensitivity, damage to the cornea, and skin damage. Longer exposure to creosote vapors can cause irritation of the respiratory tract.

How likely is creosote to cause cancer?

Long-term exposure to low levels of creosote, especially direct contact with the skin during wood treatment or manufacture of coal tar creosote-treated products, has resulted in skin cancer and cancer of the scrotum. Cancer of the scrotum in chimney sweeps has been associated with long-term skin exposure to soot and coal tar creosotes. Animal studies have also shown skin cancer from skin exposure to coal tar products.

The International Agency for Research on Cancer (IARC) has determined that coal tar is carcinogenic to humans and that creosote is probably carcinogenic to humans. The EPA has determined that coal tar creosote is a probable human carcinogen.

How can creosote affect children?

There is no unique exposure pathway of children to creosote. Children exposed to creosote will probably experience the same health effects seen in adults exposed to creosote. Children who played on soil contaminated with creosote had more skin rashes than children who played in uncontaminated areas. We do not know whether children differ from adults in their susceptibility to health effects from creosote.

Studies in animals have shown birth defects in the young of mothers exposed to high levels of creosote during pregnancy, but we do not know whether the same effects would occur in humans. Some animal studies indicate that creosotes may cross the placenta and reach the fetus. Because chemical components (PAHs, cresol, phenols) of coal tar creosote may be stored in body fat, they may be found in breast milk and could pass to nursing infants.

How can families reduce the risk of exposure to creosote?

❑ If you live in a residential area that used to have a wood preservation facility or gas manufacturing plant nearby, wear long-sleeved shirts and long pants when working or playing outside and avoid using water contaminated with creosote.
❑ Instruct children not to come in contact with creosote-treated wood when playing on or near railroad tracks, in ditches close to utility poles, in old barns or other farm structures, or on bridges or piers.
❑ Avoid using herbal remedies containing the leaves of the creosote bush and seek alternatives to skin remedies containing creosote.
❑ If you are exposed to creosote in the workplace, make sure you do not carry the chemical home in your clothing, skin, hair, tools, or other objects from the workplace (shower before going home).

Is there a medical test to show whether I've been exposed to creosote?

There is no medical test to determine if you have been exposed to creosote. Some components of creosote mixtures can be measured in body tissues, urine, or blood after exposure to creosote. These tests cannot tell whether harmful health effects will occur. The tests are not routinely available at the doctor's office because they require special equipment.

Has the federal government made recommendations to protect human health?

The Occupational Safety and Health Administration (OSHA) has set an exposure limit of 0.2 milligrams of coal tar pitch volatiles per cubic meter of air (0.2 mg/m^3) in workplace air during an 8-hour day, 40-hour workweek.

References

Agency for Toxic Substances and Disease Registry (ATSDR). 2002. Toxicological Profile for Creosote (Update). Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service.

Where can I get more information? For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology, 1600 Clifton Road NE, Mailstop F-32, Atlanta, GA 30333. Phone: 1-888-422-8737, FAX: 770-488-4178. ToxFAQs Internet address via WWW is http://www.atsdr.cdc.gov/toxfaq.html. ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.

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POLYCYCLIC AROMATIC HYDROCARBONS (PAHs)

Agency for Toxic Substances and Disease Registry ToxFAQs **September 1996**

This fact sheet answers the most frequently asked health questions (FAQs) about polycyclic aromatic hydrocarbons (PAHs). For more information, call the ATSDR Information Center at 1-888-422-8737. This fact sheet is one in a series of summaries about hazardous substances and their health effects. This information is important because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

SUMMARY: Exposure to polycyclic aromatic hydrocarbons usually occurs by breathing air contaminated by wild fires or coal tar, or by eating foods that have been grilled. PAHs have been found in at least 600 of the 1,430 National Priorities List sites identified by the Environmental Protection Agency (EPA).

What are polycyclic aromatic hydrocarbons?

(Pronounced pŏl′ĭ-sī′klĭk ăr′ə-măt′ĭk hī′drə-kar′bənz)

Polycyclic aromatic hydrocarbons (PAHs) are a group of over 100 different chemicals that are formed during the incomplete burning of coal, oil and gas, garbage, or other organic substances like tobacco or charbroiled meat. PAHs are usually found as a mixture containing two or more of these compounds, such as soot.

Some PAHs are manufactured. These pure PAHs usually exist as colorless, white, or pale yellow-green solids. PAHs are found in coal tar, crude oil, creosote, and roofing tar, but a few are used in medicines or to make dyes, plastics, and pesticides.

What happens to PAHs when they enter the environment?

- PAHs enter the air mostly as releases from volcanoes, forest fires, burning coal, and automobile exhaust.
- PAHs can occur in air attached to dust particles.
- Some PAH particles can readily evaporate into the air from soil or surface waters.
- PAHs can break down by reacting with sunlight and other chemicals in the air, over a period of days to weeks.
- PAHs enter water through discharges from industrial and wastewater treatment plants.
- Most PAHs do not dissolve easily in water. They stick to solid particles and settle to the bottoms of lakes or rivers.
- Microorganisms can break down PAHs in soil or water after a period of weeks to months.
- In soils, PAHs are most likely to stick tightly to particles; certain PAHs move through soil to contaminate underground water.
- PAH contents of plants and animals may be much higher than PAH contents of soil or water in which they live.

How might I be exposed to PAHs?

- Breathing air containing PAHs in the workplace of coking, coal-tar, and asphalt production plants; smokehouses; and municipal trash incineration facilities.
- Breathing air containing PAHs from cigarette smoke, wood smoke, vehicle exhausts, asphalt roads, or agricultural burn smoke.
- Coming in contact with air, water, or soil near hazardous waste sites.
- Eating grilled or charred meats; contaminated cereals, flour, bread, vegetables, fruits, meats; and processed or pickled foods.
- Drinking contaminated water or cow's milk.

ToxFAQs Internet address via WWW is http://www.atsdr.cdc.gov/toxfaq.html

- Nursing infants of mothers living near hazardous waste sites may be exposed to PAHs through their mother's milk.

How can PAHs affect my health?

Mice that were fed high levels of one PAH during pregnancy had difficulty reproducing and so did their offspring. These offspring also had higher rates of birth defects and lower body weights. It is not known whether these effects occur in people.

Animal studies have also shown that PAHs can cause harmful effects on the skin, body fluids, and ability to fight disease after both short- and long-term exposure. But these effects have not been seen in people.

How likely are PAHs to cause cancer?

The Department of Health and Human Services (DHHS) has determined that some PAHs may reasonably be expected to be carcinogens.

Some people who have breathed or touched mixtures of PAHs and other chemicals for long periods of time have developed cancer. Some PAHs have caused cancer in laboratory animals when they breathed air containing them (lung cancer), ingested them in food (stomach cancer), or had them applied to their skin (skin cancer).

Is there a medical test to show whether I've been exposed to PAHs?

In the body, PAHs are changed into chemicals that can attach to substances within the body. There are special tests that can detect PAHs attached to these substances in body tissues or blood. However, these tests cannot tell whether any health effects will occur or find out the extent or source of your exposure to the PAHs. The tests aren't usually available in your doctor's office because special equipment is needed to conduct them.

Has the federal government made recommendations to protect human health?

The Occupational Safety and Health Administration (OSHA) has set a limit of 0.2 milligrams of PAHs per cubic meter of air (0.2 mg/m^3). The OSHA Permissible Exposure Limit (PEL) for mineral oil mist that contains PAHs is 5 mg/m^3 averaged over an 8-hour exposure period.

The National Institute for Occupational Safety and Health (NIOSH) recommends that the average workplace air levels for coal tar products not exceed 0.1 mg/m^3 for a 10-hour workday, within a 40-hour workweek. There are other limits for workplace exposure for things that contain PAHs, such as coal, coal tar, and mineral oil.

Glossary

Carcinogen: A substance that can cause cancer.

Ingest: Take food or drink into your body.

References

Agency for Toxic Substances and Disease Registry (ATSDR). 1995. Toxicological profile for polycyclic aromatic hydrocarbons. Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service.

Where can I get more information? For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology, 1600 Clifton Road NE, Mailstop F-32, Atlanta, GA 30333. Phone: 1-888-422-8737, FAX: 770-488-4178. ToxFAQs Internet address via WWW is http://www.atsdr.cdc.gov/toxfaq.html ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.

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AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY

TOTAL PETROLEUM HYDROCARBONS (TPH)

Agency for Toxic Substances and Disease Registry ToxFAQs **August 1999**

This fact sheet answers the most frequently asked health questions (FAQs) about total petroleum hydrocarbons (TPH). For more information, call the ATSDR Information Center at 1-888-422-8737. This fact sheet is one in a series of summaries about hazardous substances and their health effects. It's important you understand this information because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

HIGHLIGHTS: TPH is a mixture of many different compounds. Everyone is exposed to TPH from many sources, including gasoline pumps, spilled oil on pavement, and chemicals used at home or work. Some TPH compounds can affect your nervous system, causing headaches and dizziness. TPH has been found in at least 23 of the 1,467 National Priorities List sites identified by the Environmental Protection Agency (EPA).

What are total petroleum hydrocarbons?

(Pronounced tōt′l pə-trō′lē-əm hī′drə-kär′bənz)

Total petroleum hydrocarbons (TPH) is a term used to describe a large family of several hundred chemical compounds that originally come from crude oil. Crude oil is used to make petroleum products, which can contaminate the environment. Because there are so many different chemicals in crude oil and in other petroleum products, it is not practical to measure each one separately. However, it is useful to measure the total amount of TPH at a site.

TPH is a mixture of chemicals, but they are all made mainly from hydrogen and carbon, called hydrocarbons. Scientists divide TPH into groups of petroleum hydrocarbons that act alike in soil or water. These groups are called petroleum hydrocarbon fractions. Each fraction contains many individual chemicals.

Some chemicals that may be found in TPH are hexane, jet fuels, mineral oils, benzene, toluene, xylenes, naphthalene, and fluorene, as well as other petroleum products and gasoline components. However, it is likely that samples of TPH will contain only some, or a mixture, of these chemicals.

What happens to TPH when it enters the environment?

- TPH may enter the environment through accidents, from industrial releases, or as byproducts from commercial or private uses.
- TPH may be released directly into water through spills or leaks.
- Some TPH fractions will float on the water and form surface films.
- Other TPH fractions will sink to the bottom sediments.
- Bacteria and microorganisms in the water may break down some of the TPH fractions.
- Some TPH fractions will move into the soil where they may stay for a long time.

How might I be exposed to TPH?

- Everyone is exposed to TPH from many sources.
- Breathing air at gasoline stations, using chemicals at home or work, or using certain pesticides.
- Drinking water contaminated with TPH.
- Working in occupations that use petroleum products.
- Living in an area near a spill or leak of petroleum products.
- Touching soil contaminated with TPH.

ToxFAQs Internet address via WWW is http://www.atsdr.cdc.gov/toxfaq.html

How can TPH affect my health?

Some of the TPH compounds can affect your central nervous system. One compound can cause headaches and dizziness at high levels in the air. Another compound can cause a nerve disorder called "peripheral neuropathy," consisting of numbness in the feet and legs. Other TPH compounds can cause effects on the blood, immune system, lungs, skin, and eyes.

Animal studies have shown effects on the lungs, central nervous system, liver, and kidney from exposure to TPH compounds. Some TPH compounds have also been shown to affect reproduction and the developing fetus in animals.

How likely is TPH to cause cancer?

The International Agency for Research on Cancer (IARC) has determined that one TPH compound (benzene) is carcinogenic to humans. IARC has determined that other TPH compounds (benzo[a]pyrene and gasoline) are probably and possibly carcinogenic to humans. Most of the other TPH compounds are considered not to be classifiable by IARC.

Is there a medical test to show whether I've been exposed to TPH?

There is no medical test that shows if you have been exposed to TPH. However, there are methods to determine if you have been exposed to some TPH compounds. Exposure to kerosene can be determined by its smell on the breath or clothing. Benzene can be measured in exhaled air and a breakdown product of benzene can be measured in urine. Other TPH compounds can be measured in blood, urine, breath, and some body tissues.

Has the federal government made recommendations to protect human health?

There are no regulations or advisories specific to TPH. The following are recommendations for some of the TPH fractions and compounds:

The EPA requires that spills or accidental releases into the environment of 10 pounds or more of benzene be reported to the EPA.

The Occupational Safety and Health Administration has set an exposure limit of 500 parts of petroleum distillates per million parts of air (500 ppm) for an 8-hour workday, 40-hour workweek.

Glossary

Carcinogenicity: Ability to cause cancer.

CAS: Chemical Abstracts Service.

Immune system: Body organs and cells that fight disease.

Pesticides: Chemicals used to kill pests.

References

Agency for Toxic Substances and Disease Registry (ATSDR). 1999. Toxicological profile for total petroleum hydrocarbons (TPH). Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service.

Where can I get more information? For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology, 1600 Clifton Road NE, Mailstop F-32, Atlanta, GA 30333. Phone: 1-888-422-8737, FAX: 770-488-4178. ToxFAQs Internet address via WWW is http://www.atsdr.cdc.gov/toxfaq.html ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.

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BENZENE

CAS # 71-43-2

Division of Toxicology and Environmental Medicine ToxFAQs™ **August 2007**

This fact sheet answers the most frequently asked health questions (FAQs) about benzene. For more information, call the ATSDR Information Center at 1-800-232-4636. This fact sheet is one in a series of summaries about hazardous substances and their health effects. It is important you understand this information because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

HIGHLIGHTS: Benzene is a widely used chemical formed from both natural processes and human activities. Breathing benzene can cause drowsiness, dizziness, and unconsciousness; long-term benzene exposure causes effects on the bone marrow and can cause anemia and leukemia. Benzene has been found in at least 1,000 of the 1,684 National Priority List sites identified by the Environmental Protection Agency (EPA).

What is benzene?

Benzene is a colorless liquid with a sweet odor. It evaporates into the air very quickly and dissolves slightly in water. It is highly flammable and is formed from both natural processes and human activities.

Benzene is widely used in the United States; it ranks in the top 20 chemicals for production volume. Some industries use benzene to make other chemicals which are used to make plastics, resins, and nylon and other synthetic fibers. Benzene is also used to make some types of rubbers, lubricants, dyes, detergents, drugs, and pesticides. Natural sources of benzene include emissions from volcanoes and forest fires. Benzene is also a natural part of crude oil, gasoline, and cigarette smoke.

What happens to benzene when it enters the environment?

❑ Industrial processes are the main source of benzene in the environment.
❑ Benzene can pass into the air from water and soil.
❑ It reacts with other chemicals in the air and breaks down within a few days.
❑ Benzene in the air can attach to rain or snow and be carried back down to the ground.
❑ It breaks down more slowly in water and soil, and can pass through the soil into underground water.
❑ Benzene does not build up in plants or animals.

How might I be exposed to benzene?

❑ Outdoor air contains low levels of benzene from tobacco smoke, automobile service stations, exhaust from motor vehicles, and industrial emissions.
❑ Vapors (or gases) from products that contain benzene, such as glues, paints, furniture wax, and detergents, can also be a source of exposure.
❑ Air around hazardous waste sites or gas stations will contain higher levels of benzene.
❑ Working in industries that make or use benzene.

How can benzene affect my health?

Breathing very high levels of benzene can result in death, while high levels can cause drowsiness, dizziness, rapid heart rate, headaches, tremors, confusion, and unconsciousness. Eating or drinking foods containing high levels of benzene can cause vomiting, irritation of the stomach, dizziness, sleepiness, convulsions, rapid heart rate, and death.

The major effect of benzene from long-term exposure is on the blood. Benzene causes harmful effects on the bone

marrow and can cause a decrease in red blood cells leading to anemia. It can also cause excessive bleeding and can affect the immune system, increasing the chance for infection.

Some women who breathed high levels of benzene for many months had irregular menstrual periods and a decrease in the size of their ovaries, but we do not know for certain that benzene caused the effects. It is not known whether benzene will affect fertility in men.

How likely is benzene to cause cancer?

Long-term exposure to high levels of benzene in the air can cause leukemia, particularly acute myelogenous leukemia, often referred to as AML. This is a cancer of the blood-forming organs. The Department of Health and Human Services (DHHS) has determined that benzene is a known carcinogen. The International Agency for Research on Cancer (IARC) and the EPA have determined that benzene is carcinogenic to humans.

How can benzene affect children?

Children can be affected by benzene exposure in the same ways as adults. It is not known if children are more susceptible to benzene poisoning than adults.

Benzene can pass from the mother's blood to a fetus. Animal studies have shown low birth weights, delayed bone formation, and bone marrow damage when pregnant animals breathed benzene.

How can families reduce the risks of exposure to benzene?

Benzene exposure can be reduced by limiting contact with gasoline and cigarette smoke. Families are encouraged not to smoke in their house, in enclosed environments, or near their children.

Is there a medical test to determine whether I've been exposed to benzene?

Several tests can show if you have been exposed to benzene. There is a test for measuring benzene in the breath; this test must be done shortly after exposure. Benzene can also be measured in the blood; however, since benzene disappears rapidly from the blood, this test is only useful for recent exposures.

In the body, benzene is converted to products called metabolites. Certain metabolites can be measured in the urine. The metabolite S-phenylmercapturic acid in urine is a sensitive indicator of benzene exposure. However, this test must be done shortly after exposure and is not a reliable indicator of how much benzene you have been exposed to, since the metabolites may be present in urine from other sources.

Has the federal government made recommendations to protect human health?

The EPA has set the maximum permissible level of benzene in drinking water at 5 parts benzene per billion parts of water (5 ppb).

The Occupational Safety and Health Administration (OSHA) has set limits of 1 part benzene per million parts of workplace air (1 ppm) for 8 hour shifts and 40 hour work weeks.

References

Agency for Toxic Substances and Disease Registry (ATSDR). 2007. Toxicological Profile for Benzene (Update). Atlanta, GA: U.S. Department of Public Health and Human Services, Public Health Service.

Where can I get more information? For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology and Environmental Medicine, 1600 Clifton Road NE, Mailstop F-32, Atlanta, GA 30333. Phone: 1-800-232-4636, FAX: 770-488-4178. ToxFAQs Internet address via WWW is http://www.atsdr.cdc.gov/toxfaq.html. ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.

ATSDR
AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY

TOLUENE
CAS # 108-88-3

Division of Toxicology ToxFAQs™ **February 2001**

This fact sheet answers the most frequently asked health questions (FAQs) about toluene. For more information, call the ATSDR Information Center at 1-888-422-8737. This fact sheet is one in a series of summaries about hazardous substances and their health effects. It's important you understand this information because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

HIGHLIGHTS: Exposure to toluene occurs from breathing contaminated workplace air, in automobile exhaust, some consumer products paints, paint thinners, fingernail polish, lacquers, and adhesives. Toluene affects the nervous system. Toluene has been found at 959 of the 1,591 National Priority List sites identified by the Environmental Protection Agency

What is toluene?

Toluene is a clear, colorless liquid with a distinctive smell. Toluene occurs naturally in crude oil and in the tolu tree. It is also produced in the process of making gasoline and other fuels from crude oil and making coke from coal.

Toluene is used in making paints, paint thinners, fingernail polish, lacquers, adhesives, and rubber and in some printing and leather tanning processes.

What happens to toluene when it enters the environment?

❑ Toluene enters the environment when you use materials that contain it. It can also enter surface water and groundwater from spills of solvents and petrolieum products as well as from leasking underground storage tanks at gasoline stations and other facilities.

❑ When toluene-containing products are placed in landfills or waste disposal sites, the toluene can enter the soil or water near the waste site.

❑ Toluene does not usually stay in the environment long.

❑ Toluene does not concentrate or buildup to high levels in animals.

How might I be exposed to toluene?

❑ Breathing contaminated workplace air or automobile exhaust.

❑ Working with gasoline, kerosene, heating oil, paints, and lacquers.

❑ Drinking contaminated well-water.

❑ Living near uncontrolled hazardous waste sites containing toluene products.

How can toluene affect my health?

Toluene may affect the nervous system. Low to moderate levles can cause tiredness, confusion, weakness, drunken-type actions, memory loss, nausea, loss of appetite, and

hearing and color vision loss. These symptoms usually disappear when exposure is stopped.

Inhaling High levels of toluene in a short time can make you feel light-headed, dizzy, or sleepy. It can also cause unconsciousness, and even death.

High levels of toluene may affect your kidneys.

How likely is toluene to cause cancer?

Studies in humans and animals generally indicate that toluene does not cause cancer.

The EPA has determined that the carcinogenicity of toluene can not be classified.

How can toluene affect children?

It is likely that health effects seen in children exposed to toluene will be similar to the effects seen in adults. Some studies in animals suggest that babies may be more sensitive than adults.

Breathing very high levels of toluene during pregnancy can result in children with birth defects and retard mental abilities, and growth. We do not know if toluene harms the unborn child if the mother is exposed to low levels of toluene during pregnancy.

How can families reduce the risk of exposure to toluene?

❑ Use toluene-containing products in well-ventilated areas.

❑ When not in use, toluene-containing products should be tightly covered to prevent evaporation into the air.

Is there a medical test to show whether I've been exposed to toluene?

There are tests to measure the level of toluene or its breakdown products in exhaled air, urine, and blood. To determine if you have been exposed to toluene, your urine or blood must be checked within 12 hours of exposure. Several other chemicals are also changed into the same breakdown products as toluene, so some of these tests are not specific for toluene.

Has the federal government made recommendations to protect human health?

EPA has set a limit of 1 milligram per liter of drinking water (1 mg/L).

Discharges, releases, or spills of more than 1,000 pounds of toluene must be reported to the National Response Center.

The Occupational Safety and Health Administration has set a limit of 200 parts toluene per million of workplace air (200 ppm).

References

Agency for Toxic Substances and Disease Registry (ATSDR). 2000. Toxicological Profile for Toluene. Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service.

Where can I get more information? For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology, 1600 Clifton Road NE, Mailstop F-32, Atlanta, GA 30333. Phone: 1-888-422-8737, FAX: 770-488-4178. ToxFAQs™ Internet address is http://www.atsdr.cdc.gov/toxfaq.html . ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.

ATSDR
AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY

ETHYLBENZENE

CAS # 100-41-4

Division of Toxicology and Environmental Medicine ToxFAQs™ September 2007

This fact sheet answers the most frequently asked health questions (FAQs) about ethylbenzene. For more information, call the ATSDR Information Center at 1-800-232-4636. This fact sheet is one in a series of summaries about hazardous substances and their health effects. It is important you understand this information because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

HIGHLIGHTS: Ethylbenzene is a colorless liquid found in a number of products including gasoline and paints. Breathing very high levels can cause dizziness and throat and eye irritation. Breathing lower levels has resulted in hearing effects and kidney damage in animals. Ethylbenzene has been found in at least 829 of 1,689 National Priorities List sites identified by the Environmental Protection Agency (EPA).

What is ethylbenzene?

Ethylbenzene is a colorless, flammable liquid that smells like gasoline.
It is naturally found in coal tar and petroleum and is also found in manufactured products such as inks, pesticides, and paints.
Ethylbenzene is used primarily to make another chemical, styrene. Other uses include as a solvent, in fuels, and to make other chemicals.

What happens to ethylbenzene when it enters the environment?

- ❏ Ethylbenzene moves easily into the air from water and soil.
- ❏ It takes about 3 days for ethylbenzene to be broken down in air into other chemicals.
- ❏ In surface water, ethylbenzene breaks down by reacting with other chemicals found naturally in water.
- ❏ Ethylbenzene can move through soil into groundwater
- ❏ In soil, it is broken down by bacteria.

How might I be exposed to ethylbenzene?

- ❏ If you live in a city or near many factories or heavily traveled highways, you may be exposed to ethylbenzene in air.
- ❏ Releases of ethylbenzene into the air occur from burning oil, gas, and coal and from industries using ethylbenzene.
- ❏ Ethylbenzene is not often found in drinking water. Higher levels may be found in residential drinking water wells near landfills, waste sites, or leaking underground fuel storage tanks.
- ❏ Working in an industry where ethylbenzene is used or made.
- ❏ Using products containing it, such as gasoline, carpet glues, varnishes, and paints.

How can ethylbenzene affect my health?

Exposure to high levels of ethylbenzene in air for short periods can cause eye and throat irritation. Exposure to higher levels can result in dizziness.
Irreversible damage to the inner ear and hearing has been observed in animals exposed to relatively low concentrations of ethylbenzene for several days to weeks.
Exposure to relatively low concentrations of ethylbenzene in air for several months to years causes kidney damage in animals.

How likely is ethylbenzene to cause cancer?

The International Agency for Research on Cancer (IARC) has determined that ethylbenzene is a possible human carcinogen.

ETHYLBENZENE
CAS # 100-41-4

How can ethylbenzene affect children?

There are no studies evaluating the effects of ethylbenzene exposure on children or immature animals. It is likely that children would have the same health effects as adults. We do not know whether children would be more sensitive than adults to the effects of ethylbenzene.
We do not know if ethylbenzene will cause birth defects in humans. Minor birth defects and low birth weight have occurred in newborn animals whose mothers were exposed to ethylbenzene in air during pregnancy.

How can families reduce the risks of exposure to ethylbenzene?

❑ Use adequate ventilation to reduce exposure to ethylbenzene vapors from consumer products such as gasoline, pesticides, varnishes and paints, and newly installed carpeting.
❑ Sometimes older children sniff household chemicals, including ethylbenzene, in an attempt to get high. Talk with your children about the dangers of sniffing chemicals.
❑ Household chemicals should be stored out of reach of children to prevent accidental poisoning. Always store household chemicals in their original containers; never store them in containers that children would find attractive to eat or drink from, such as old soda bottles. Gasoline should be stored in a gasoline can with a locked cap.

Is there a medical test to determine whether I've been exposed to ethylbenzene?

Ethylbenzene is found in the blood, urine, breath, and some body tissues of exposed people. The most common way to test for ethylbenzene is in the urine. This test measures substances formed by the breakdown of ethylbenzene. Because these substances leave the body very quickly, this test needs to be done within a few hours after exposure occurs.

These tests can show you were exposed to ethylbenzene, but cannot predict the kind of health effects that might occur.

Has the federal government made recommendations to protect human health?

The EPA has determined that exposure to ethylbenzene in drinking water at concentrations of 30 ppm for 1 day or 3 ppm for 10 days is not expected to cause any adverse effects in a child.
The EPA has determined that lifetime exposure to 0.7 ppm ethylbenzene is not expected to cause any adverse effects.
The Occupational Health and Safety Administration (OSHA) has limited workers' exposure to an average of 100 ppm for an 8-hour workday, 40-hour workweek.

References

Agency for Toxic Substances and Disease Registry (ATSDR). 2007. Toxicological Profile for Ethylbenzene (Draft for Public Comment). Atlanta, GA: U.S. Department of Public Health and Human Services, Public Health Service.

Where can I get more information? For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology and Environmental Medicine, 1600 Clifton Road NE, Mailstop F-32, Atlanta, GA 30333. Phone: 1-800-232-4636, FAX: 770-488-4178. ToxFAQs Internet address via WWW is http://www.atsdr.cdc.gov/toxfaq.html. ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.

ATSDR
AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY

XYLENE
CAS # 1330-20-7

Division of Toxicology and Environmental Medicine ToxFAQs™ **September 2005**

This fact sheet answers the most frequently asked health questions (FAQs) about xylene. For more information, call the ATSDR Information Center at 1-888-422-8737. This fact sheet is one in a series of summaries about hazardous substances and their health effects. It is important you understand this information because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

HIGHLIGHTS: Exposure to xylene occurs in the workplace and when you use paint, gasoline, paint thinners and other products that contain it. People who breathe high levels may have dizziness, confusion, and a change in their sense of balance. Xylene has been found in at least 844 of the 1,662 National Priority List sites identified by the Environmental Protection Agency (EPA).

What is xylene?

There are three forms of xylene in which the methyl groups vary on the benzene ring: *meta*-xylene, *ortho*-xylene, and *para*-xylene (*m*-, *o*-, and *p*-xylene). These different forms are referred to as isomers.

Xylene is a colorless, sweet-smelling liquid that catches on fire easily. It occurs naturally in petroleum and coal tar. Chemical industries produce xylene from petroleum. It is one of the top 30 chemicals produced in the United States in terms of volume.

Xylene is used as a solvent and in the printing, rubber, and leather industries. It is also used as a cleaning agent, a thinner for paint, and in paints and varnishes. It is found in small amounts in airplane fuel and gasoline.

What happens to xylene when it enters the environment?

❏ Xylene evaporates quickly from the soil and surface water into the air.
❏ In the air, it is broken down by sunlight into other less harmful chemicals.
❏ It is broken down by microorganisms in soil and water.
❏ Only a small amount of it builds up in fish, shellfish, plants, and other animals living in xylene-contaminated water.

How might I be exposed to xylene?

❏ Using a variety of consumer products including gasoline, pain, varnish, shellac, rust preventives, and cigarette smoke. Xylene can be absorbed through the respiratory tract and through the skin.
❏ Ingesting xylene-contaminated food or water, although these levels are likely to be very low.
❏ Working in a job that involves the use of xylene such as painters, paint industry workers, biomedical laboratory workers, automobile garage workers, metal workers, and furniture refinishers.

How can xylene affect my health?

No health effects have been noted at the background levels that people are exposed to on a daily basis.

High levels of exposure for short or long periods can cause headaches, lack of muscle coordination, dizziness, confusion, and changes in one's sense of balance. Exposure of people to high levels of xylene for short periods can also cause irritation of the skin, eyes, nose, and throat; difficulty in breathing; problems with the lungs; delayed reaction time; memory difficulties; stomach discomfort; and possibly changes in the liver and kidneys. It can cause unconsciousness and even death at very high levels.

XYLENE
CAS # 1330-20-7

ToxFAQs™ Internet address is http://www.atsdr.cdc.gov/toxfaq.html

How likely is xylene to cause cancer?
Both the International Agency for Research on Cancer (IARC) and the EPA have found that there is insufficient information to determine whether or not xylene is carcinogenic.

How can xylene affect children?
The effects of xylene have not been studied in children, but it is likely that they would be similar to those seen in exposed adults. Although there is no direct evidence, children may be more sensitive to acute inhalation exposure than adults because their narrower airways would be more sensitive to swelling effects.

Studies of unborn animals indicate that high concentrations of xylene may cause increased numbers of deaths, and delayed growth and development. In many instances, these same concentrations also cause damage to the mothers. We do not know if xylene harms the unborn child if the mother is exposed to low levels of xylene during pregnancy.

How can families reduce the risks of exposure to xylene?
❑ Exposure to xylene as solvents (in paints or gasoline) can be reduced if the products are used with adequate ventilation and if they are stored in tightly closed containers out of the reach of small children.
❑ Sometimes older children sniff household chemicals in attempt to get high. Talk with your children about the dangers of sniffing xylene.
❑ If products containing xylene are spilled on the skin, then the excess should be wiped off and the area cleaned with soap and water.

Is there a medical test to determine whether I've been exposed to xylene?
Laboratory tests can detect xylene or its breakdown products in exhaled air, blood, or urine. There is a high degree of agreement between the levels of exposure to xylene and the levels of xylene breakdown products in the urine. However, a urine sample must be provided very soon after exposure ends because xylene quickly leaves the body. These tests are not routinely available at your doctor's office.

Has the federal government made recommendations to protect human health?
The EPA set a limit of 10 parts xylene per million parts drinking water (10 ppm).

The Occupational Safety and Health Administration (OSHA) has set limits of 100 parts xylene per million parts of workplace air (100 ppm) for 8 hour shifts and 40 hour work weeks.

References
Agency for Toxic Substances and Disease Registry (ATSDR). 2005. Toxicological Profile for Xylene (Draft for Public Comment). Atlanta, GA: U.S. Department of Public Health and Human Services, Public Health Service.

Where can I get more information? For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology and Environmental Medicine, 1600 Clifton Road NE, Mailstop F-32, Atlanta, GA 30333. Phone: 1-888-422-8737, FAX: 770-488-4178. ToxFAQs Internet address via WWW is http://www.atsdr.cdc.gov/toxfaq.html. ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.

ATSDR
AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY

CHLORINATED DIBENZO-p-DIOXINS (CDDs)

Division of Toxicology and Environmental Medicine ToxFAQs™ **February 1999**

This fact sheet answers the most frequently asked health questions (FAQs) about dibenzo-p-dioxins. For more information, call the ATSDR Information Center at 1-800-232-4636. This fact sheet is one in a series of summaries about hazardous substances and their health effects. It is important you understand this information because these substances may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

HIGHLIGHTS: Exposure to chlorinated dibenzo-p-dioxins (CDDs) (75 chemicals) occurs mainly from eating food that contains the chemicals. One chemical in this group, 2,3,7,8-tetrachlorodibenzo-p-dioxin or 2,3,7,8-TCDD, has been shown to be very toxic in animal studies. It causes effects on the skin and may cause cancer in people. This chemical has been found in at least 91 of the 1,467 National Priorities List sites identified by the Environmental Protection Agency (EPA).

What are CDDs?

CDDs are a family of 75 chemically related compounds commonly known as chlorinated dioxins. One of these compounds is called 2,3,7,8-TCDD. It is one of the most toxic of the CDDs and is the one most studied.

In the pure form, CDDs are crystals or colorless solids. CDDs enter the environment as mixtures containing a number of individual components. 2,3,7,8-TCDD is odorless and the odors of the other CDDs are not known.

CDDs are not intentionally manufactured by industry except for research purposes. They (mainly 2,3,7,8-TCDD) may be formed during the chlorine bleaching process at pulp and paper mills. CDDs are also formed during chlorination by waste and drinking water treatment plants. They can occur as contaminants in the manufacture of certain organic chemicals. CDDs are released into the air in emissions from municipal solid waste and industrial incinerators.

What happens to CDDs when they enter the environment?

❑ When released into the air, some CDDs may be transported long distances, even around the globe.

❑ When released in waste waters, some CDDs are broken down by sunlight, some evaporate to air, but most attach to soil and settle to the bottom sediment in water.

❑ CDD concentrations may build up in the food chain, resulting in measurable levels in animals.

How might I be exposed to CDDs?

❑ Eating food, primarily meat, dairy products, and fish, makes up more than 90% of the intake of CDDs for the general population.

❑ Breathing low levels in air and drinking low levels in water.

❑ Skin contact with certain pesticides and herbicides.

❑ Living near an uncontrolled hazardous waste site containing CDDs or incinerators releasing CDDs.

❑ Working in industries involved in producing certain pesticides containing CDDs as impurities, working at paper and pulp mills, or operating incinerators.

How can CDDs affect my health?

The most noted health effect in people exposed to large amounts of 2,3,7,8-TCDD is chloracne. Chloracne is a severe skin disease with acne-like lesions that occur mainly on the face and upper body. Other skin effects noted in people exposed to high doses of 2,3,7,8-TCDD include skin rashes, discoloration, and excessive body hair. Changes in blood and urine that may indicate liver damage also are seen in people. Exposure to high concentrations of CDDs may induce longterm alterations in glucose metabolism and subtle changes in hormonal levels.

In certain animal species, 2,3,7,8-TCDD is especially harmful and can cause death after a single exposure. Exposure to lower levels can cause a variety of effects in

animals, such as weight loss, liver damage, and disruption of the endocrine system. In many species of animals, 2,3,7,8-TCDD weakens the immune system and causes a decrease in the system's ability to fight bacteria and viruses. In other animal studies, exposure to 2,3,7,8-TCDD has caused reproductive damage and birth defects. Some animal species exposed to CDDs during pregnancy had miscarriages and the offspring of animals exposed to 2,3,7,8-TCDD during pregnancy often had severe birth defects including skeletal deformities, kidney defects, and weakened immune responses.

How likely are CDDs to cause cancer?

Several studies suggest that exposure to 2,3,7,8-TCDD increases the risk of several types of cancer in people. Animal studies have also shown an increased risk of cancer from exposure to 2,3,7,8-TCDD.
The World Health Organization (WHO) has determined that 2,3,7,8-TCDD is a human carcinogen.
The Department of Health and Human Services (DHHS) has determined that 2,3,7,8-TCDD may reasonably be anticipated to cause cancer.

How can CDDs affect children?

Very few studies have looked at the effects of CDDs on children. Chloracne has been seen in children exposed to high levels of CDDs. We don't know if CDDs affect the ability of people to have children or if it causes birth defects, but given the effects observed in animal studies, this cannot be ruled out.

How can families reduce the risk of exposure to CDDs?

❏ Children should avoid playing in soils near uncontrolled hazardous waste sites.
❏ Discourage children from eating dirt or putting toys or other objects in their mouths.
❏ Everyone should wash hands frequently if playing or working near uncontrolled hazardous waste sites.
❏ For new mothers and young children, restrict eating foods from the proximity of uncontrolled sites with known CDDs.
❏ Children and adults should eat a balanced diet preferably containing low to moderate amounts of animal fats including meat and dairy products, and fish that contain lower amounts of CDDs and eat larger amounts of fruits, vegetables, and grains.

Is there a medical test to determine whether I've been exposed to CDDs?

Tests are available to measure CDD levels in body fat, blood, and breast milk, but these tests are not routinely available. Most people have low levels of CDDs in their body fat and blood, and levels considerably above these levels indicate past exposure to above-normal levels of 2,3,7,8-TCDD. Although CDDs stay in body fat for a long time, tests cannot be used to determine when exposure occurred.

Has the federal government made recommendations to protect human health?

The EPA has set a limit of 0.00003 micrograms of 2,3,7,8-TCDD per liter of drinking water (0.00003 µg/L). Discharges, spills, or accidental releases of 1 pound or more of 2,3,7,8-TCDD must be reported to EPA. The Food and Drug Administration (FDA) recommends against eating fish and shellfish with levels of 2,3,7,8-TCDD greater than 50 parts per trillion (50 ppt).

References

Agency for Toxic Substances and Disease Registry (ATSDR). 1998. Toxicological Profile for Chlorinated Dibenzo-p-Dioxins. Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service.

Where can I get more information? For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology and Environmental Medicine, 1600 Clifton Road NE, Mailstop F-62, Atlanta, GA 30333. Phone: 1-800-232-4636, FAX: 770-488-4178. ToxFAQs Internet address via WWW is http://www.atsdr.cdc.gov/toxfaq.html. ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.

APPENDIX 4

TAILGATE SAFETY BRIEFING FORM
Preliminary Assessment/ Site Investigation
Krassel Wood Treatment Site
Payette National Forest, Idaho

Date of Safety Briefing:_____
Site Safety Officer:_____

Discussion topics:

_____ overview of HSP including any changes
_____ emergency contacts
_____ chemical hazards
_____ exposure prevention
_____ decontamination requirements
_____ physical hazards and prevention
_____ hazard mitigation for upcoming tasks
_____ waste handling and cross-media transfer prevention
_____ site control
_____ previously-observed noncompliance with the HSP and corrective actions taken
_____ other topics pertinent to completion of project objectives (list below):

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Signatures of attendees at tailgate safety briefing:

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