



SOIL REMOVAL ACTION REPORT

Environmental Investigation at the Formerly Used Defense Site (FUDS)
at the former Benicia Army Arsenal, Benicia, California
FUDS Number: J09CA075600

DRAFT FINAL

Prepared for:



DEPARTMENT OF DEFENSE
UNITED STATES ARMY ENGINEER DISTRICT, SACRAMENTO DISTRICT
CORPS OF ENGINEERS
1325 J Street
Sacramento, California 95814-2922

Prepared by:



BROWN AND CALDWELL
10540 White Rock Road, Suite 180
Rancho Cordova, CA 95670
(916) 444-0123

April 2010

Contract No. GSA GS-10F-0101L

**SOIL REMOVAL ACTION REPORT
BENICIA ARMY ARSENAL, BENICIA, CALIFORNIA**

Signatures of principal personnel responsible for development and execution of this *Soil Removal Action Report*.

Approved:



Wendy Linck, P.G. # 6934
Project Manager



Greg Menna
Task Leader

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ACRONYMS AND ABBREVIATIONS

APP	Accident Prevention Plan
Arsenal	Benicia Army Arsenal
bgs	below ground surface
BMPs	Best Management Practices
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CHM	Conceptual Hydrogeologic Model
COCs	chemicals of concern
COPCs	chemicals of potential concern
DERP	Defense Environmental Restoration Program
DoD	Department of Defense
DRO	Diesel Range Organics
ELAP	Environmental Laboratory Accreditation Program
ESLs	environmental screening levels
ft	feet
FUDS	Formerly Used Defense Site
GPS	Global Positioning System
GRO	gasoline range organics
GSA	General Services Administration
HHRA	Human Health Risk Assessment
MDL	method detection limit
mg/kg	milligram per kilogram
msl	mean sea level
NDAI	No DoD Action Indicated
OSHA	U.S. Occupational Safety and Health Administration
PAHs	polyaromatic hydrocarbons
PCBs	polychlorinated biphenyls
PID	photoionization detector
PRP	potentially responsible party
QAPP	Quality Assurance Project Plan

RA	Removal Action
RCRA	Resource Conservation and Recovery Act
RRO	motor oil range organics
RSL	USEPA Region 9 Regional Screening Level
STLC	Soluble Threshold Limit Concentration
SVOCs	semi-volatile organic compounds
SWPPP	Storm Water Pollution Prevention Plan
TCE	trichloroethene
TCLP	Toxicity Characteristic Leaching Procedure
TPH-DRO	total petroleum hydrocarbons diesel range organics
µg/kg	micrograms per kilogram
µg/L	micrograms per liter
USA	underground service alert
USACE	United States Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
USTs	underground storage tanks
VOCs	volatile organic compounds
Water Board	Regional Water Quality Control Board

EXECUTIVE SUMMARY

This Soil Removal Action Report (Report) was prepared for the former Benicia Army Arsenal (Arsenal), a formerly used defense site (FUDS), under General Services Administration (GSA) Contract No. GS-10F-0101L, Work Order W19238-06-F-0063. This work was performed on behalf of and with oversight by the United States Army Corp of Engineers (USACE), Sacramento District. The soil removal action focused on shallow soil impacts at the former Arsenal. The report describes the soil excavation activities conducted at former drum storage/maintenance area at Building 51 and at the former Building 161 underground storage tank (UST) site between November 16, 2009 and December 2, 2009.

Data gathered and analyzed during the Benicia Arsenal soil removal action has determined that not all of the contamination is solely the responsibility of the DoD and that some contamination has commingled in the same geographic areas. Furthermore, the risk assessment has determined that these commingled areas are a potential risk to human health and the environment. Therefore, the FUDS program dictates that a PRP project must be initiated. Experience has shown that effective management of this situation requires that the USACE Office of Counsel takes the lead in these efforts. The goal is towards settlement of any DoD CERCLA liability and this will be conducted at a later date. This Report involves the sites that USACE has determined to be contaminated only from former DoD activities, which will not be part of the PRP project.

Arsenal Building 51

Remediation at Building 51 was conducted the week of November 16, 2009 to remove arsenic-impacted soil. Arsenic was identified as the only contaminant of concern (COC) in soil at this location from the Arsenal Human Health Risk Assessment (HHRA) (USACE, 2008). The excavation was located along the wall and edge of foundation for an existing Building 51 structure and correlated to the area of a former drum storage/maintenance area used by the Army. Excavation of the impacted area required a single day to complete. Backfill, compaction and site restoration also required a single day to complete.

Six soil samples were collected from the walls and floor of the excavation. Sample depths ranged from approximately 1 foot bgs (walls) to 1.5 feet bgs (floor). Material excavated consisted of clay then transitioning to fine sand (weathered sandstone). Competent sandstone was underlying the floor of the excavation. No groundwater was encountered. Arsenic in the sample collected along the east excavation wall (B051GR002) slightly exceeded the Arsenal Ambient Concentration Limit of 12.9 milligrams per kilogram (mg/kg) (Brown and Caldwell, 2006). Additional excavation along the wall could not be conducted due to this structure. Analysis of all other soil samples did not indicate arsenic at concentrations exceeding the Arsenal Ambient Concentration Limit at the Arsenal. Additionally, the average arsenic concentration is 10.1 mg/kg and below the Arsenal Ambient Concentration Limit. Approximately 5 tons of soil was containerized at the Site. The soil was sampled and profiled as non-RCRA California hazardous waste. The soil was then transported to Waste Management at Kettleman Hills, California.

Former Arsenal Building 161 UST

As an expansion to the excavation and removal of the Building 161 UST in 2006, more soil was removed in the area of the former Building 161 UST during the week of November 16, 2009. The 2006 excavation was expanded to the north and south. Soil removal required a total of two days to complete. Backfill, compaction and site restoration required three days to complete.

A total of eight soil samples were collected from walls of the former Building 161 UST excavations. Sample depths were similar for both excavations at approximately 3 feet bgs. Material excavated consisted of sandy clay. Organic clay was observed below the concrete slabs to depths of approximately 5 feet bgs. Groundwater samples were not collected from excavations because samples have been collected and groundwater impacts have been delineated (Brown and Caldwell, 2005a). Based on the HHRA, PCB-1254 (Arochlor-1254) and PAH dibenz(a,h)anthracene were identified as COPCs in soil at this site. There were also some residual concentrations of diesel range organics remaining from the 2006 UST removal and sampling activities that exceeded Regional Water Quality Control Board Environmental Screening Level (Water Board ESL) (Water Board, 2007). Since excavation was being performed for the other COPCs, those diesel range organics areas were also excavated during this removal action.

Excavation confirmation samples were analyzed for diesel range organics, PCB-1254 (Arochlor-1254) and PAH dibenz(a,h)anthracene. Analysis of soil samples indicated the presence of diesel range organics at low concentrations in excavation wall samples. Concentrations did not exceed the Water Board ESL of 150 mg/kg. Soil analyzed for PCBs and dibenz(a,h)anthracene did not indicate concentrations exceeding laboratory method detection limits.

Confirmation sampling demonstrated that soil within the predetermined excavation boundaries for Building 51 and Former Building 161 UST had been removed. Approximately 120 tons of soil was containerized at the Site. The soil was sampled and profiled as non hazardous waste and transported to the Altamont Landfill in Livermore, California. All tasks outlined in the November 2009 Soil Removal Action Work Plan (Brown and Caldwell, 2009) were completed.

Based upon conclusions explained above for Building 51 and Former Building 161 UST, a Category IV no DoD action indicated (NDAI) determination has been made. Remediation for those areas contaminated solely by past DoD activities is complete.

1.0 INTRODUCTION AND BACKGROUND

This Soil Removal Action Report (Report) was prepared for the former Benicia Army Arsenal (Arsenal) under General Services Administration (GSA) Contract No. GS-10F-0101L, Work Order W19238-06-F-0063 in accordance with requirements of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) and the Resource Conservation Recovery Act (RCRA), as appropriate. The Arsenal is located about 25 miles northeast of San Francisco in Benicia, California, on the north side of the Carquinez Strait (Figure 1-1).

The report describes the soil excavation activities conducted at Building 51 and former Building 161 UST between November 16 and December 2, 2009. All field activities were conducted under the supervision of a Professional Geologist licensed in the State of California.

This Report is organized into eight sections. Section 1.0 presents a physical description, background information and included the historical uses and a summary of previous investigations. Section 2.0 describes the removal action field methods. Section 3.0 describes the quality and usability of the data collected during this site inspection. Section 4.0 describes excavation activities and the analytical results of confirmation sampling. Section 5.0 discusses waste sampling, staging and transportation processes. Section 6.0 presents the conclusions and recommendations and references are included as Section 7.0.

This report contains five appendices. Each appendix is described briefly below.

Appendix A – Photographic Log. This appendix includes photos collected during soil removal action field work for both Building 51 and former Building 161 UST.

Appendix B – Field Activity Notes. Daily summaries of occurrences logged during field work.

Appendix C – Legend for Analytical Results. Definitions of data acronyms, quality control flags, and reason codes.

Appendix D – Soil Analytical Tables. The analytical results for soil are tabulated for all samples collected for this removal action.

Appendix E – Laboratory Analytical Results. The laboratory data reports for all soil samples are provided in PDF format.

Appendix F – Investigation Derived Waste Manifests for Soil. This section includes waste transportation documentation for all soil generated as hazardous and non hazardous during the soil removal action.

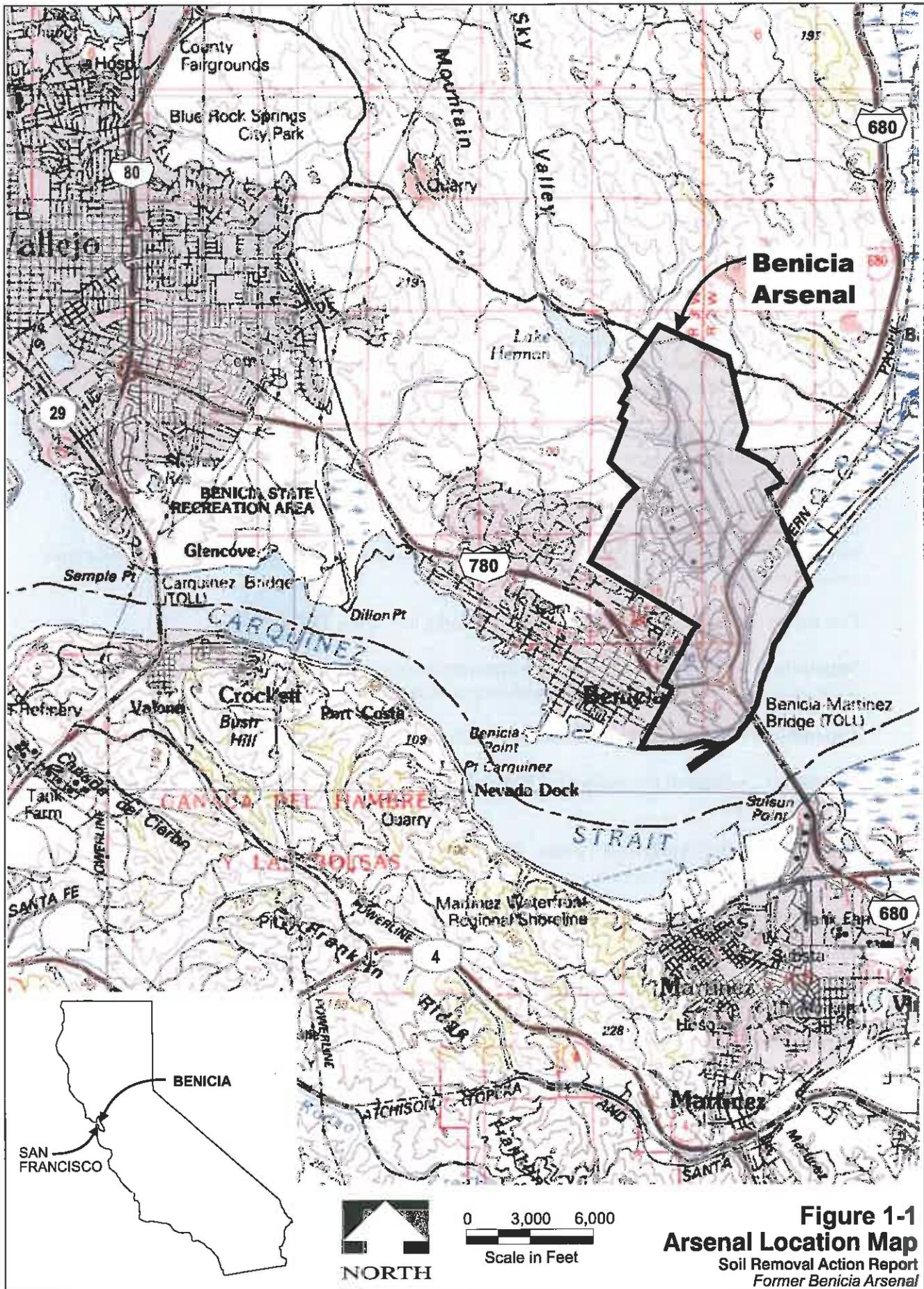


Figure 1-1
Arsenal Location Map
 Soil Removal Action Report
 Former Benicia Arsenal

1.1 Formerly Used Defense Site (FUDS) Program

FUDS program funding can only be used to assess and remediate Department of Defense (DoD) liability at eligible property, which is defined as real property formerly owned by, leased by, possessed by, or otherwise under the jurisdiction of the Secretary of Defense or elements of the United States military. Under the FUDS program, land that was previously utilized by DoD and that has no “beneficial use” history will be characterized and, if necessary, remediated to an appropriate standard. “Beneficial use” of former DoD land is defined as activity by subsequent landowners or lessors that would either mask contamination caused by DoD or continue contamination in the same manner.

Under the FUDS program, one of the parameters to be considered during the initiation of a project is whether the property (or specific item/site) has been beneficially used by any owner, operator, or other party that may be considered a potentially responsible party (PRP). If the United States Army Corps of Engineers (USACE) determines the contamination was caused solely by DoD, it will be mitigated by USACE through the FUDS program. If an investigation is initiated (by any party) and DoD is determined to be only partially responsible, USACE will investigate to the extent necessary to determine DoD liability.

Consideration must also be given to the ability to identify DoD generated contaminants from contaminants introduced by other PRPs, on or off the FUDS property. If identification of separate contaminant streams cannot be achieved, or if separate remediation of DoD generated contaminants cannot be realized, the project may be ineligible for remediation under the FUDS program. If commingled contamination exists, a PRP project must be initiated and the Department of Justice will negotiate a contribution settlement with the current landowner/responsible party based on a liability analysis.

Further, the Defense Environmental Restoration Program (DERP)-FUDS policy does not allow the USACE to provide cost recovery to property owners nor does it allow USACE to recover costs from property owners for remedial work. However, the property owner may initiate an investigation and/or clean-up action and subsequently seek cost reimbursement from the Department of Justice by filing a tort claim.

Data gathered and analyzed during the Benicia Arsenal soil removal action has determined that not all of the contamination is solely the responsibility of the DoD and that some contamination has commingled in the same geographic areas. Furthermore, the risk assessment has determined that these commingled areas are a potential risk to human health and the environment. Therefore, the FUDS program dictates that a PRP project must be initiated. Experience has shown that effective management of this situation requires that the USACE Office of Counsel takes the lead in these efforts. The goal is towards settlement of any DoD CERCLA liability and this will be conducted at a later date. This Report involves the sites that USACE has determined to be contaminated only from former DoD activities, which will not be part of the PRP project.

1.2 Arsenal Background

This section describes the arsenal's physical setting, operational history, historic uses, and geology/hydrogeology.

The City of Benicia is located northeast of San Francisco along the eastern margin of the California Coast Ranges. The Benicia Arsenal occupies an area of low hills along the northern shore of the Carquinez Strait (Figure 1-1). The Carquinez Strait separates San Pablo Bay to the west with the Suisun Bay to the east. The southernmost portion of the Arsenal rises from sea level at the Carquinez Strait to an elevation of approximately 160 feet above mean sea level (msl) in the low-lying foothills near the former location of Pine Lake.

During its active life from 1849 to 1964, the Arsenal served the United States Army as a principal depot for ordnance and ordnance stores, as well as, the issuance, manufacture and testing of small arms. A massive expansion of the former Arsenal took place during World War II. Physical expansion included the addition of 1,847 acres and over 200 structures. Another full-scale expansion took place just prior to and following the Korean Conflict (1950s), with the addition of approximately 40 to 50 structures. The Arsenal eventually grew by land acquisition to a total of 2,728 acres (Jacobs, 1999). Many of these additions were warehouses for inert materials and transitory shelters. Throughout the former Arsenal's history, the functions of many buildings and operation areas changed, in response to changing government needs.

The areas that make up the Arsenal are shown on Figure 1-2. The location of activities in the Report, the Industrial Area (Area I) served as the main industrial and manufacturing area throughout the 115-year history of the facility and was the center of activity at the former Arsenal. The Army operated many varieties of shops, light industrial, manufacturing, cleaning, painting, blacksmith, welding, small arms, vehicle, and artillery repair. Other areas of the Arsenal included maintenance facilities and fuel and waste storage areas. The industrial area also housed the former Arsenal's administrative offices, most of the permanent housing facilities, photographic laboratories, a firehouse, and a hospital. Fuel storage and dispensing facilities, a locomotive house, boiler houses, storehouse and warehouse facilities, open storage facilities, fillsites, and quarries were also located within this area.

After closure of the Arsenal, tenants and landowners used some buildings for a variety of manufacturing, maintenance, and repair activities. Prior to the 1970s, it was customary to discharge untreated waste into the sewer and/or storm drain system. Regulations were later enacted and enforced to prohibit these activities. The discharge of untreated wastes into the sewer system continued for five years after the Army left in 1964, when an upgrade to the sewer system was completed and untreated wastes were diverted from the Carquinez Strait into the City of Benicia Wastewater Treatment Plant.

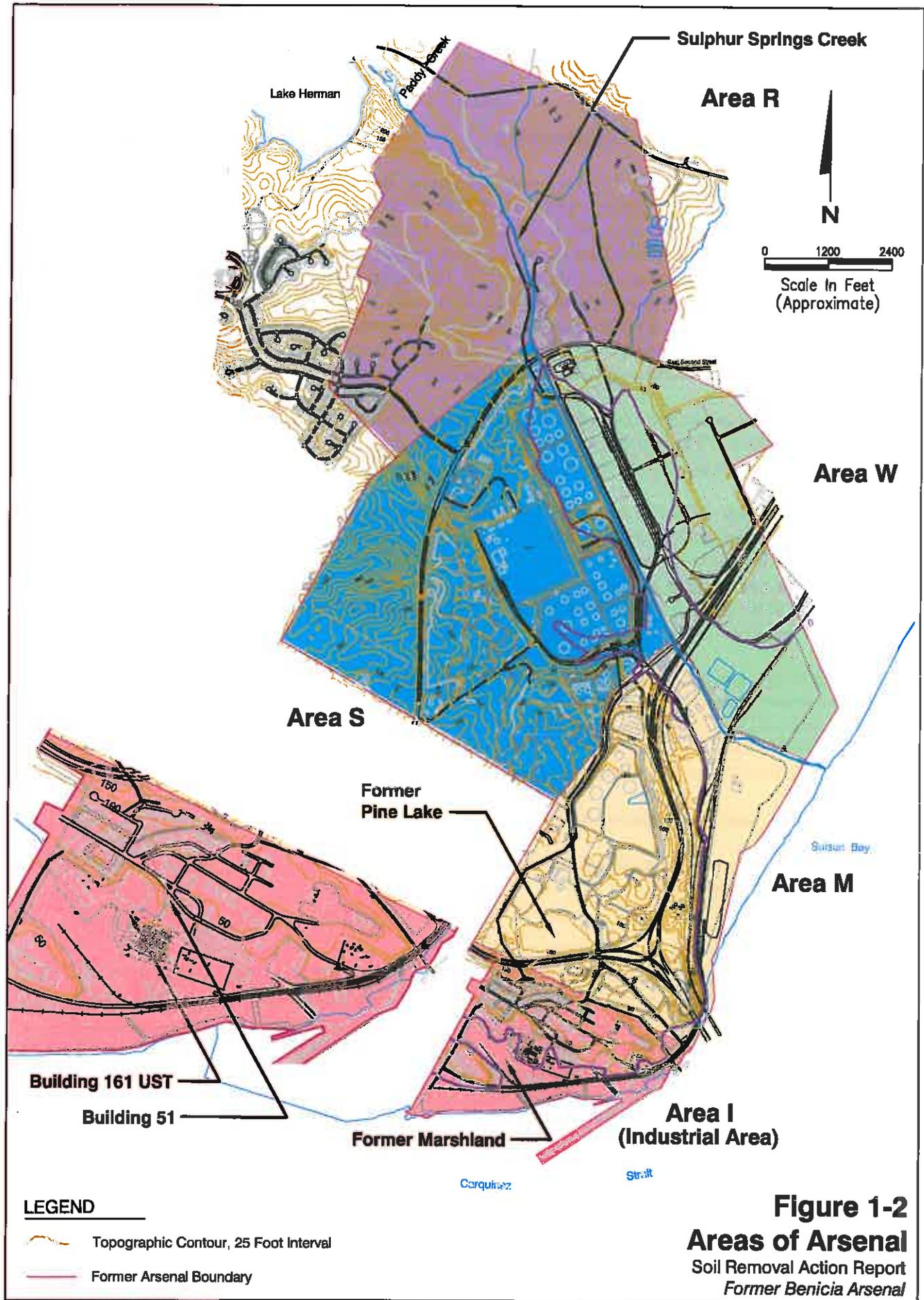


Figure 1-2
Areas of Arsenal
 Soil Removal Action Report
 Former Benicia Arsenal

1.2.1 Arsenal Geology and Hydrogeology

The geology and hydrogeology of the former Arsenal are discussed in detail in the *Conceptual Hydrogeologic Model* (CHM) (Brown and Caldwell, 2005c), the *Expanded SI* (Brown and Caldwell, 2005a), and summarized in this section. The former Arsenal was divided into two hydrogeologic areas based on the geology combined with the hydrogeologic characteristics (including water quality). These areas are referred as the Lowlands and the Highlands. The stratigraphy of the Lowland area (above the bedrock material) may contain the following geologic units, from oldest to youngest: older alluvium, Bay Mud, and fill material. The Lowland area on the former Arsenal includes the former marshlands. In the industrial area, the boundary between the Lowland and Highland area is the boundary of the former marshland.

Depth to the bedrock in the industrial area ranges from at surface to about 105 feet below the former marshland. The topography of the top of the bedrock indicates that several valleys were partially filled with alluvium, prior to the deposition of the estuarine Bay Mud.

The Bay Mud was deposited between 8,000 and 11,000 years ago when a rise in sea level inundated the region. Marshlands formed on top of the Bay Mud (clays and sensitive fines). Lenses of alluvial sands and silts may be present within the Bay Mud. Most soil borings in the industrial area include artificial fill consisting of sandy silt, silt, clayey silt, and sand overlying the Bay Mud. The thickness of the fill increases as the distance from bedrock highs increase; the thickness of the fill ranges from about 2 feet to 13 feet.

Depth to first groundwater in the industrial area is less than 12 feet deep. At deeper depths, static groundwater is under confined conditions such that water levels rise to within 10 ft bgs and sometimes above the ground surface (artesian conditions). In the industrial area, fresh to saline groundwater is present. The deeper groundwater in the area, based on electrical conductivity, is saline. In the Highlands, groundwater is not found until deeper in the fractured bedrock.

1.3 Previous Investigation Activities

Discussions on previous investigation conducted at the Sites remediated under the Soil Removal Action are provided below.

1.3.1 Building 51

Building 51 was used as a drum storage/maintenance area by the DoD and was sampled to determine the lateral extent of lead and polyaromatic hydrocarbons (PAHs) in soil. The building is located on the hills above Buildings 31 and 98 in the industrial area (Figure 1-2). Two soil samples and a duplicate were included in the *Expanded SI Report* (Brown and Caldwell, 2005a).

Concentrations of lead did not exceed the risk to commercial/industrial worker of 750 milligrams per kilogram (mg/kg) based on the Water Board Environmental Screening Level (ESL; Water Board, 2007). However, in the duplicate sample at 0.5-feet to 1.0-feet, lead concentration was 798 mg/kg and exceeded the Water Board ESL. Lead concentrations decrease in concentration with depth (Table 1-1). Since the lead concentration may be near a source, additional samples were collected.

Three soil samples were collected northwest and southeast of the Expanded SI boring, B051HP001 during the addendum field investigation (Brown and Caldwell, 2008a). Sample depths ranged from 0.5 feet bgs to 2.2 feet bgs. Fill material of silt and organics (i.e. leaves) was encountered at the surface to approximately 8 inches bgs. Sandstone underlies the fill material. Competent sandstone was encountered at depths of 2 feet bgs to 2.2 feet bgs. No groundwater was encountered.

A comparison of the lead data from the addendum investigation and the Expanded SI is provided in Table 1-1. Concentrations of lead are consistent with the reported results in the *Expanded SI Report*, around 150 mg/kg (Brown and Caldwell, 2005a). Since the lead reported in shallow soil from the June 2004 sampling location is below the Water Board ESL, the June 2004 duplicate sample of 798 mg/kg is considered to be an anomaly.

Sample I.D.	Depth (feet bgs)	Water Board ESL (mg/kg)	Concentration (mg/kg)
B051HP001 ⁺	0.5-1.0	750	155⁺/798[™]
B051HP001 ⁺	1.5-2.0		153
B051HA001	1.75-2.2		34.5
B051HA002	1.5-2.0		166
B051HA003	1.75-2.2		141

[™] Duplicate sample

⁺ Documented in the Expanded SI Report (Brown and Caldwell, 2005a)

ESL = Environmental Screening Level (Water Board, 2007)

Bolded values exceed the ESL

mg/kg = milligram per kilogram

bgs = below ground surface

PAHs were detected in addendum investigation soil samples above laboratory method detection limits (MDLs) and their concentrations are listed in Table 1-2. PAH concentrations are consistent with the reported results in the *Expanded SI Report* (Brown and Caldwell, 2005a) and did not exceed the Water Board ESL. Arsenic was reported at 0.5 to 1 foot bgs in B051HP001 at a concentration of 17.1 mg/kg. The duplicate sample reported a concentration of 9.8 mg/kg. The lower concentration was presented in the *Expanded Site Addendum Report* (Brown and Caldwell, 2008a). All data (non-TPH) collected at this location were evaluated in the risk assessment.

1.3.2 Former Building 161 UST

A 3,400-gallon single-walled steel underground storage tank (UST) was located at Building 161 and historically used to hold kerosene (typically between C4-C19). The Building 161 UST is located in the industrial area (Figure 1-2). The tank (Photo 1) was located on the north side of the former building. In January 2006 and January 2008 tank removal and site investigation activities were conducted



Photo 1. Building 161 UST.
 Photo taken 1/6/2006. Looking east towards Jackson Street

as part of the *Expanded SI* (Brown and Caldwell, 2005a) and the *Expanded SI Addendum* (Brown and Caldwell, 2008a).

In January 2006, approximately 2,200 gallons of water and a viscous sludge were pumped into a vacuum truck: 2,100 gallons of liquid from the UST (emptied the tank) and 100 gallons of the oily sheen in the excavation. The UST was removed from the site.

During tank removal, the west side of the excavation appeared to be impacted with hydrocarbons. Four soil borings (B161GB001, B161GB002, B161GB003, and B161GB004) were advanced surrounding the suspected impact on January 6, 2006. The samples from borings on the north and west side of the excavation (B161GB001 and B161GB002) contained very low to no concentrations above the MDLs for petroleum hydrocarbons. The detections were below commercial/industrial ESLs. The borings south of the excavation, B161GB003 and B161GB004, did contain petroleum hydrocarbons and/or trichloroethene (TCE) and their results are shown in Table 1-2. Samples were also analyzed for polychlorinated biphenyls (PCBs), PAHs, volatile organic compounds (VOCs), and metals.

On January 22 and 23, 2008, four direct push borings (B161GB005 through B161GB008) were advanced and soil samples collected at pre-selected depths (4.5 to 5.5 feet bgs and 8 to 9 feet bgs) and groundwater samples were collected in each boring to delineate TPH near the limits of the UST excavation. These sample depths were agreed upon by the Water Board to represent soil samples from the top of the tank and the bottom of the tank. Additionally, the placements of the borings were deliberate such that three borings (B161GB005, B161GB006, and B161GB007) were placed closer to the UST than the borings drilled and sampled in 2006, B161GB005 was upgradient of the UST, and the other three borings downgradient of the UST (B161GB006 through B161GB008) in a triangular pattern with B161GB008 furthest downgradient.

Diesel fuel range hydrocarbons were detected above the Water Board ESL of 150 mg/kg in boring B161GB003 (660 mg/kg). A downgradient location, B161GB004, was sampled and diesel fuel range hydrocarbons were not detected above laboratory method detection limits. There were no gasoline range hydrocarbons detected in soil around the UST. Kerosene was indicated by the Army as the fuel stored in the UST. It was possible that the UST may have contained diesel fuel at a later date.

Lead was reported in all of the soil samples but none of the concentrations exceeded the Water Board ESL or its ambient concentration limit (Table 1-3). Likewise, none of the other analytes reported in soil in the UST excavation or the other borings advanced during the January 2006 addendum investigation exceeded their respective Water Board ESLs, including polychlorinated biphenyls (PCBs) (Table 1-2).

PCB-1254 and PCB-1260 were reported at 1.1 mg/kg and 0.34 mg/kg, respectively in B161GB005 at 5 feet bgs to 5.5 feet bgs (Table 1-2). B161GB005 is located 4 feet north of the UST excavation. The Water Board ESL for PCBs is 0.3 mg/kg (commercial/industrial use and groundwater is not a potential source of drinking water). All other 2008 soil samples collected (including all samples collected at a depth of 8 to 9 feet bgs) were reported at concentrations below their respective MDLs and thusly, below the Water Board ESL for PCBs (Table 1-2).

Table 1-2. Petroleum Hydrocarbon, Lead, TCE, and PCB Results in Soil at Former UST 161

Analyte	B161GB001	B161GB002	B161GB003	B161GB004	B161GB005	B161GB006	B161GB007	B161GB008	Water Board ESL	Ambient Concentration Limit**
Sample Depth = 4 to 5.5 feet bgs										
Lead	8.29	7.95	6.17	10.9	NA	NA	NA	NA	750	36.8
Trichloroethene	< 0.0022	<0.0022	<0.0022	0.0023	NA	NA	NA	NA	4	NE
Gasoline range (C6-C10)**	<0.6	<0.56	3.6	<0.6	NA	NA	NA	NA	450	NE
Diesel range (C10-C24)*	4*	<2.7	660	<2.6	NA	NA	NA	NA	150	NE
Motor oil range (C20-C34)	<2.7	<2.6	730	<2.5	NA	NA	NA	NA	2,500	NE
PCBs	<0.024	<0.023	<0.023	<0.022	1.1 (PCB-1254) 0.34 (PCB-1260)	<0.022	<0.021	<0.018	0.3	NE
Sample Depth = 8 to 9 feet bgs										
PCBs	NS	NS	NS	NS	<0.020	<0.021	<0.020	<0.02	0.3	NE

Concentrations in mg/kg – milligrams per kilogram

NA – not analyzed

NE – not established

NS – not sampled

ESL – Environmental Screening Level for shallow soil (<3 meters) where groundwater is NOT a potential source of drinking water, industrial/commercial land use (Water Board, 2007)

* reported in the duplicate sample

** kerosene (typically between C4-C19), a product allegedly used in the Building 27 UST, coincides within the gasoline and diesel range

*** Brown and Caldwell, 2006

Grab groundwater samples were collected from the excavation sample (B161GR001) and shallow groundwater from borings B161GB005 through B161GB008. Petroleum hydrocarbons, diesel fuel, gasoline, and motor oil are all above their respective Water Board ESLs (Table 1-3). Broader investigations for these constituents were performed for the *Expanded SI* (Brown and Caldwell, 2005b) and have delineated the vertical and lateral extent of these parameters in groundwater. This impact to groundwater is part of the PRP project. The grab groundwater sample also contained two PCBs congeners, 1254 and 1260, which are not above their Water Board ESLs.

Table 1-3. Results above ESL in Groundwater at Former UST 161						
Analyte	Concentrations in µg/L					Water Board ESL
	B161GB001 (excavation grab sample)	B161GB005	B161GB006	B161GB007	B161GB008	
Diesel fuel range (C10-C24)	27,000	5,500	Not analyzed	Not analyzed	720	2,500
Gasoline range (C6-C10)	6,900	750	Not analyzed	Not analyzed	93	5,000
Motor oil range (C20-C34)	18,000	4,000	Not analyzed	Not analyzed	190	2,500
PCB-1254	5.6	<0.24	<0.24	<0.24	<0.24	16
PCB-1260	1.6	<0.24	<0.24	<0.24	<0.24	16

BOLD indicates concentration exceeds its ESL

µg/L – micrograms per liter

ESL – Environmental Screening Level for groundwater is not a potential source of drinking water, industrial/commercial land use (Water Board, 2007)

A product sample was collected from the UST for waste characterization. Methylene chloride, TCE, PCB-1254, and PCB-1260 were detected in the product sample (Table 1-4). The density of the product sample is 0.94 grams per millimeter which means it is lighter than water. The product was observed floating on water which substantiates that a light aqueous phase liquid was contained in the tank, like kerosene or diesel fuel. The presence of VOCs and PCBs in the product sample means they have co-eluted in the sample. TCE and the PCB congeners were also reported in the grab groundwater sample from the tank excavation.

Table 1-4. Building 161 UST Product Sample Results		
Analyte	Result (µg/kg)	% of product
Methylene chloride	28,000	0.003%
Trichloroethene	930,000	0.093%
PCB-1254	27,000	0.003%
PCB-1260	8,200	0.001%
Total		0.099%

µg/kg- micrograms per kilogram = parts per billion

Based on the historical use of PCBs provided above and the use of electrical equipment at the Arsenal, it is possible that Arsenal equipment contained PCB-laden dielectric oil; however, how it got into the UST is not documented. One soil sample in close proximity to the UST (B161GB005 at 5 feet bgs to 5.5 feet bgs) contained the same PCB congeners as reported in the grab groundwater sample from the UST and in the UST product sample. The impact to soil is not extensive. PCB concentrations are very low and the 2006 PCB soil sample, approximately 5 feet north of B161GB005 did not report any PCBs. The presence of PCBs in soil was evaluated in the risk assessment. PCBs have not impacted groundwater. Based on these data, the source of PCBs in the grab groundwater sample appears to be the UST. A volume of contaminated groundwater was removed from the open excavation, as well as, all of the contents from the UST. Therefore, the source PCBs have been removed. PAH, metals, PCBs, and VOC data were evaluated in the risk assessment.

1.4 Risk Assessment

The scope of the *Human Health Risk Assessment* (HHRA; USACE, 2008) was limited to two areas contaminated solely by past DoD activities. Evaluation of data determined to be unrelated to DoD past practice was outside the scope of the assessment but will be included in a future PRP project. Detailed analysis methods and exposure assumptions used to assess potential human risks/hazards associated with exposure to contaminants are described in the *Benicia Arsenal Risk Assumptions Document* (USACE, 2005).

The objective of the HHRA was to evaluate potential human health risks associated with exposure to contaminants of potential concern (COPCs) detected in soil and groundwater. The evaluation used hypothetical exposure scenarios. Table 1-5 shows a summary of site risks associated with exposures to site media.

Table 1-5. Summary of Estimated Site Risks and Hazards Former Benicia Arsenal, Benicia, CA				
Receptor	Exposure Pathway	Estimated Lifetime Cancer Risk (ELCR)	Hazard Index	Exceeds USEPA Target Risk Levels ^a
Current Installation Worker	Ingestion of Surface Soil	9E-06	3E-01	Yes
	Dermal contact with Surface Soil	6E-06	9E-02	Yes
	TOTAL RISK OR HAZARD	2E-05	3E-01	Yes
Future Intrusive Worker	Ingestion of Surface Soil	3E-07	3E-01	No
	Dermal Contact with Surface Soils	8E-06	3E-01	Yes
	Dermal Exposure to Groundwater	6E-17	2E-11	No
	TOTAL RISK OR HAZARD	8E-06	6E-01	Yes
Current Indoor Worker	Ingestion of Surface Soil	9E-06	3E-01	Yes
	Dermal Contact with Surface Soils	6E-06	9E-02	Yes
	TOTAL RISK OR HAZARD	2E-05	3E-01	Yes

^a USEPA establishes a condition of no significant risk if the Hazard Index is less than or equal to one and the ELCR is less than or equal to 1E-06.

Potential risks were indicated for the current installation and indoor worker receptors based on estimated lifetime cancer risks. However, USEPA recommends active remedies for industrial receptors when cancer risks exceed $1E-04$ or when the hazard index exceeds one. Neither of these thresholds is exceeded at Benicia. Therefore, appropriate risk management activities (institutional controls, land-use controls) should be considered in the corrective measures study.

Based on the industrial receptor evaluation, the risks associated with exposure to soil are from the following COPCs and their source locations:

- Arsenic at B051HP001 (17.1 mg/kg at 0.5 to 1 ft bgs);
- Dibenzo(a,h)anthracene at B161GB003 (4.7 mg/kg at 4.5 to 5 feet bgs); and
- PCB-1254 at B161GB005 (1.1 mg/kg at 5 to 5.5 feet bgs).

1.5 Work Plan Purpose and Removal Action Objectives

As mentioned in the introduction, this report describes soil excavation activities conducted under the November 2009 Soil Removal Action Work Plan (Brown and Caldwell, 2009) for Benicia Arsenal Building 51 and former Building 161 UST between November 16, 2009 and December 2, 2009. The purpose and objectives for the Soil Removal Action are described below:

- Remove soil that contained COPCs exceeding risk-based concentrations;
- Remove diesel range organics exceeding Water Board ESL remaining from the Building 161 UST;
- Confirm that impacted soil is removed through confirmation sampling and analysis;
- Restore the Site to the condition prior to the removal action;
- Conduct the removal action in a healthy and safe manner;
- Meet local, state, and federal requirements for soil staging, transportation, and disposal; and
- Minimize disruption to tenant and landowner activity.

Location of the samples that exceeded risk-based concentrations at the former drum storage/maintenance area at Building 51 (B051HP001) is shown on Figure 4-1 and at the former Building 161 UST (B161GB005 and B161GB003) are shown on Figures 4-2 and 4-3.

2.0 REMOVAL ACTION FIELD METHODS

Section 2.0 provides descriptions of various preparatory activities, excavation methods, and sampling methods performed for this removal action. Work Plan variances experienced during field activities are also provided.

2.1 Site Preparation and Field Methods

Site preparation activities consisted of permitting, regulatory agency coordination, surveying, utility clearance, and preparing a Accident Prevention Plan (APP) and Storm Water Pollution Prevention Plan (SWPPP). The removal action required permission from landowners and coordination with tenants. USACE discussed the scope of work with each land owner and requested and attained formal right of entry to each parcel, prior to beginning work. The City of Benicia did not require Brown and Caldwell to obtain a permit to conduct the removal action; however, the Public Works Department was notified of our intent and schedule of activities.

Brown and Caldwell prepared a SWPPP for the removal action at former Building 161 UST (848 Jackson Street, Benicia). The SWPPP was prepared in response to a request by the City of Benicia Public Works for work being conducted adjacent to their property.

SWPPP best management practices (BMPs) were implemented during every phase of work. Exposed areas of the site were maintained in a clean and orderly manner. Soil tracked between the two excavations at former Building 161 was swept back into the excavations at the end of each work day. Excavations were secured with steel trench plates. Trench plates acted as covers to the excavations. Edges of the trench plates were sealed with asphalt at the end of each work day to prevent any surface water from entering the excavations. All soil was contained in designated bins that were closed and secured when not in use.

Various features (e.g., UST locations, soil boring locations, monitoring wells) at the Site have previously been surveyed by a California-licensed surveyor. Excavated areas were delineated using a hand-held Global Positioning System (GPS) unit. Lastly, Underground Service Alert (USA) was notified of excavation locations in accordance with their 48-hour timeframe requirements

2.1.1 Excavation Methods

Brown and Caldwell, acting as the construction manager, was present on Site during construction activity to verify that the construction contractor was implementing the techniques according to the Soil Removal Action Work Plan. Brown and Caldwell contracted Northstate Earth and Water, Inc., a California licensed remediation contractor (License # 882240-HAZ). At a minimum the soil excavation would remove the boring and surrounding soil at the location identified in the HHRA that exceeded risk-based concentrations. The extent of the excavation was planned to extend to the nearest site inspection soil sample that is non-detect for the COPC or less than the Water Board ESL for diesel range organics. However, the ultimate boundary of the excavation was based on site conditions and was confirmed by collecting soil confirmation samples.

Conventional excavation and loading techniques were implemented for this removal action. Twenty yard roll-off bins were staged at various places near the excavations to allow for direct loading. Spotting assistance was used at all times while heavy equipment was operational. When appropriate,

the construction contractor sloped excavations, per U.S. Occupational Safety and Health Administration (OSHA) guidelines. Monitoring for fugitive dust, VOC vapors, soil stability, and soil and groundwater discoloration was conducted throughout the soil removal action. A photo log is provided as Appendix A. Field activity notes are provided as Appendix B.

2.2 Confirmation Soil Sampling Methods

Sampling was conducted once the total anticipated depths of excavations were achieved to confirm that impacted soil was removed to the clean-up goals listed in Table 2-1. Confirmation soil samples were collected at four sides of each excavation and bottom, when conditions in the excavations allowed (e.g., no groundwater). A drive sampler with clean stainless steel sleeves was used for confirmation sampling. The samples were fitted with Teflon tape and plastic end caps before placing on ice.

2.2.1 Analytical Parameters

The soil samples were analyzed for only the constituents identified to be above risk based levels. Soil samples were submitted on an expedited 48-hour turnaround time. Samples were submitted to EMAX laboratories, an Environmental Laboratory Accreditation Program (ELAP)-Certified Lab (#2672), located in Torrance, California. Samples were submitted under standard Arsenal QAPP chain of custody procedures.

Table 2-1. Cleanup Goals for Confirmation Sampling				
Site	Analyte	Analysis	Cleanup Goal (mg/kg)	Basis of Cleanup Goal
Bldg. 51	Arsenic	USEPA Method 6010	12.9	Ambient Concentration Limit (Brown and Caldwell, 2006)
Bldg. 161 UST	PCB-1254 (Arochlor 1254)	USEPA Method 8082	0.74	USEPA Industrial RSL
	Diesel Range Organics	USEPA Method 8015	150	Water Board ESL
	Dibenz(a,h)Anthracene	USEPA Method 8310	0.21	USEPA Industrial RSL

(US EPA, 2009)

2.3 Work Plan Variances

Prior to and during the Soil Removal Action, Brown and Caldwell worked closely with the USACE to maximize field time with respect to findings from previous investigations and achieve objectives outlined in the November 2009 Soil Removal Action Work Plan (Brown and Caldwell, 2009). However, various unanticipated variables were experienced during the soil removal action that required staff to improvise.

The most significant variance experienced during the effort resulted in a change in waste profiling classification for soil generated from the Building 51 removal action. The waste disposal facility requested that metals solubility analyses (in addition to arsenic) be performed on the waste samples. Soluble Threshold Limit Concentration (STLC) analysis indicated that lead exceeded the California STLC disposal criteria. Failure of the STLC concentration criteria required Toxicity Characteristic

Leaching Procedure (TCLP) analysis. Lead in waste soil did not exceed TCLP concentration criteria. Therefore, the soil did not exceed Federal waste characterization limits as federally hazardous waste but the soil did meet the criteria for California hazardous waste. Brown and Caldwell anticipated that all soil generated during the effort would be processed as non-hazardous waste and transported to Altamont Landfill, approximately 1 hour one-way from the Arsenal. However, the single 20-yard soil bin for Building 51 soil would need to be disposed as a non-RCRA California hazardous waste and was transported to Kettleman Hills, California, approximately a 5 hour one-way trip from the Arsenal.

In the southern excavation at Building 161 UST, the northern wall was not sampled. This excavation and the 2006 excavation that removed the Building 161 UST coincided such that the gravel used to backfill the 2006 excavation collapsed into the excavation.

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3.0 DATA USABILITY

This section summarizes the data quality assessment of analytical results reported for soil samples collected during the soil removal action. Validation and/or verification of the laboratory analytical data were performed per the criteria specified in the Arsenal Soil Removal Action Workplan (Brown and Caldwell, 2009) and in the *Quality Assurance Project Plan for the Benicia Arsenal* (QAPP; FA/BC, 2001).

Soil and groundwater samples were collected by Brown and Caldwell between November 16 and 18, 2009. A total of 14 confirmation soil samples were collected between the Building 51 and former Building 161 UST excavations.

A total of six soil samples (including one duplicate) were analyzed for arsenic by USEPA Method 6010B (Building 51); a total of three samples were analyzed for PCB-1254 (Arochlor 1254) by USEPA Method 8082 (former Building 161); a total of eight soil samples (including one duplicate) were analyzed for total petroleum hydrocarbon as diesel range organics (TPH-DRO) (USEPA Method 8015M) (Former Building 161), and a total of five soil samples (including one duplicate) were analyzed for dibenz(a,h)anthracene, PAHs by USEPA Method 8310 (former Building 161).

In addition, three equipment blanks were collected and analyzed for the same analyses as the associated field samples – based on the Site building designation. A legend for analytical results is provided in Appendix C. The complete EMAX analytical report for soil samples is provided as Appendix D.

A total of two waste characterization soil samples were submitted for the soil removal action; one sample for Building 51 and another for former Building 161 UST site. Analyses of waste soil were conducted based on requirements of waste disposal facility and discussed in Section 5.0.

All waste characterization samples were submitted to EMAX. Results for the IDW samples were not validated. Data was received in both hard copy and electronic formats. In general, the results are of acceptable quality and are usable for their intended purpose. None of the results were rejected. No results required qualification due to validation, with the exception of a single diesel detection that was below the laboratory's practical quantitation limit. No global problems were identified. All methods had an analytical completeness of 100 percent.

4.0 SOIL REMOVAL ACTION ACTIVITIES AND ANALYTICAL RESULTS

This section describes the soil removal action field occurrences and observations. Excavation specifications and confirmation soil sampling analytical data interpretations are provided as well.

4.1 Building 51 Soil Removal Action

Remediation at Building 51 was conducted the week of November 16, 2009. Excavation of the impacted area required a single day to complete. Backfill, compaction and site restoration also required a single day to complete (Appendix B).

4.1.1 Building 51 Soil Excavation Activities

A compact front-end loader and vacuum unit were employed along with hand digging due to limited access near Building 51. The dimensions of the excavation were 4.5 feet wide (center); 13.5 feet long (west end); and 1.5 feet deep. Photo 2 presents a view of the final excavation (see at right).



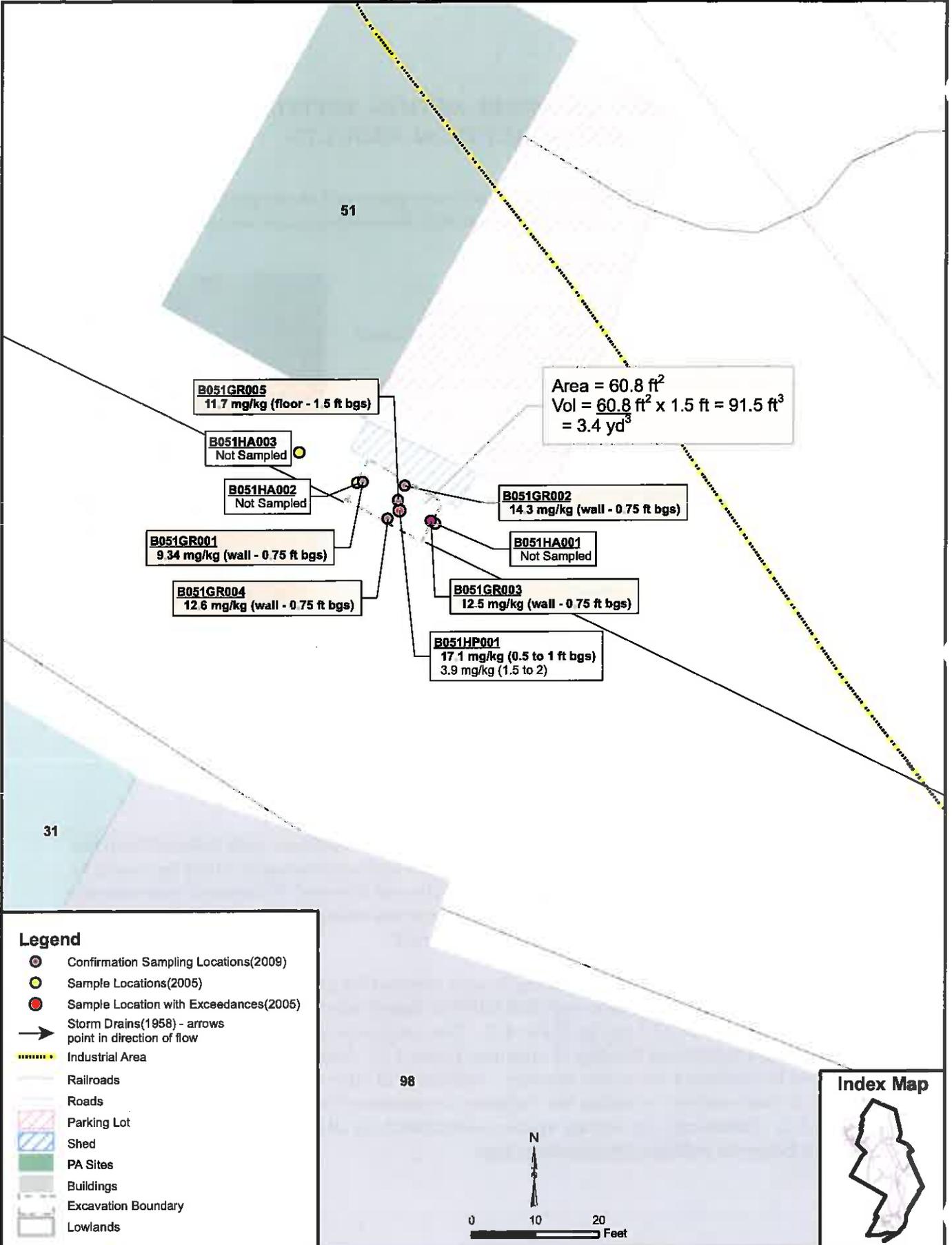
Photo 2. Completed excavation at Building 51. Southeast corner of Building 51 located at right. Photo taken 11/16/2009.

Excavated soil was loaded directly into a single 20 cubic yard roll off bin staged adjacent to the work area. The total amount of soil removed totaled approximately 3.4 cubic yards, approximately 5 tons by weight. Upon completion of the effort, the soil bin was moved to a designated bin staging area at former Building 161 UST (Appendix A, Photo 17).

4.1.2 Building 51 Confirmation Soil Sampling Results

Six soil samples (B051GR001 thru B051GR005), including one duplicate, were collected from the walls and floor of the excavation. Sample depths ranged from approximately 1 foot bgs (walls) to 1.5 feet bgs (floor). Material excavated consisted of clay and fine sand. Competent sandstone was underlying the floor of the excavation. No groundwater was encountered. Laboratory data tables and analytical reports are provided in Appendices D and E.

Confirmation samples collected at Building 51 were analyzed for arsenic. Arsenic in the sample collected along the east excavation wall (B051GR002) slightly exceeded the Arsenal Ambient Concentration Limit of 12.9 mg/kg (Table 4-1). This sample was located along the wall and edge of foundation for the existing Building 51 structure (Figure 4-1). Additional excavation along the wall could not be conducted due to this structure. Analysis of all other soil samples did not indicate arsenic at concentrations exceeding the Ambient Concentration Limit for arsenic at the Arsenal (Table 4-1). Additionally, the average arsenic concentration for all the soil samples is 10.1 mg/kg, which is below the ambient concentrations limit.



B051GR005
11.7 mg/kg (floor - 1.5 ft bgs)

B051HA003
Not Sampled

B051HA002
Not Sampled

B051GR001
9.34 mg/kg (wall - 0.75 ft bgs)

B051GR004
12.6 mg/kg (wall - 0.75 ft bgs)

Area = 60.8 ft²
Vol = 60.8 ft² x 1.5 ft = 91.5 ft³
= 3.4 yd³

B051GR002
14.3 mg/kg (wall - 0.75 ft bgs)

B051HA001
Not Sampled

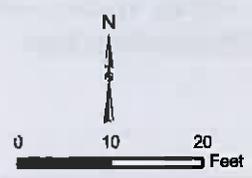
B051GR003
12.5 mg/kg (wall - 0.75 ft bgs)

B051HP001
17.1 mg/kg (0.5 to 1 ft bgs)
3.9 mg/kg (1.5 to 2)

Legend

- Confirmation Sampling Locations(2009)
- Sample Locations(2005)
- Sample Location with Exceedances(2005)
- Storm Drains(1958) - arrows point in direction of flow
- Industrial Area
- Railroads
- Roads
- Parking Lot
- Shed
- PA Sites
- Buildings
- Excavation Boundary
- Lowlands

Index Map



S:\Benicia Feasibility Study\Figure 4-1 - B051HP Arsenic.mxd



PROJECT:
130759-013
DATE:
1/27/2010

TITLE:
SITE:

Building 51 Arsenic Soil Concentrations
Former Benicia Arsenal, Benicia, California

Figure 4-1

Table 4-1. Building 51 Soil Analytical Results

Sample I.D.	Orientation and Depth (feet bgs)	Ambient Concentration Limit (Brown and Caldwell, 2006) (mg/kg)	Concentration (mg/kg)
B051GR001-A-S01	North Wall – 1 foot	12.9	9.34
B051GR002-A-S01	East Wall– 1 foot		14.3
B051GR003-A-S01	South Wall– 1 foot		12.5
B051GR004-A-S01	West Wall– 1 foot		12.6
B051GR005-A-S01	Center – 1.5 feet		11.7 (9.53**)

* Duplicate sample

Bolded values exceed their respective ambient concentration limit.

mg/kg = milligram per kilogram

4.2 Former Building 161 UST Removal Action

Expanded excavation work at former Building 161 UST site was conducted the week of November 16, 2009. Work was conducted at two separate locations, adjacent to the former UST (north and south sides). Soil removal required a total of two days to complete. Backfill, compaction and site restoration required three days to complete.

4.2.1 Building 161 UST Soil Excavation Activities

Excavation at former Building 161 UST site was conducted with a track-mounted excavator and compact front-end loader. The concrete surface was cut by a contracted specialist and demolished with a hydraulic hammer mounted on the loader (Appendix A, photo 6). The excavator was used to lift sections of slab directly into 20 cubic yard roll-off bins. The total amount of concrete removed during demolition totaled approximately 30 cubic yards (three 20 cubic yard bins). Also with direct loading, soil removal totaled approximately 105 cubic yards (approximately 120 tons by weight) for the two excavations (10-20 yard bins). The excavations at former Building 161 UST site were advanced to approximately 7 feet bgs.

Dimensions of the north excavation were 8 feet wide (east/west ends) and 14 feet long (north end). Dimensions of the south excavation were 24 feet wide (east/west ends) and 12 feet long (north end). A sewer pipe was observed in the north excavation along the north wall. The pipe was observed at approximately 3 feet bgs in imported sand material oriented in a west to east direction. The pipe was approximately 6 inches in diameter and appeared to be steel. In addition, gravel fill used as backfill for the former UST collapsed into the northern side of the excavation, undermining the concrete surface slab (Appendix A, Photo 10).

A buried – and previously unknown – concrete slab was discovered in the south excavation during concrete demolition. The thickness was similar to the surface slab, however, the feature was built with rebar throughout. A 1-inch diameter fuel pipe was observed in the south excavation, along the north wall, adjacent to the former UST. The pipe extended 5 feet into the excavation and began

draining an unidentified substance into the excavation once uncovered. The substance was completely removed with waste soil. The pipe was broken off at the wall of the excavation and capped with grout (Appendix A, Photo 12).

Groundwater was observed at approximately 6 feet bgs in excavations conducted at former Building 161 UST. Because of the low permeable clay in the area, groundwater slowly entered the excavations. Approximately 1 foot of groundwater filled each excavation over a 10 day period. Below the groundwater table, darker colored soil was observed and appeared stained was observed along all walls in patch-like patterns and on excavation floor (Appendix A, Photo 13). Based on previous sampling at this location and in the area during the *Expanded SI* (Brown and Caldwell, 2005), groundwater is impacted with petroleum hydrocarbons and VOCs. Therefore, this soil staining below the groundwater table was expected. Groundwater was not removed from excavations. Excavation boundaries with corresponding confirmation soil sampling locations for former Building 161 UST site are provided in Figures 4-2 and 4-3.

Photoionization detector (PID) screening was conducted for ambient air during all soil removal activities. Volatile concentrations, measured by the PID, were elevated above background for both excavations.

4.2.2 Former Building 161 UST Confirmation Soil Sampling Results

A total of seven soil samples (B161GR003 thru B161GR008), including one duplicate, were collected from walls of the former Building 161 UST excavations (Figures 4-2 and 4-3). Sample depths were similar for both excavations at approximately 3 feet bgs. Material excavated consisted of organic clay. The clay was observed below the concrete slabs to depths of approximately 5 feet bgs. The material transitioned to a sandy clay between approximately 5 feet bgs. Static water level is approximately 6 feet bgs.

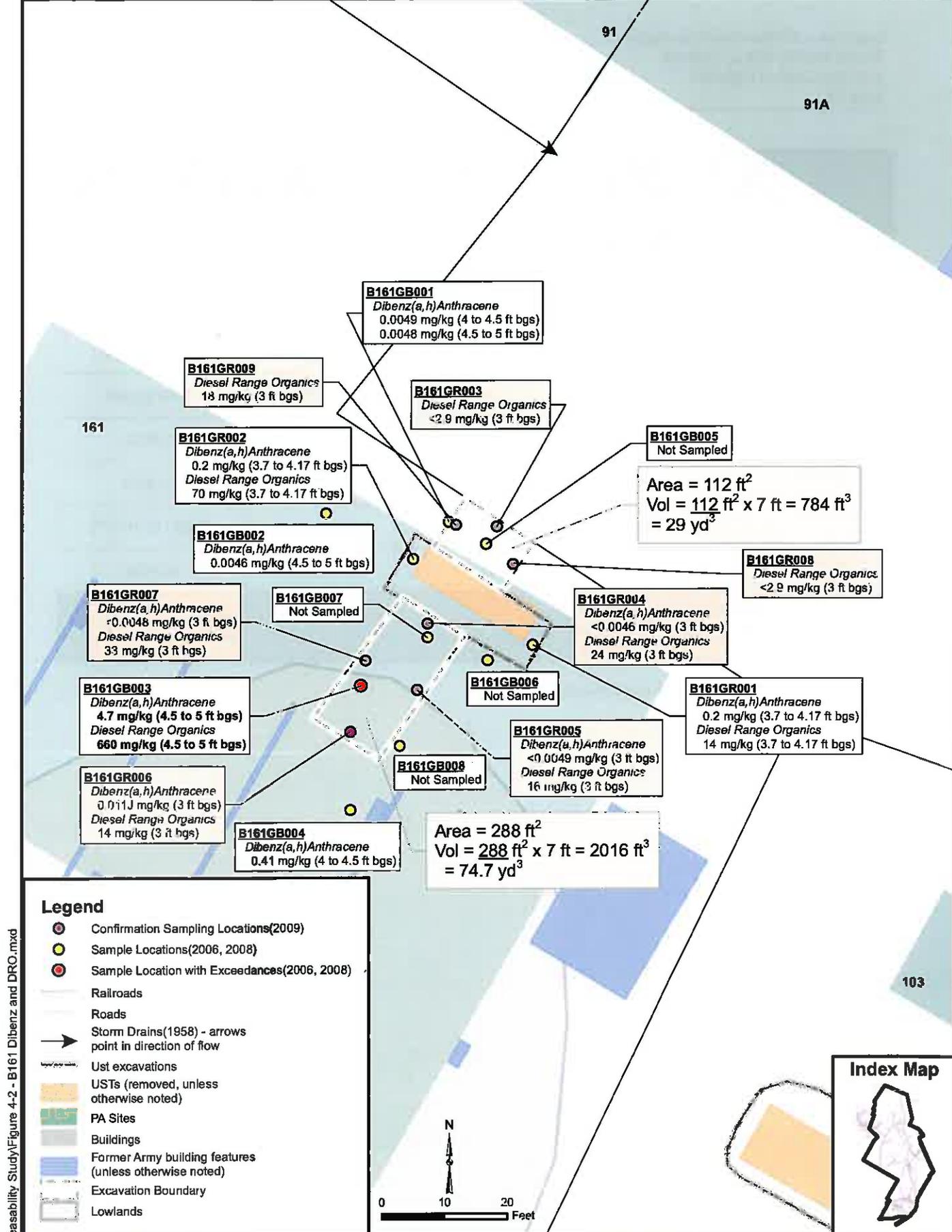
The soil samples were analyzed for diesel range organics, PCB-1254 (Arochlor-1254) and PAH dibenz(a,h)anthracene (Appendices D and E). Analysis of soil samples indicated the presence of diesel range organics at low concentrations in excavation wall samples. Concentrations did not exceed the Water Board ESL of 150 mg/kg (Table 4-2). Soil analyzed for PCBs and dibenz(a,h)anthracene did not indicate concentrations exceeding laboratory MDLs (Table 4-2). Figures 4-2 shows the results of all samples collected at the site, including these latest values, for dibenz(a,h)anthracene and diesel range organics. Similarly, Figure 4-3 shows the concentrations for PCB-1254 (Arochlor-1254).

Table 4-2. Former Building 161 UST Site Soil Analytical Results

Sample I.D.	Location	Orientation	Sample Analysis and Results (mg/kg)		
			Diesel Range Organics (C10 to C24)	PCB-1254 (Arochlor-1254)	Dibenz(a,h)Anthracene
B161GR003-A-S01	North Excavation	North	<2.9	<0.20	Not analyzed
B161GR008-A-S01	North Excavation	East	<2.9	<0.21	Not analyzed
B161GR009-A-S01	North Excavation	West	18	<0.21	Not analyzed
B161GR004-A-S01	South Excavation	North	24	Not analyzed	<0.0046
B161GR005-A-S01	South Excavation	East	16	Not analyzed	<0.0049
B161GR006-A-S01	South Excavation	South	9.7J (14**)	Not analyzed	0.007J (0.011J**)
B161GR007-A-S01	South Excavation	West	33	Not analyzed	<0.0048
Clean Up Goal (mg/kg)			150	0.74	0.21
Basis of Cleanup Goal			Water Board ESL	USEPA Industrial RSL	USEPA Industrial RSL

** Duplicate sample

Bolded values exceed their respective USEPA RSLs or ESL.
 mg/kg = milligram per kilogram



B161GB001
Dibenz(a,h)Anthracene
0.0049 mg/kg (4 to 4.5 ft bgs)
0.0048 mg/kg (4.5 to 5 ft bgs)

B161GR009
Diesel Range Organics
18 mg/kg (3 ft bgs)

B161GR003
Diesel Range Organics
<2.9 mg/kg (3 ft bgs)

B161GR002
Dibenz(a,h)Anthracene
0.2 mg/kg (3.7 to 4.17 ft bgs)
Diesel Range Organics
70 mg/kg (3.7 to 4.17 ft bgs)

B161GB005
Not Sampled

Area = 112 ft²
Vol = 112 ft² x 7 ft = 784 ft³
= 29 yd³

B161GR008
Diesel Range Organics
<2.9 mg/kg (3 ft bgs)

B161GB002
Dibenz(a,h)Anthracene
0.0046 mg/kg (4.5 to 5 ft bgs)

B161GR007
Dibenz(a,h)Anthracene
<0.0048 mg/kg (3 ft bgs)
Diesel Range Organics
33 mg/kg (3 ft bgs)

B161GB007
Not Sampled

B161GR004
Dibenz(a,h)Anthracene
<0.0046 mg/kg (3 ft bgs)
Diesel Range Organics
24 mg/kg (3 ft bgs)

B161GB006
Not Sampled

B161GR001
Dibenz(a,h)Anthracene
0.2 mg/kg (3.7 to 4.17 ft bgs)
Diesel Range Organics
14 mg/kg (3.7 to 4.17 ft bgs)

B161GB003
Dibenz(a,h)Anthracene
4.7 mg/kg (4.5 to 5 ft bgs)
Diesel Range Organics
660 mg/kg (4.5 to 5 ft bgs)

B161GR005
Dibenz(a,h)Anthracene
<0.0049 mg/kg (3 ft bgs)
Diesel Range Organics
16 mg/kg (3 ft bgs)

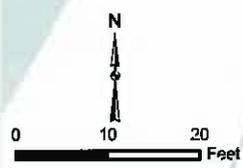
B161GB008
Not Sampled

B161GR006
Dibenz(a,h)Anthracene
0.011 mg/kg (3 ft bgs)
Diesel Range Organics
14 mg/kg (3 ft bgs)

B161GB004
Dibenz(a,h)Anthracene
0.41 mg/kg (4 to 4.5 ft bgs)

Area = 288 ft²
Vol = 288 ft² x 7 ft = 2016 ft³
= 74.7 yd³

- Legend**
- Confirmation Sampling Locations(2009)
 - Sample Locations(2006, 2008)
 - Sample Location with Exceedances(2006, 2008)
 - Railroads
 - Roads
 - Storm Drains(1958) - arrows point in direction of flow
 - Ust excavations
 - USTs (removed, unless otherwise noted)
 - PA Sites
 - Buildings
 - Former Army building features (unless otherwise noted)
 - Excavation Boundary
 - Lowlands



S:\Benicia\Feasibility Study\Figure 4-2 - B161 Dibenz and DRO.mxd



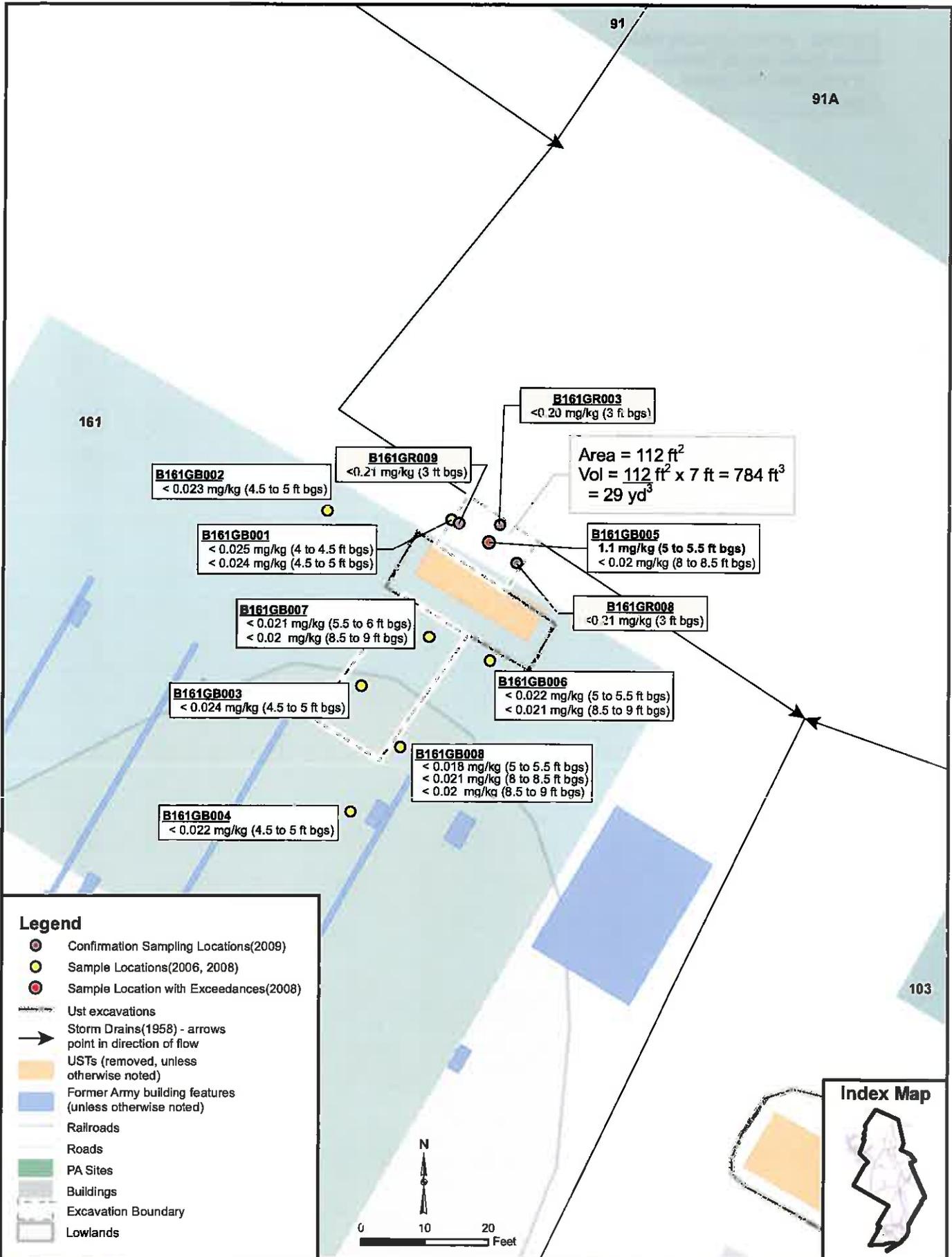
PROJECT:
130759-013
DATE:
1/27/2010

TITLE:
SITE:

Building 161 UST Dibenz(a,h)anthracene and Diesel Range Organic Soil Concentrations Former Benicia Arsenal, Benicia, California

Figure 4-2

S:\Benicia Feasibility Study\Figure 4-3 - B161 PCB1254.mxd



PROJECT:
130759-013
DATE:
1/27/2010

TITLE: **Building 161 UST PCB-1254 (Arochlor 1254) Soil Concentrations**
SITE: **Former Benicia Arsenal, Benicia, California**

Figure 4-3

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5.0 INVESTIGATION DERIVED WASTE MANAGEMENT

5.1 Soil Analyses

One waste characterization soil sample was submitted for soil excavated at Building 51 (approximately 3.4 cubic yards of soil) per the requirements of the disposal facility. The sample consisted of four separate 4-ounce glass jars submitted as one sample. Each 4-ounce jar contained equal grab amounts from four sides of the single dedicated bin.

Based on the procedures specified by the disposal facility, a single waste characterization sample was submitted for soil excavated at former Building 161 UST site (approximately 105 cubic yards of soil). Ten bins were filled with soil during the effort; three bins were filled with concrete. The soil sample served as a composite from all ten bins. Waste characterization analytical reports are provided in Appendix E.

Waste characterization samples were homogenized in the field prior to laboratory submittal. The characterization samples were tested for analyses determined by the disposal facility; which are provided below and discussed in Section 5.2.

- California Title 22 total metals (antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, mercury, molybdenum, nickel, silver, selenium, thallium, vanadium, and zinc) by USEPA Methods 6010B/7471A;
- Selected metals for STLC and TCLP analyses – as requested by the waste disposal facility – based on the initial total metals results;
- VOCs by USEPA Method 8260B;
- Semi-volatile organic compounds (SVOCs) by USEPA Method 8270C;
- Gasoline range organics (GRO), diesel range organics (DRO), and motor oil range organics (RRO) by USEPA Method 8015M

Waste characterization samples were submitted to EMAX (Appendix E).

5.2 Soil Staging, Transportation and Disposal

The construction contractor loaded soil into 20 cubic yard roll-off bins to the recommended capacity of approximately 50 percent. Once loaded the bins were moved to a staging area at former Building 161 UST site until characterization and disposal profiling were complete. All bins were covered and secured when not in use (Appendix A, Photo 17).

Soil waste profiling documentation was prepared by the construction contractor, the transportation contractor and Brown and Caldwell. A USACE representative signed documentation as the waste generator, and then the bins were loaded onto trucks and transported to the designated off-site disposal facility. All waste transportation documentation is provided in Appendix F.

Based on investigation results conducted to date, Brown and Caldwell anticipated that final disposition of all impacted soil would be to the Class II Altamont Landfill operated by Waste Management. However, characterization solubility analyses for soil generated at Building 51 indicated elevated soluble lead. The concentration required the 3.4 yards of soil to be classified as non-RCRA California hazardous waste (Table 5-1). The waste bin was transported to the Kettleman Hills Waste Management Facility, located four miles west of Kettleman City, California. Soil accumulated at former Building 161 UST was processed as nonhazardous waste and transported to the Class II Altamont Landfill located at 10840 Altamont Pass Road in Livermore, California.

Table 5-1. Building 51 and former Building 161 UST Waste Solubility Analytical Results						
Sample I.D.	STLC Threshold Values (mg/L)		STLC Results (mg/L)	TCLP Threshold Values (mg/L)		TCLP Results (mg/L)
	B051-BIN-21293	Lead	5	8.12	Lead	5
B161-BIN-COMP	Chromium	560	0.21	Chromium	5	Analysis not required

Bolded value exceeds STLC threshold
 mg/L = milligram per liter

5.3 Site Restoration

Confirmation sampling (see Section 4) demonstrated that soil within the predetermined excavation boundaries for Building 51 and former Building 161 UST was successfully remediated. On Friday November 20th, the construction contractor backfilled and compacted material to complete restoration at Building 51 (Appendix A, photos 3 and 4). A ¾ inch imported road base was used as backfill per the request of the landowner. The original surface at the Building 51 excavation was not covered by concrete or asphalt.

Beginning on November 30th, the construction contractor began restoration for excavations at former Building 161 UST. The excavations were backfilled with a combination of imported pea gravel from the total depth of excavation to approximately 3 feet below grade and ¾ inch imported road base from 3 feet below grade to 9 inches below grade. Backfill was mechanically compacted to 90 percent relative compaction (to ASTM D-1557).

Concrete removed during excavation at former Building 161 UST sites was replaced with concrete of equivalent thickness (approximately 9 inches thick) and finalized with a swept finish (Appendix A, photo 16). Tables 5-2 and 5-3 provide approximate totals for material removed as well as backfill totals and types, based on site and COPCs.

Table 5-2. Approximate Volumes of Impacted Soil

Site	COPC	Anticipated Volume	Actual Volume	Area	Depth (bgs)
Bldg. 51	Arsenic	13.6 yd ³ (16 tons)	3.4 yd ³ (4.5 tons)	61 ft ²	1.5 ft
Former Bldg. 161 UST	PCB-1254 (Arochlor 1254) and Diesel Range Organics (north excavation)	24.6 yd ³ (30 tons)	29 yd ³ (34 tons)	112 ft ²	7 ft
	Dibenz(a,h)Anthracene and Diesel Range Organics (south excavation)	63.1 yd ³ (75 tons)	74.7 yd ³ (90 tons)	288 ft ²	7 ft

Table 5-3. Approximate Volumes of Site Restoration Materials

Site	COPC	Pea Gravel Volume	Structural Fill Volume	Concrete Volume
Bldg. 51	Arsenic	Not used	4 yd ³ (5 tons)	Not used
Former Bldg. 161 UST	PCB-1254 (Arochlor 1254) and Diesel Range Organics (north excavation)	12 yd ³ (14 tons)	5 yd ³ (6 tons)	3 yd ³
	Dibenz(a,h)Anthracene and Diesel Range Organics (south excavation)	50 yd ³ (60 tons)	33 yd ³ (40 tons)	5.5 yd ³

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6.0 CONCLUSIONS AND RECOMMENDATIONS

The objectives of the Benicia Arsenal soil removal action were to use an aggressive approach to 1) remove soil that contained COPCs exceeding risk-based concentrations; 2) confirm that impacted soil is removed through confirmation sampling and analysis; 3) restore the Site to the condition prior to the removal action; 4) conduct the removal action in a healthy and safe manner; 5) meet local, state, and federal requirements for soil staging, transportation, and disposal; 6) and minimize disruption to tenant and landowner activity.

These objectives were achieved for Building 51 and former Building 161 UST site. All tasks outlined in the November 2009 Soil Removal Action Work Plan (Brown and Caldwell, 2009) were completed. A summary of conclusions and recommendations are summarized below.

6.1 Summary of Conclusions

In summary, no COPCs were found in soil warranting additional investigation or remediation.

- Confirmation soil samples collected at Building 51 were analyzed for arsenic. Arsenic in the sample collected along the east excavation wall (B051GR002) slightly exceeded the Ambient Concentration Limit of 12.9 mg/kg, but the average concentration of the samples collected do not exceed this limit. Additional excavation along the eastern wall could not be conducted due to this structure.
- Former Building 161 UST site excavation confirmation samples were analyzed for diesel range organics, PCB-1254 (Arochlor-1254) and PAH dibenz(a,h)anthracene. Analysis of soil samples indicated the presence of diesel range organics at low concentrations that did not exceed the Water Board ESL of 150 mg/kg. Soil analyzed for PCBs and dibenz(a,h)anthracene did not indicate concentrations exceeding laboratory MDLs.

6.2 Recommendations—No DoD Action Indicated (NDAI)

FUDS policy outlines four categories of NDAI (I, II, III, and IV) (USACE, 2004). A Category I NDAI decision applies to the PA process. Sites are classified as Category I NDAI where USACE has determined that the hazards found were not attributable to DoD. Sites that continue through the CERCLA process could be designated as Category II (after SI efforts), Category III (after RI/FS or Engineering Evaluation/Cost Analysis efforts) and Category IV (after Removal Action [RA] efforts) NDAI decisions.

Based upon conclusions explained above for Arsenal Building 51 and former Building 161 UST site, a Category IV NDAI determination has been made. Remediation for those areas contaminated solely by past DoD activities is complete.

7.0 REFERENCES

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<http://www.epa.gov/region09/superfund/prg/rsl-table.html>

Appendix A:

Photo Log – By Site Operation Location

APPENDIX A

PHOTO LOG SOIL REMOVAL ACTION REPORT

BENICIA ARSENAL
BENICIA, CA

Building 51 Excavation Photos



Photo 1. View of vacuum soil removal at Building 51.

Building 51 Excavation Photos (continued)



Photo 2. View of completed Building 51 soil removal action with exposed utility lines.



Photo 3. View of structural fill used for Building 51 restoration.

Building 51 Excavation Photos (continued)



Photo 4. View of restored work area at Building 51.



Photo 5. View of concrete cutting performed at north excavation for former Building 161 UST.

Building 51 Excavation Photos (continued)



Photo 6. View of concrete removal performed at south excavation for former Building 161 UST.



Photo 7. View of standard concrete depth observed for former Building 161 UST excavations.

Building 51 Excavation Photos (continued)



Photo 8. View of buried concrete at south former Building 161 UST excavation.



Photo 9. View of collapsed gravel used for backfill during former Building 161 UST removal. Photo taken at north excavation.

Building 51 Excavation Photos (continued)



Photo 10. View of completed north excavation. Note sewer line on wall of excavation and groundwater in bottom of excavation. Groundwater measured at approximately 6 feet below ground surface.



Photo 11. View of pipeline observed below surface slab at south excavation. The pipe was broken off at the wall of the excavation and capped with grout.

Building 51 Excavation Photos (continued)



Photo 12. View of soil staining on floor of south excavation. All stained soil observed on floors was excavated. Note concrete slab and cut fuel pipeline observed below surface slab along wall of excavation. The pipe was capped with grout.



Photo 13. View of completed south excavation. Note groundwater in bottom of excavation at 6 feet bgs.

Building 51 Excavation Photos (continued)



Photo 14. View of backfilling at south excavation.



Photo 15. View of mechanical compaction performed at north excavation.

Building 51 Excavation Photos (continued)



Photo 16. View of concrete restoration for both former Building 161 UST excavations.



Photo 17. View of secured soil bins for Building 51 and former Building 161 UST. All bins were staged adjacent to former Building 161 UST excavations along Jackson Street.

Appendix B:
Field Activity Notes

on Page No. 1

November 16, 2009

Weather 60°F Clear & Breezy

Objective: Excavate to ~ 1 foot bgs behind rabbit slw @ Bldg. 51, sample if time.

- 0650 Departed Davis for Benicia.
 - 0745 Arrived - waited on site access.
 - 0800 20 Yard bin arrived.
 - 0845 Accessed site, Mike Fitzgerald arrived & set up.
 - 0930 Surveyed area for excavation and discovered "Telephone" utility box. Decided to leave a place. Covered HES tailgate.
 - 0945 Terry Gleason, USACE 440 on site to survey. No munitions concerns.
 - 1000 Terry Gleason departed site.
 - 1020 Vac. rig excavation began. Deconned slide hammer w/ 3 buckets.
 - 1200 Took lunch.
 - 1245 Resumed w/ hand excavating. Prepared equip. blank (BOSI-62001-0-W)
 - 1400 Excavation complete, bin loaded. Sample collection began.
 - 1440 Excavation and bin sampling complete (BIN # 21293)
Soil samples collected as N, E, W, and center w/ duplicate.
done on center sample. Excavation dimensions: 4-ft(w) x 13.5-ft(L) x 5-ft (D).
East sample classification: LLAY (CL), dark brown, medium plasticity, soft

South sample classification: LLAY (CL), dark yellowish brown, medium plasticity, (70% fines, 30% fine sand)

West sample classification: As above, percentage change to 60% fines, 20% medium, 20% fine sand
 - 1500 Site swept & cleaned, excavation mapped.
Will meet @ Bldg. 161 in AM on 11/17/09
Victors Concrete will arrive @ 0800
 - 1545 Departed site for office.
 - 1645 Sample mgmt. completed; Departed for Fed Exp.
 - 1800 Samples shipped. End of day.
- Summary: Excavated around impacted area to ~ 1.5 ft bgs
Collected confirmation & composite samples.
- Equip. Truck, hand tools, Data ram, Peri. pump, tubing, buckets, alconox, 55 drums

To Page No. 1

Inspected & Understood by me,

Date

11/16/09

Invented by

Date

Recorded by

From Page No. 1

Weather: 60°F
& clear

11/17/09

Objective: Excavate Bldg. 161
Collect confirmation samples

0700

Departed Davis for site

0745

Arrived to meet Northlake team.

0810

Concrete cutter on site. Conducted HES tailgate.
Calibrated Beta Ram in bag.

0930

Concrete cutting on two excavation areas completed.
Heavy equip. used to break up concrete.

1100

Excavation within tenaline (south, larger) has second
and deeper concrete pad. Two concrete pads were
separated by 8-12 inches of sand imported backfill and
native organic clay. Strong diesel odor present in fill
material.

1145

Mike Fitzgerald researching sampling frequency
for waste soil.

1200

Took lunch

1230

Resumed, prepared PID for use.

1315

Moved to north excavation & began transferring into
adjacent bin.

1400

Excavation taken to ~3 feet bgs. Base rock A/B
observed on south trench. A/B material collapsing into
excavation. Imported sand observed on Northwest corner.

1415

Decanned sampling tools. Prepared for equip. blank

Total on materials so far: 20 yards soil stored (2 bins)
20 yards concrete stored (2 bins)

1425

Stained soil observed @ ~3 feet bgs in larger (south) excavation.
PID @ 2 ppm when held in excavation.

1615

Three well soil samples collected from north excavation.

Samples collected as "008(N)" "009(E)" "003(W)" ("001" & "002" I.D. used in 2006/10/17 removal)

Discussed excavation findings w/ Wendy Link. W. Link
concluded that floor (at groundwater = 9 feet bgs) should be
left alone. No duplicates necessary for 8082 analyses
in excavation samples.

1630

Cleaned up site. Placed trench plates over
excavation & sealed seams. Northlake off site.

To Page No. 1

Witnessed & Understood by me,



Date

11/17/09

Invented by

Date

Recorded by

TITLE Excavation for RA @ Bldg. 161

From Page No. 1

11/17/09 Contd.

1645 Cal'd Dularcum in bag. PID: not calibrating.

1715 Brought ice for samples & departed for office.

1820 EOD.

Summary: Cut & removed concrete for two Bldg. 161 excavations.

- Excavated smaller (north) location.
- Collected three N, E, W soil samples from walls of excavation.
- Closed excavations w/ trench plates

Equip.: Data Recr, PID, truck, SS shovels, hand tools, buckets, alconox

To Page No. 6

Witnessed & Understood by me,

[Signature]

Date

11/17/09

Invented by

Date

Recorded by

From Page No. 1

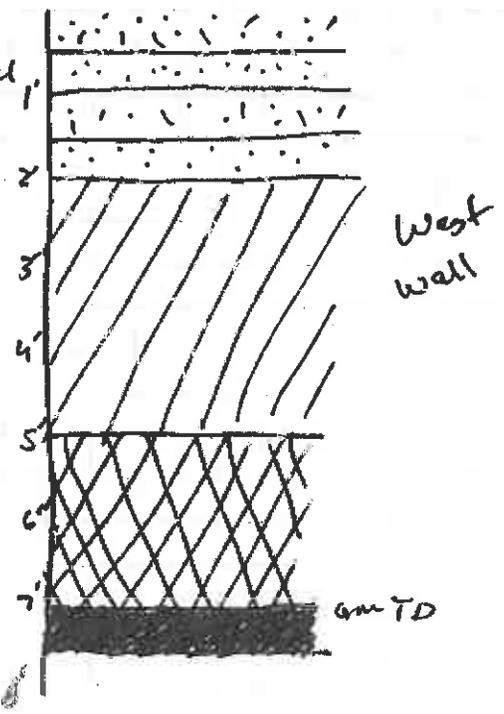
Weather: 50°F
3 Breezy

4/18/01 Objective: Complete both Bldg. 161 excavations, sample larger excavation, collect bin inventory, cover excavations & seal for return trip.

0805 Arrived to meet Northstate team. Cal's. PID / Data Run (100 PPM Test/Bag for Data Run). Conducted H&S tailgate. Soil Bin Inventory. All bins have ~ 10 yards soil/bin. F.O.s: Bldg. 51 (~ 5 yards) - 21293
Bldg. 161 - 18012, 18229, 21292, 18197, 18344, 1862, 1815, 18298, 18336, 1813, 1926

1045 Bldg. 161 Excavation dimensions:
Large excavation (South) 12 ft (N) x 24 ft (E/W) x 7 ft deep
Small excavation (North) 14 ft (N) x 8 ft (E/W) x 8.5 ft deep
Excavation delay as crew awaits addtl. bins.

1110 Large (South) excavation soil log:
0-1 feet bgs: 0-6" concrete
6-12" Sand fill material
1-2 feet bgs: 1-1.5' Seal concrete pad
1.5-2' Sand fill w/ wire & rebar
2-3 feet bgs Clay w/ sand & gravel
3-4 feet bgs as above
4-5 feet bgs as above, w/ staining & odor
5-7.5 (TO) 7 Clay
Rebar encased @ ~ 7.5 feet bgs w/ Shear ~ 7



1145 Took lunch
1215 Resealed w/ final excavation loads into bins
Concrete contained in 21292

To Page No. _____

Witnessed & Understood by me,

Date 4/19/01

Invented by

Date

Recorded by

From Page No. 1 11/10/09 Contd.

1230 Small excavation (north) soil log

0-1 feet bgs : 0-8" concrete

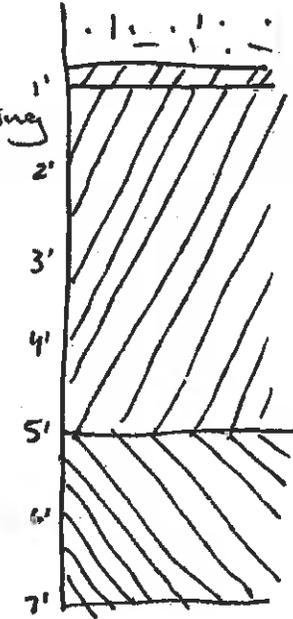
8-12" clay w/ staining

1-3 feet bgs : Clay w/ stained patches

3-5 feet bgs : as above w/out staining

5-7 feet bgs : Clayey sand

Groundwater @ 27 feet bgs



1330 Decanned Sumpster, prepared to sample large excavation.

1455 All samples collected as N(004) E(005)

S(006-A, 006-B [dup.]), W(007)

MS/MSD volume collected in "006A" Sample.

Mike Fitzgerald of Northstate discussed sample protocol for Bins w/ waste management. 7 sample needed for up to 500 yards. Sample designated as "BIN-BIN-COMP" for all 10 bins (1455).

1530 Sample mount. complete, site cleaned up.

Equip. staged in gated area.

Bins will be moved on 11/19/09. Mike Fitzgerald furnished profile contact info. to be sent to USACE.

1555 Northstate off site. BC off site, headed to lab.

Summary: Completed large excavation, logged soil/walls of excavations, sampled large excavation, took bin inventory.

Equip: Data team, PID, truck, SS slurs, hand tools, buckets, airconyx

To Page No. _____

Witnessed & Understood by me.

Date

11/10/09

Invented by

Date

Recorded by

From Page No. 1 11/30/09

Weather 50° F RLL

Objective: Oversight for excavation backfill

- 0900 Departed office for site.
- 1000 Arrived to meet Northside Staff. Prepared monitoring equip., mapped excavations, collected GPS coordinates.
- 1050 Northside arrived. Conducted HRS tailgate.
- 1100 Excavation GPS coordinates logged as follows:
- | | |
|-------------------------------|---|
| <u>North/Small excavation</u> | NW - 38° 02' 46.68" / 122° 08' 24.27" |
| | SW - 38° 02' 46.62" / 122° 08' 24.33" |
| | NE - 38° 02' 46.61" / 122° 08' 24.11" |
| | SE - 38° 02' 46.59" / 122° 08' 24.18" |
| <u>South/Large excavation</u> | NW - 38° 02' 46.52" / 122° 08' 24.35" |
| | SW - 38° 02' 46.35" / 122° 08' 24.26" 24.5" |
| | NE - 38° 02' 46.46" / 122° 08' 24.36" |
| | SE - 38° 02' 46.27" / 122° 08' 24.40" |
- 1130 Trash plates removed from small excavation. (W) measured @ 6-5 ft lgs in excavation. ~ 2 foot of water in excavation.
- 1145 Backfill material will not be arriving today; began placing trash plates on Small excavation.
- 1200 Yantra excavator tipped into excavation. Mike Fitzgerald jumped off of machine. Assisted Mike in recovering machine w/ Northside truck. Discussed at length with Wendy Clark & Jim Butler. Processed APP incident form.
- 1330 Assisted Mike w/ concrete cutting for large excavation restoration. Air monitoring not necessary.
- 1430 Departed Bldg. 161 for Bldg. 51 to photograph & log GPS coordinates.

To Page No. 2

Witnessed & Understood by me.



Date

11/30/09

Invented by

Date

Recorded by

111

TITLE Bonita PA

Project No. 130757

Book No. 10019

63

in Page No. 2 11/30/09 contd.

Blkg. S: center point coordinates:

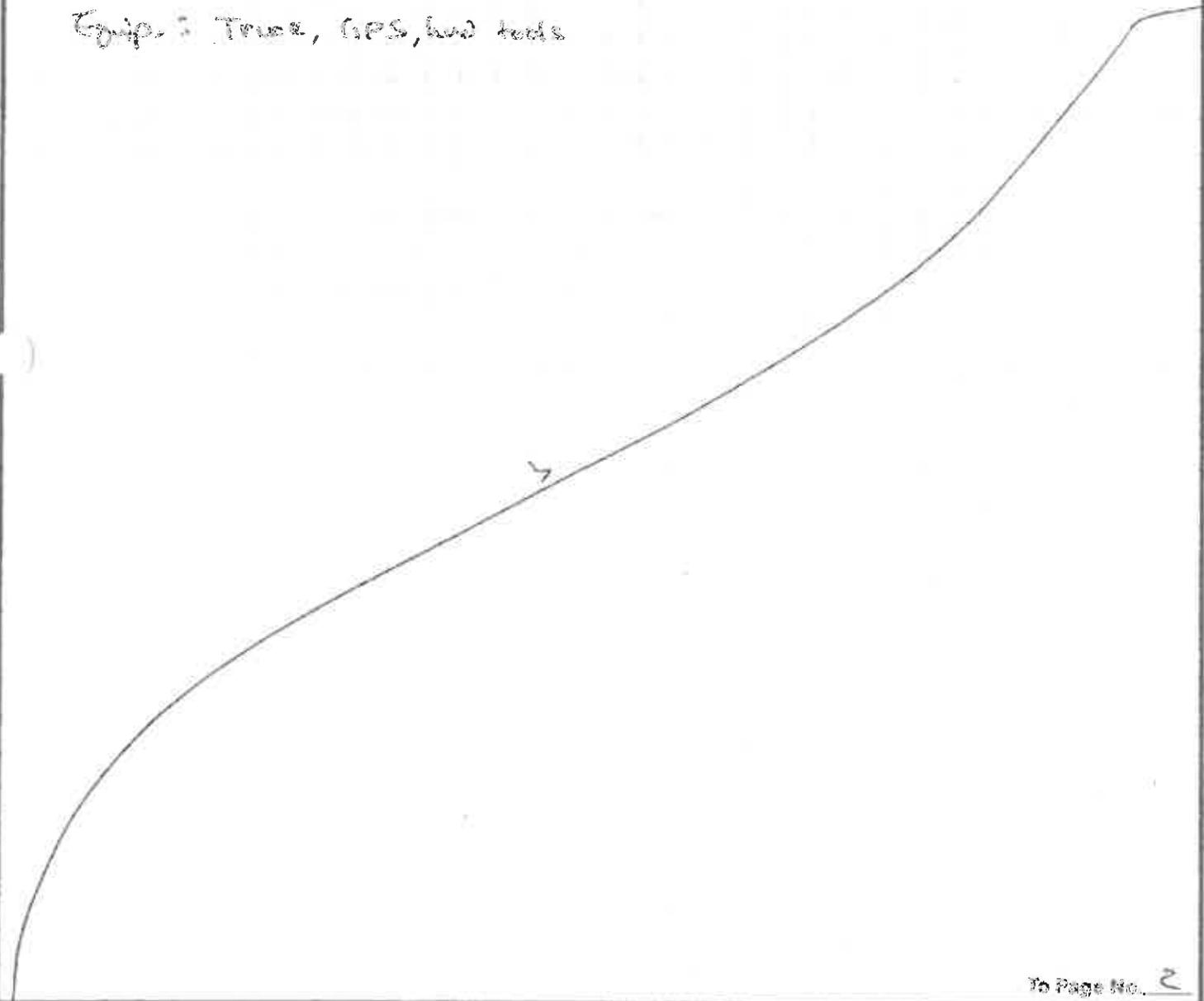
$38^{\circ}02'47.16''$ / $122^{\circ}08'19.07''$

1530 Departed site for office to write incident summary.

1625 End of day

Summary: - Documented excavation tipping incident
- Cut concrete @ large excavation
- obtained GPS coordinates for all excavations

Equip.: Truck, GPS, hand tools



To Page No. 2

Inspected & Understood by me, [Signature]

Date 11/30/09

Invented by

Date

Recorded by

From Page No. 1 12/1/09 Objective: Backfill excavations,
cut concrete.

Weather: 40°F

0630 Departed office for site.

0720 Arrived to meet Northstate staff. Conduct H&S tailgate & debriefed from incident w/ excavator on 11/30/09.

0745 Prepared PID for use. Semi arrived w/ 20 yards of pea gravel.

0830 Trinch plate Co. on site to remove all trinch plates. Backfill commenced. Water in large excavation @ 26' cut logs

1020 Awaiting addtl. material for backfill, cleaning up site.

1130 Pea gravel backfill complete for both excavations +
Pea gravel backfill totals: Small excavation - ~~24~~ 14 tons
Large excavation - ~~70~~ 60 tons
Crushed concrete A/B totals: Small excavation - 6 tons
Large excavation - ~~50~~ 40 tons
Took lunch

1200 Commenced. Mike Fitzgerald departed site to pickup compactor (mechanical, push-behind).

1330 Small excavation complete w/ compaction -
large excavation being compacted w/ every 5th truck load.

1400 Vickless concrete cutting arrived to cut concrete ends (PBS) @ large excavation to prepare for restoration. H&S tailgate conducted.

1420 BC departed site for office.

Summary: Both Bldg 161 excavations backfilled w/ pea gravel, A/B
Concrete cut by Vickless for restoration.
All backfill compacted mechanically.

Equip: PID, truck camera

To Page No. 1

Witnessed & Understood by me,

Date

12/1/09

Invented by

Date

Recorded by

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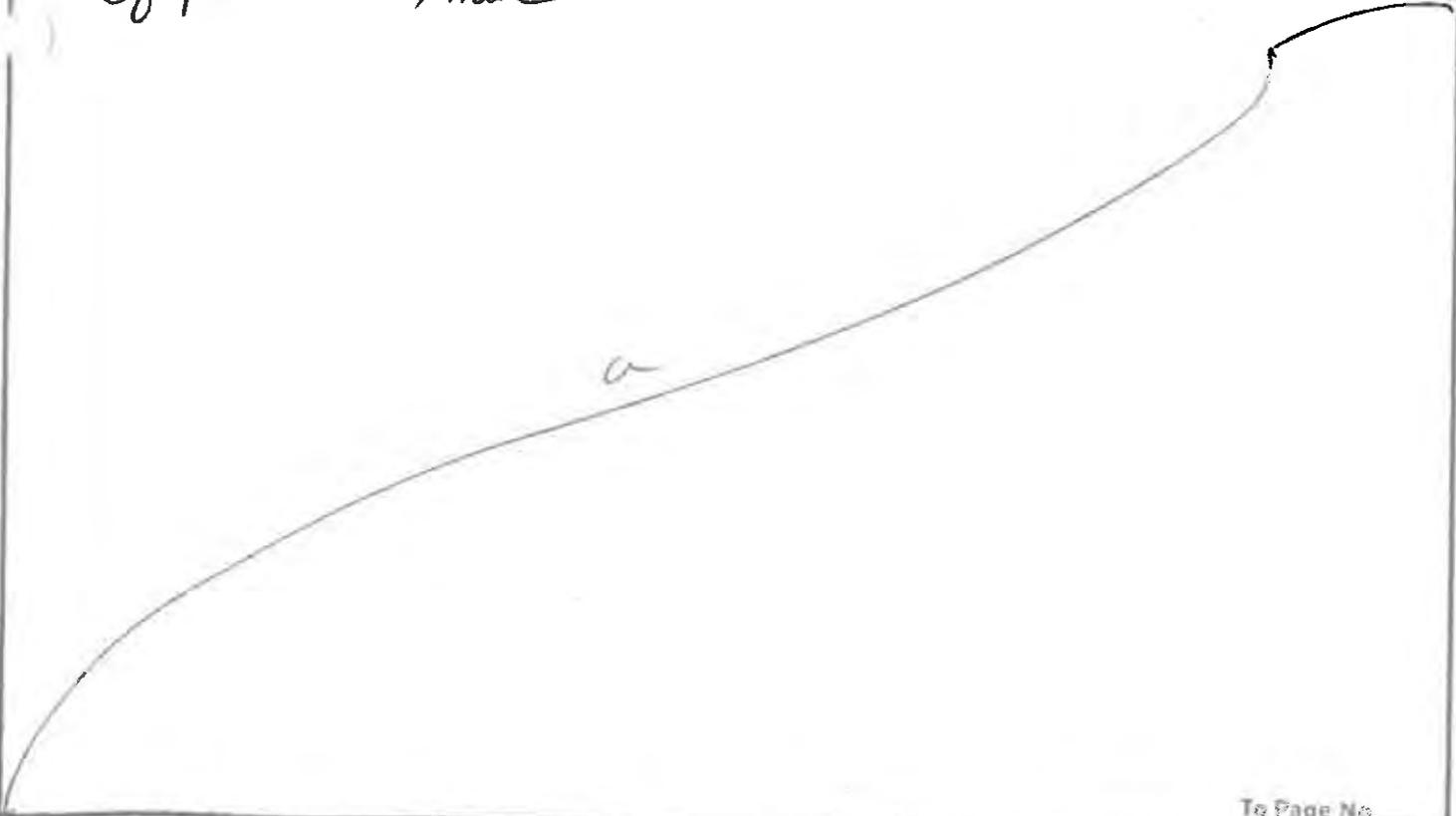
Objective: Pour concrete on backfill to complete restoration.

12/2/09

- 0845 Departed office for site.
- 0945 Arrived to meet Northstate staff. Conducted HRS tailgate.
- 1015 Sync concrete truck arrived w/ 27 yards of concrete.
- 1100 Concrete pour complete. Request approval from Therman File to pour wheelbarrel of concrete (extra) on rubble in storage area.
- 1200 Concrete smoothed, area cleaned up. Waiting for addtl. drying before sweeping.
- 1300 Northstate staff departed site for lunch. BC departed for office.

Summary: Observed concrete restoration on excavations

Equip: Camera, truck



To Page No. _____

Witnessed & Understood by me, *[Signature]*

Date 12/2/09

Invented by _____

Date _____

Recorded by _____

Appendix C:
Legend for Analytical Results

Appendix C.
Legend for Analytical Results

Sample Types	
SampleTypeID	Description
FD	Field Duplicate
N	Normal Environmental Sample

Laboratory	
Lab ID	Description
EMXT	EMAX Labs., Inc., Torrance, CA

Analytes	
AnalyteID	Analyte Name
1072-16-8	Octane, 2,7-dimethyl-
107-83-5	2-METHYLPENTANE
108-87-2	METHYLCYCLOHEXANE
109-66-0	N-PENTANE(C5)
110-82-7	CYCLOHEXANE
120-92-3	Cyclopentanone
16747-25-4	Hexane, 2,2,3-trimethyl-
1678-91-7	ETHYLCYCLOHEXANE
611-14-3	2-ETHYLTOLUENE
622-96-8	1-ETHYL-4-METHYL-BENZENE
638-04-0	CIS-1,3-DIMETHYL CYCLOHEXANE
74-99-7	1-Propyne
767-58-8	METHYLDIHYDROINDENE
78-78-4	2-METHYLBUTANE
872-56-0	ISOPROPYLCYCLOBUTANE
96-14-0	3-METHYLPENTANE
96-37-7	METHYLCYCLOPENTANE
ACE	ACETONE
ACNP	ACENAPHTHENE
ACNPY	ACENAPHTHYLENE
ANTH	ANTHRACENE
BDCME	BROMODICHLOROMETHANE
BRBZ	BROMOBENZENE
BRCLME	BROMOCHLOROMETHANE
BRME	BROMOMETHANE
BTBZN	n-BUTYLBENZENE
BTBZS	SEC-BUTYLBENZENE
BTBZT	t-BUTYLBENZENE
BZ	BENZENE
BZAA	BENZO(a)ANTHRACENE
BZAP	BENZO(a)PYRENE
BZBF	BENZO(b)FLUORANTHENE
BZGHIP	BENZO(g,h,i)PERYLENE

Appendix C.
Legend for Analytical Results

Analytes (continued)	
AnalyteID	Analyte Name
BZKF	BENZO(k)FLUORANTHENE
BZLCL	BENZYL CHLORIDE
BZME	TOLUENE
C7T	TOTAL HEPTANES
CDS	CARBON DISULFIDE
CHRYSENE	CHRYSENE
CLBZ	CHLOROBENZENE
CLBZME2	2-CHLOROTOLUENE
CLBZME4	4-CHLOROTOLUENE
CLEA	CHLOROETHANE
CLME	CHLOROMETHANE
CLPE3	ALLYL CHLORIDE (3-CHLOROPROPENE)
CTCL	CARBON TETRACHLORIDE
CYHEXANE	CYCLOHEXANE
CYMP	P-CYMENE (p-ISOPROPYLTOLUENE)
DBAHA	DIBENZ(a,h)ANTHRACENE
DBCME	DIBROMOCHLOROMETHANE
DBCP	1,2-DIBROMO-3-CHLOROPROPANE
DBMA	DIBROMOMETHANE
DCA11	1,1-DICHLOROETHANE
DCA12	1,2-DICHLOROETHANE
DCBZ12	1,2-DICHLOROBENZENE
DCBZ13	1,3-DICHLOROBENZENE
DCBZ14	1,4-DICHLOROBENZENE
DCE11	1,1-DICHLOROETHENE
DCE12C	cis-1,2-DICHLOROETHYLENE
DCE12T	trans-1,2-DICHLOROETHENE
DCP11	1,1-DICHLOROPROPENE
DCP13C	cis-1,3-DICHLOROPROPENE
DCP13T	trans-1,3-DICHLOROPROPENE
DCPA12	1,2-DICHLOROPROPANE
DCPA13	1,3-DICHLOROPROPANE
DCPA22	2,2-DICHLOROPROPANE
DIOXANE14	1,4-DIOXANE (P-DIOXANE)
DRO	DIESEL (C10-C24)
EBZ	ETHYLBENZENE
EBZME4	4-ETHYLTOLUENE
EDB	1,2-DIBROMOETHANE (ETHYLENE DIBROMIDE)
ERYTHRENE	1,3-BUTADIENE
ETBE	TERT-BUTYL ETHYL ETHER
ETHANOL	ETHANOL
FC11	TRICHLOROFLUOROMETHANE
FC113	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE
FC114	Freon 114
FC12	DICHLORODIFLUOROMETHANE

Appendix C.
Legend for Analytical Results

Analytes (continued)	
AnalyteID	Analyte Name
FL	FLUORENE
FLA	FLUORANTHENE
GRO	GASOLINE (~C6-C10)
HCBU	HEXACHLOROBUTADIENE
HEXANE	Hexane
HXO2	2-HEXANONE
IME	IODOMETHANE (METHYL IODIDE)
INP123	INDENO(1,2,3-c,d)PYRENE
IPBZ	ISOPROPYLBENZENE (CUMENE)
ISOPRE	ISOPROPYL ETHER
ISOPROH	ISOPROPANOL
MEK	METHYL ETHYL KETONE (2-BUTANONE)
MIBK	METHYL ISOBUTYL KETONE (4-METHYL-2-PENTANONE)
MTLNCL	METHYLENE CHLORIDE
NAPH	NAPHTHALENE
PB	LEAD
PBZN	n-PROPYLBENZENE
PCA	1,1,2,2-TETRACHLOROETHANE
PCE	TETRACHLOROETHYLENE(PCE)
PHAN	PHENANTHRENE
PROPENE	PROPYLENE
PYR	PYRENE
RRO	MOTOR OIL (C20-C36)
STY	STYRENE
TAME	TERT-AMYL METHYL ETHER
TBME	BROMOFORM
TBUTMEE	tert-BUTYL METHYL ETHER
TC1112	1,1,1,2-TETRACHLOROETHANE
TCA111	1,1,1-TRICHLOROETHANE
TCA112	1,1,2-TRICHLOROETHANE
TCB123	1,2,3-TRICHLOROBENZENE
TCB124	1,2,4-TRICHLOROBENZENE
TCE	TRICHLOROETHYLENE (TCE)
TCLME	CHLOROFORM
TCPR123	1,2,3-TRICHLOROPROPANE
THF	TETRAHYDROFURAN
TM224C5N	2,2,4-TRIMETHYLPENTANE
TMB124	1,2,4-TRIMETHYLBENZENE
TMB135	1,3,5-TRIMETHYLBENZENE (MESITYLENE)
VA	VINYL ACETATE
VC	VINYL CHLORIDE
XYLMP	M,P-XYLENE (SUM OF ISOMERS)
XYLO	O-XYLENE (1,2-DIMETHYLBENZENE)

Appendix C.
Legend for Analytical Results

Parvq	
ParvqID	Description
=	Detected Above Reporting Limit
ND	Not Detected Above Detection Limit
TI	Tentatively Identified Compound
TR	Trace Detection; Below RL, Above DL

QC Flags	
QCFlag	Description
NJ	The analyte identification is presumptive. Reported value is an estimated concentration.
UJ	The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in.
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

Reason Codes	
ReasonCode	Description
6L	Low LCS recovery
A	Absence of supporting QC
T	Trace level compound, poor quantitation

Units	
UnitsID	Description
MG/KG	Milligrams per Kilogram
MG/L	Milligrams per Liter
UG/L	Micrograms per Liter

Appendix D:
Soil Analytical Tables

Appendix D
Analytical Results for all Constituents

Soil Results:

Location	Sample ID	Sample Type	Sample Date	Depth (FT)	Analytical Method	Analyte	Result	Units	Detect Limit	Parvq	QC Flag	Reason Code
B161GR003	B161GR003-A-S01	N	11/17/2009	0 - 3	SW8082	Arochlor 1016	< 0.02	MG/KG	0.02	ND	U	-
B161GR008	B161GR008-A-S01	N	11/17/2009	0 - 3	SW8082	Arochlor 1016	< 0.021	MG/KG	0.021	ND	U	-
B161GR009	B161GR009-A-S01	N	11/17/2009	0 - 3	SW8082	Arochlor 1016	< 0.021	MG/KG	0.021	ND	U	-
B161GR003	B161GR003-A-S01	N	11/17/2009	0 - 3	SW8082	Arochlor 1221	< 0.02	MG/KG	0.02	ND	U	-
B161GR008	B161GR008-A-S01	N	11/17/2009	0 - 3	SW8082	Arochlor 1221	< 0.021	MG/KG	0.021	ND	U	-
B161GR009	B161GR009-A-S01	N	11/17/2009	0 - 3	SW8082	Arochlor 1221	< 0.021	MG/KG	0.021	ND	U	-
B161GR003	B161GR003-A-S01	N	11/17/2009	0 - 3	SW8082	Arochlor 1232	< 0.02	MG/KG	0.02	ND	U	-
B161GR008	B161GR008-A-S01	N	11/17/2009	0 - 3	SW8082	Arochlor 1232	< 0.021	MG/KG	0.021	ND	U	-
B161GR009	B161GR009-A-S01	N	11/17/2009	0 - 3	SW8082	Arochlor 1232	< 0.021	MG/KG	0.021	ND	U	-
B161GR003	B161GR003-A-S01	N	11/17/2009	0 - 3	SW8082	Arochlor 1242	< 0.02	MG/KG	0.02	ND	U	-
B161GR008	B161GR008-A-S01	N	11/17/2009	0 - 3	SW8082	Arochlor 1242	< 0.021	MG/KG	0.021	ND	U	-
B161GR009	B161GR009-A-S01	N	11/17/2009	0 - 3	SW8082	Arochlor 1242	< 0.021	MG/KG	0.021	ND	U	-
B161GR003	B161GR003-A-S01	N	11/17/2009	0 - 3	SW8082	Arochlor 1248	< 0.02	MG/KG	0.02	ND	U	-
B161GR008	B161GR008-A-S01	N	11/17/2009	0 - 3	SW8082	Arochlor 1248	< 0.021	MG/KG	0.021	ND	U	-
B161GR009	B161GR009-A-S01	N	11/17/2009	0 - 3	SW8082	Arochlor 1248	< 0.021	MG/KG	0.021	ND	U	-
B161GR003	B161GR003-A-S01	N	11/17/2009	0 - 3	SW8082	Arochlor 1254	< 0.02	MG/KG	0.02	ND	U	-
B161GR008	B161GR008-A-S01	N	11/17/2009	0 - 3	SW8082	Arochlor 1254	< 0.021	MG/KG	0.021	ND	U	-
B161GR009	B161GR009-A-S01	N	11/17/2009	0 - 3	SW8082	Arochlor 1254	< 0.021	MG/KG	0.021	ND	U	-
B161GR003	B161GR003-A-S01	N	11/17/2009	0 - 3	SW8082	Arochlor 1260	< 0.02	MG/KG	0.02	ND	U	-
B161GR008	B161GR008-A-S01	N	11/17/2009	0 - 3	SW8082	Arochlor 1260	< 0.021	MG/KG	0.021	ND	U	-
B161GR009	B161GR009-A-S01	N	11/17/2009	0 - 3	SW8082	Arochlor 1260	< 0.021	MG/KG	0.021	ND	U	-
B051GR001	B051GR001-A-S01	N	11/16/2009	0 - 0.75	SW6010B	Arsenic	9.34	MG/KG	0.409	=	-	-
B051GR002	B051GR002-A-S01	N	11/16/2009	0 - 0.75	SW6010B	Arsenic	14.3	MG/KG	0.437	=	-	-
B051GR003	B051GR003-A-S01	N	11/16/2009	0 - 0.75	SW6010B	Arsenic	12.5	MG/KG	0.414	=	-	-
B051GR004	B051GR004-A-S01	N	11/16/2009	0 - 0.75	SW6010B	Arsenic	12.6	MG/KG	0.42	=	-	-
B051GR005	B051GR005-A-S01	N	11/16/2009	0 - 0.75	SW6010B	Arsenic	11.7	MG/KG	0.411	=	-	-
B051GR005	B051GR005-B-S01	FD	11/16/2009	0 - 0.75	SW6010B	Arsenic	9.53	MG/KG	0.402	=	-	-

Appendix D, continued
Analytical Results for all Constituents

Soil Results:

Location	Sample ID	Sample Type	Sample Date	Depth (FT)	Analytical Method	Analyte	Result	Units	Detect Limit	Parvq	QC Flag	Reason Code
B161GR004	B161GR004-A-S01	N	11/18/2009	0 - 3	SW8310	Dibenz (a,h) Anthracene	< 0.0046	MG/KG	0.0046	ND	U	-
B161GR005	B161GR005-A-S01	N	11/18/2009	0 - 3	SW8310	Dibenz (a,h) Anthracene	< 0.0049	MG/KG	0.0049	ND	U	-
B161GR006	B161GR006-A-S01	N	11/18/2009	0 - 3	SW8310	Dibenz (a,h) Anthracene	< 0.005	MG/KG	0.005	ND	U	-
B161GR006	B161GR006-B-S01	FD	11/18/2009	0 - 3	SW8310	Dibenz (a,h) Anthracene	< 0.0048	MG/KG	0.0048	ND	U	-
B161GR007	B161GR007-A-S01	N	11/18/2009	0 - 3	SW8310	Dibenz (a,h) Anthracene	< 0.0048	MG/KG	0.0048	ND	U	-
B161GR003	B161GR003-A-S01	N	11/17/2009	0 - 3	SW8015B	Diesel	< 2.9	MG/KG	2.9	ND	U	-
B161GR004	B161GR004-A-S01	N	11/18/2009	0 - 3	SW8015B	Diesel	24	MG/KG	2.7	=	-	-
B161GR005	B161GR005-A-S01	N	11/18/2009	0 - 3	SW8015B	Diesel	16	MG/KG	2.9	=	-	-
B161GR006	B161GR006-A-S01	N	11/18/2009	0 - 3	SW8015B	Diesel	9.7	MG/KG	2.9	TR	J	T
B161GR006	B161GR006-B-S01	FD	11/18/2009	0 - 3	SW8015B	Diesel	14	MG/KG	2.8	=	-	-
B161GR007	B161GR007-A-S01	N	11/18/2009	0 - 3	SW8015B	Diesel	33	MG/KG	2.9	=	-	-
B161GR008	B161GR008-A-S01	N	11/17/2009	0 - 3	SW8015B	Diesel	< 2.9	MG/KG	2.9	ND	U	-
B161GR009	B161GR009-A-S01	N	11/17/2009	0 - 3	SW8015B	Diesel	18	MG/KG	3	=	-	-

Appendix E:
Laboratory Analytical Reports



SDG Login Review Sheet

Date: 11/17/2009

RB
11/18/09

Client Code: BC_0904_
Client: Brown & Caldwell
Project: Former Benicia Arsenal
EMAX PM: Richard Beauvil

Send Report To: Attn: Greg Cole
Company: Brown & Caldwell
Address: 10540 White Rock Road, Ste 180
Rancho Cordova CA 95670
NA

SDG: 09K183

DATE/ TIME RECEIVED: 11/17/2009 9:30

DUE DATE: 12/8/2009

Lwks ID	Control #	Sample ID	Matrix	Coll Date	Time	Lwks Method	Analysis
EP12091	K183-01	B051GR001-D-W01 ✓	WATER	11/16/2009 ✓	13:00 ✓	ASDW	Dissolved Arsenic ✓
EF12092	K183-02	B051GR001-A-S01 ✓	SOIL	11/16/2009	14:00 ✓	ASS	Arsenic
	K183-02	B051GR001-A-S01	SOIL	11/16/2009	14:00	MCD	Moisture Content Determination
EP12093	K183-03	B051GR002-A-S01 ✓	SOIL	11/16/2009	14:10 ✓	ASS	Arsenic
	K183-03	B051GR002-A-S01	SOIL	11/16/2009	14:10	MCD	Moisture Content Determination
EP12094	K183-04	B051GR003-A-S01 ✓	SOIL	11/16/2009	14:15 ✓	ASS	Arsenic
	K183-04	B051GR003-A-S01	SOIL	11/16/2009	14:15	MCD	Moisture Content Determination
EP12095	K183-05	B051GR004-A-S01 ✓	SOIL	11/16/2009	14:20 ✓	ASS	Arsenic
	K183-05	B051GR004-A-S01	SOIL	11/16/2009	14:20	MCD	Moisture Content Determination
EP12096	K183-06	B051GR005-A-S01 ✓	SOIL	11/16/2009	14:25 ✓	ASS	Arsenic
	K183-06	B051GR005-A-S01	SOIL	11/16/2009	14:25	MCD	Moisture Content Determination
97	K183-07	B051GR005-B-S01 ✓	SOIL	11/16/2009	14:30 ✓	ASS	Arsenic
	K183-07	B051GR005-B-S01	SOIL	11/16/2009	14:30	MCD	Moisture Content Determination



SAMPLE RECEIPT FORM 1

Type of Delivery	Delivered By/Airbill	ECN 09K183
<input type="checkbox"/> EMAX Courier		Recipient J-LUNA
<input type="checkbox"/> Client Delivery		Date 11-17-09
<input checked="" type="checkbox"/> Third Party FED EX	870063271630	Time 0930

COC Inspection

<input checked="" type="checkbox"/> Client Name	<input checked="" type="checkbox"/> Client PM/FC	<input checked="" type="checkbox"/> Sampler Name	<input checked="" type="checkbox"/> Sampling Date, Time/Location	<input checked="" type="checkbox"/> Sample ID	<input checked="" type="checkbox"/> Matrix
<input checked="" type="checkbox"/> Address	<input checked="" type="checkbox"/> Tel # / Fax #	<input type="checkbox"/> Courier Signature	<input checked="" type="checkbox"/> Analysis Required	<input checked="" type="checkbox"/> Preservative (if any)	<input checked="" type="checkbox"/> TAT
Safety Issues	<input checked="" type="checkbox"/> None	<input type="checkbox"/> High concentrations expected	<input type="checkbox"/> Superfund Site samples	<input type="checkbox"/> Rad screening required	

Comments:

Packaging Inspection

Container	<input checked="" type="checkbox"/> Cooler	<input type="checkbox"/> Box	<input type="checkbox"/> Other
Condition	<input checked="" type="checkbox"/> Custody Seal	<input checked="" type="checkbox"/> Intact	<input type="checkbox"/> Damaged
Packaging	<input checked="" type="checkbox"/> Bubble Pack	<input type="checkbox"/> Styrofoam	<input type="checkbox"/> Popcorn
Temperature: (Cool. ≤5 °C but not frozen)	<input checked="" type="checkbox"/> Cooler 1 3.7 °C	<input type="checkbox"/> Cooler 2 _____ °C	<input type="checkbox"/> Cooler 3 _____ °C
	<input type="checkbox"/> Cooler 6 _____ °C	<input type="checkbox"/> Cooler 7 _____ °C	<input type="checkbox"/> Cooler 8 _____ °C
		<input type="checkbox"/> Cooler 9 _____ °C	<input type="checkbox"/> Cooler 10 _____ °C

Comments: PM was informed on non-compliant coolers immediately.

DISCREPANCIES				
LSID	LSCID	Sample Label ID/COC #	Discrepancy Code	Corrective Action Code
- 01		DISC. AS	H1	Informed client

REVIEWS

Sample Labeling [Signature]	SRF [Signature]	PM [Signature]
Date 11/17/09	Date 11/17/09	Date 11/18/09

- LEGEND:**
- | | | |
|---|---|---|
| <p>Code Description- Sample Management</p> <p>A1 Analysis is not indicated in COC</p> <p>A2 Analysis is not indicated in label</p> <p>A3 Analysis is inconsistent in COC vis-à-vis label</p> <p>A4 _____</p> <p>B1 Sample ID is not indicated in COC</p> <p>B2 Sample ID is not indicated in label</p> <p>B3 Sample ID is inconsistent in COC vis-à-vis label</p> <p>B4 _____</p> <p>C1 Wrong container</p> <p>C2 Broken container</p> <p>C3 Leaking container</p> <p>C4 _____</p> | <p>Code Description-Sample Management</p> <p>D1 Date and/or time is not indicated in COC</p> <p>D2 Date and/or time is not indicated in label</p> <p>D3 Date and/or time is inconsistent in COC vis-à-vis label</p> <p>E1 Insufficient preservative</p> <p>E2 Improper preservation</p> <p>F1 Insufficient Sample</p> <p>F2 Bubble is > 6mm</p> <p>G1 Temperature is out of range</p> <p>G2 Out of Holding Time</p> <p>G3 >20 % solid particle</p> <p>H1 NO FILTRO INFO</p> <p>H2 _____</p> | <p>Code Description-Project Management</p> <p>R1 Hold sample(s); wait for further instructions</p> <p>R2 Proceed as indicated in COC</p> <p>R3 Refer to attached instruction</p> <p>R4 Cancel the analysis</p> <p>R5 _____</p> <p>R6 _____</p> |
|---|---|---|



SDG Login Review Sheet

Date: 11/19/2009

Client Code: BC_0904_

Client: Brown & Caldwell

Project: Former Benicia Arsenal

EMAX PM: Richard Beauvil

DB
11/19/09

Send Report To: Attn: Greg Cole

Company: Brown & Caldwell

Address: 10540 White Rock Road, Ste 180
Rancho Cordova CA 95670
NA

SDG: 09K226		DATE/ TIME RECEIVED: 11/19/2009 9:45				DUE DATE: 12/10/2009		
Lwks ID	Control #	Sample ID	Matrix	Coll Date	Time	Lwks Method	Analysis	
EP12338	K226-01	B161GR001-D-W01 ✓	WATER	11/17/2009	14:45	TPHDW	TPH Diesel ✓	
	K226-01	B161GR001-D-W01	WATER	11/17/2009	14:45	PCBW	Polychlorinated Biphenyls (PCBs) ✓	
EP12339	K226-02	B161GR001-A-S01 ✓	SOIL	11/17/2009	15:55	MCD	Moisture Content Determination ✓	
	K226-02	B161GR001-A-S01	SOIL	11/17/2009	15:55	TPHDS	TPH Diesel ✓	
	K226-02	B161GR001-A-S01	SOIL	11/17/2009	15:55	PCBS	Polychlorinated Biphenyls (PCBs) ✓	
EP12340	K226-03	B161GR002-A-S01	SOIL	11/17/2009	15:58	MCD	Moisture Content Determination ✓	
	K226-03	B161GR002-A-S01	SOIL	11/17/2009	15:58	TPHDS	TPH Diesel ✓	
	K226-03	B161GR002-A-S01	SOIL	11/17/2009	15:58	PCBS	Polychlorinated Biphenyls (PCBs) ✓	
EP12341	K226-04	B161GR003-A-S01	SOIL	11/17/2009	16:10	MCD	Moisture Content Determination ✓	
	K226-04	B161GR003-A-S01	SOIL	11/17/2009	16:10	TPHDS	TPH Diesel ✓	
	K226-04	B161GR003-A-S01	SOIL	11/17/2009	16:10	PCBS	Polychlorinated Biphenyls (PCBs) ✓	
142	K226-05	B161GR001-D-W02 ✓	WATER	11/17/2009	9:55	TPHDW	TPH Diesel ✓	
	K226-05	B161GR001-D-W02	WATER	11/17/2009	9:55	PAHHW	PAH by HPLC ✓	
EP12343	K226-06	B161GR004-A-S01 ✓	SOIL	11/18/2009	13:40	MCD	Moisture Content Determination ✓	
	K226-06	B161GR004-A-S01	SOIL	11/18/2009	13:40	TPHDS	TPH Diesel ✓	
	K226-06	B161GR004-A-S01	SOIL	11/18/2009	13:40	PAHHS	PAH by HPLC ✓	
EP12344	K226-07	B161GR005-A-S01 ✓	SOIL	11/18/2009	13:55	MCD	Moisture Content Determination ✓	
	K226-07	B161GR005-A-S01	SOIL	11/18/2009	13:55	TPHDS	TPH Diesel ✓	
	K226-07	B161GR005-A-S01	SOIL	11/18/2009	13:55	PAHHS	PAH by HPLC ✓	
EP12345	K226-08	B161GR006-A-S01 ✓	SOIL	11/18/2009	14:05	MCD	Moisture Content Determination ✓	
	K226-08	B161GR006-A-S01	SOIL	11/18/2009	14:05	TPHDS	TPH Diesel ✓	
	K226-08	B161GR006-A-S01	SOIL	11/18/2009	14:05	PAHHS	PAH by HPLC ✓	
EP12348	K226-08M	B161GR006-A-S01MS ✓	SOIL	11/18/2009	14:05	TPHDS	TPH Diesel ✓	
	K226-08M	B161GR006-A-S01MS	SOIL	11/18/2009	14:05	PAHHS	PAH by HPLC ✓	
EP12349	K226-08S	B161GR006-A-S01MSD ✓	SOIL	11/18/2009	14:05	TPHDS	TPH Diesel ✓	
	K226-08S	B161GR006-A-S01MSD	SOIL	11/18/2009	14:05	PAHHS	PAH by HPLC ✓	
EP12346	K226-09	B161GR006-B-S01 ✓	SOIL	11/18/2009	14:10	MCD	Moisture Content Determination ✓	
	K226-09	B161GR006-B-S01	SOIL	11/18/2009	14:10	TPHDS	TPH Diesel ✓	
	K226-09	B161GR006-B-S01	SOIL	11/18/2009	14:10	PAHHS	PAH by HPLC ✓	
EP12347	K226-10	B161GR007-A-S01 ✓	SOIL	11/18/2009	14:25	MCD	Moisture Content Determination ✓	
	K226-10	B161GR007-A-S01	SOIL	11/18/2009	14:25	TPHDS	TPH Diesel ✓	
	K226-10	B161GR007-A-S01	SOIL	11/18/2009	14:25	PAHHS	PAH by HPLC ✓	

BC_0904 -

CHAIN OF CUSTODY

1 of 2

MAX LABORATORIES, INC.
 1834 W. 205th Street, Torrance, CA 90501
 Tel: 310-218-8888 Fax: 310-218-8888
 Email: info@maxlab.com

CLIENT: Brown & Caldwell
PROJECT: Benicia Bldg. 161 EA (USACE)
CONTACTOR: Wendy Lindell
TEL: (916) 853-5325
SEND REPORT TO: Wendy Lindell c/o Greg Memo
COMPANY: Brown & Caldwell
ADDRESS: 10070 White Road, Ste. 180
Benito Corobova, CA 95670
ANALYST: Picard Beauil

PC NUMBER: 130759
EMAX CONTROLING #: 09 K226
PROXY CODE:

ANALYSIS REQUIRED:
 Rush 48 hrs. Subtotal
 7 days
 14 days
 21 days
 30 days
 days
 Standard TAT on 1

PRELIMINARY CODES:
 8082 (Aerial RSH)
 8015 (TPHD) *
 8310 (Subtotal) **
 MS/MSD

LAB	SAMPLE ID	CLIENT	SAMPLING		CONTAINER	MATERIAL CODE	QC	PRELIMINARY CODES			COMMENTS			
			LOCATION	DATE TIME				NO.	SIZE	TYPE		8082 (Aerial RSH)	8015 (TPHD) *	8310 (Subtotal) **
1	B1616R001-D-W01	Benicia	11/17/09	1445	2	L	Glog	W				X	X	Standard TAT
2	B1616R001-A-S01	Benicia	11/17/09	1555	1	2pk	Slam	S				X	X	N/48 hr. TAT
3	B1616R002-A-S01	Benicia	11/17/09	1558	1	2pk	Slam	S				X	X	E/48 hr. TAT
4	B1616R003-A-S01	Benicia	11/17/09	1610	1	2pk	Slam	S				X	X	W/48 hr. TAT
5	B1616R001-D-W02	Benicia	11/18/09	0955	2	L	Glass	W				X	X	Standard TAT
6	B1616R004-A-S01	Benicia	11/18/09	1340	1	2pk	Slam	S				X	X	N/48 hr. TAT
7	B1616R005-A-S01	Benicia	11/18/09	1355	1	2pk	Slam	S				X	X	E/48 hr. TAT
8	B1616R006-A-S01	Benicia	11/18/09	1405	1	2pk	Slam	S				X	X	S/48 hr. TAT
9	B1616R006-B-S01	Benicia	11/18/09	1410	1	2pk	Slam	S				X	X	S/48 hr. TAT
10	B1616R007-A-S01	Benicia	11/18/09	1425	1	2pk	Slam	S				X	X	W/48 hr. TAT

Instructions:
 X-TPHD w/ Silicon gel cleanup
 * * - Dibenz(a,h)Anthracene for 8310

Cooler #: 1081
Temp. (°C): 1
3.42

SAMPLER: Greg Memo
REL. ACQUIRED BY: [Signature]
DATE: 11/17/09
TIME: 1700
RECEIVED BY: [Signature]
DATE: 11/19/09
TIME: 9:45

COURIER: AIRBH L

NOTE: This report is (TAT) for samples that are high sulfur. All other samples have been analyzed. For samples received and analyzed before 11/18/09, TAT will vary. TAT will vary depending on the sample type. Samples will be analyzed if the report is produced for the maximum of 30 calendar days after the date of collection. Samples are analyzed within 30 days of collection. Samples are analyzed within 30 days of collection. Samples are analyzed within 30 days of collection.



SAMPLE RECEIPT FORM 1

Type of Delivery	Delivered By/Airbill	ECN <u>09 16726</u>
<input type="checkbox"/> EMAX Courier		Recipient <u>J. HATEZ</u>
<input type="checkbox"/> Client Delivery		Date <u>11-19-09</u>
<input checked="" type="checkbox"/> Third Party <u>Redox</u>	<u>8700 6327 1641</u>	Time <u>9:45 AM</u>

COC Inspection

<input checked="" type="checkbox"/> Client Name	<input type="checkbox"/> Client PM/PC	<input checked="" type="checkbox"/> Sampler Name	<input checked="" type="checkbox"/> Sampling Date, Time/Location	<input type="checkbox"/> Sample ID	<input type="checkbox"/> Matrix
<input checked="" type="checkbox"/> Address	<input checked="" type="checkbox"/> Tel# / Fax #	<input type="checkbox"/> Courier Signature	<input type="checkbox"/> Analysis Required	<input type="checkbox"/> Preservative (if any)	<input type="checkbox"/> PAT
Safety Issues	<input checked="" type="checkbox"/> None	<input type="checkbox"/> High concentrations expected	<input type="checkbox"/> Superfund Site samples	<input type="checkbox"/> Rad screening required	
Comments:					

Packaging Inspection

Container	<input checked="" type="checkbox"/> Plastic	<input type="checkbox"/> Box	<input type="checkbox"/> Other		
Condition	<input type="checkbox"/> Custody Seal	<input checked="" type="checkbox"/> Intact	<input type="checkbox"/> Damaged		
Packaging	<input checked="" type="checkbox"/> Bubble Pack	<input type="checkbox"/> Styrofoam	<input type="checkbox"/> Popcorn	<input checked="" type="checkbox"/> Sufficient	<u>apbstrudag</u>
Temperatures (Cool, ≤6 °C but not frozen)	<input checked="" type="checkbox"/> Cooler 1 <u>3.4</u> °C	<input type="checkbox"/> Cooler 2 _____ °C	<input type="checkbox"/> Cooler 3 _____ °C	<input type="checkbox"/> Cooler 4 _____ °C	<input type="checkbox"/> Cooler 5 _____ °C
	<input type="checkbox"/> Cooler 6 _____ °C	<input type="checkbox"/> Cooler 7 _____ °C	<input type="checkbox"/> Cooler 8 _____ °C	<input type="checkbox"/> Cooler 9 _____ °C	<input type="checkbox"/> Cooler 10 _____ °C
Comments: <input type="checkbox"/> PM was informed on non-compliant coolers immediately.					

DISCREPANCIES				
LSID	LSCID	Sample Label ID/COC ID	Discrepancy Code	Corrective Action Code

REVIEWS

Sample Labeling <u>[Signature]</u>	SRF <u>[Signature]</u>	PM <u>[Signature]</u>
Date <u>11-19-09</u>	Date <u>11/19/09</u>	Date <u>11/19/09</u>

- LEGEND:**
- | | | |
|--|---|--|
| <p>Code Description- Sample Management</p> <ul style="list-style-type: none"> A1 Analysis is not indicated in COC A2 Analysis is not indicated in label A3 Analysis is inconsistent in COC vis-à-vis label A4 _____ B1 Sample ID is not indicated in COC B2 Sample ID is not indicated in label B3 Sample ID is inconsistent in COC vis-à-vis label B4 _____ C1 Wrong container C2 Broken container C3 Leaking container C4 _____ | <p>Code Description-Sample Management</p> <ul style="list-style-type: none"> D1 Date and/or time is not indicated in COC D2 Date and/or time is not indicated in label D3 Date and/or time is inconsistent in COC vis-à-vis label E1 Insufficient preservative E2 Improper preservation F1 Insufficient Sample F2 Bubble is > 6mm G1 Temperature is out of range G2 Out of Holding Time G3 > 20 % solid particle H1 _____ H2 _____ | <p>Code Description-Project Management</p> <ul style="list-style-type: none"> R1 Hold sample(s); wait for further instructions R2 Proceed as indicated in COC R3 Refer to attached instruction R4 Cancel the analysis R5 _____ R6 _____ |
|--|---|--|



SAMPLE RECEIPT FORM 2

09K226

SAMPLES RECEIVED FOR ECN:

ECN (*)	SAMPLE CONTAINER ID	Sample Amount Sufficiency	CONTAINER TYPE								CHEMICAL PRESERVATIVE											Filtered		
			Jar	Amber	HDPE	Encore	Vial	Tube	Bag	Other	NONE	HCl (pH<2)	HNO3 (pH<2)	H2SO4 (pH<2)	ZnAc+NaOH (pH>12)	NaOH (pH>12)	Na2S2O3	Picric Acid+ZnAc (pH<2)	Other	Other	Other	Yes	No	
01	* 1			/						/														
	* 2			/						/														
02	* 3									/														
03	* 4									/														
04	* 5									/														
05	* 6			/						/														
	* 7			/						/														
06	* 8									/														
07	* 9									/														
08	* 10									/														
	* 1									/														
09	* 2									/														
10	* 13									/														
	* 4																							
	* 5																							
	* 6																							
	* 7																							
	* 8																							
	* 9																							
	* 0																							
	* 1																							
	* 2																							
	* 3																							
	* 4																							
	* 5																							
	* 6																							
	* 7																							
	* 8																							
	* 9																							
	* 0																							

9 11-19-09

METHOD SW3520C/3630C/8015B
DIESEL RANGE ORGANICS

```

=====
Client       : BROWN & CALDWELL           Date Collected: 11/17/09
Project      : FORMER BENICIA ARSENAL     Date Received: 11/19/09
Batch No.    : 09K226                     Date Extracted: 11/20/09 18:30
Sample ID    : B161GR001-D-W01           Date Analyzed: 11/23/09 15:21
Lab Samp ID  : K226-01                   Dilution Factor: 1.04
Lab File ID  : LK23012A                  Matrix          : WATER
Ext Btch ID  : DSK041W                   % Moisture      : NA
Calib. Ref.  : LK23004A                  Instrument ID   : GCT105
=====
  
```

PARAMETERS	RESULTS (ug/L)	PQL (ug/L)	MDL (ug/L)
DIESEL RANGE ORGANICS	ND	100	25

SURROGATE PARAMETERS	% RECOVERY	QC LIMIT
BROMOBENZENE	81	60-140
HEXACOSANE	91	60-140

PQL: Practical Quantitation Limit

Parameter	H-C Range
Diesel	C10-C24
Motor Oil	C20-C34

METHOD SW3550B/3630C/8015B
DIESEL RANGE ORGANICS

=====
Client : BROWN & CALDWELL Date Collected: 11/17/09
Project : FORMER BENICIA ARSENAL Date Received: 11/19/09
Batch No. : 09K226 Date Extracted: 11/20/09 16:00
Sample ID: B161GR001-A-S01 Date Analyzed: 11/21/09 12:06
Lab Samp ID: K226-02 Dilution Factor: 1
Lab File ID: LK200862 Matrix : SOIL
Ext Btch ID: DSK038S % Moisture : 18.7
Calib. Ref.: LK20080A Instrument ID : GCT105
=====

PARAMETERS	RESULTS (mg/kg)	PQL (mg/kg)	MDL (mg/kg)
DIESEL RANGE ORGANICS	ND	10	2.9

SURROGATE PARAMETERS	% RECOVERY	QC LIMIT
BROMOBENZENE	73	50-150
HEXACOSANE	86	50-150

PQL: Practical Quantitation Limit
Parameter H-C Range
Diesel C10-C24
Motor Oil C20-C34

METHOD SW3550B/3630C/8015B
DIESEL RANGE ORGANICS

```

=====
Client       : BROWN & CALDWELL           Date Collected: 11/17/09
Project      : FORMER BENICIA ARSENAL     Date Received: 11/19/09
Sample No.   : 09K226                     Date Extracted: 11/20/09 16:00
Sample ID    : B161GR002-A-S01           Date Analyzed: 11/21/09 12:23
Lab Samp ID  : K226-03                    Dilution Factor: 1
Lab File ID  : LK20087A                   Matrix          : SOIL
Ext Btch ID  : DSK038S                    % Moisture     : 19.8
Calib. Ref.  : LK20080A                   Instrument ID   : GCT105
=====

```

PARAMETERS	RESULTS (mg/kg)	PQL (mg/kg)	MDL (mg/kg)
DIESEL RANGE ORGANICS	18	10	3.0

SURROGATE PARAMETERS	% RECOVERY	QC LIMIT
BROMOBENZENE	78	50-150
HEXACOSANE	95	50-150

PQL: Practical Quantitation Limit
Parameter H-C Range
Diesel C10-C24
Motor Oil C20-C34

METHOD SW3550B/3630C/8015B
DIESEL RANGE ORGANICS

=====
Client : BROWN & CALDWELL Date Collected: 11/17/09
Project : FORMER BENICIA ARSENAL Date Received: 11/19/09
Batch No. : 09K226 Date Extracted: 11/20/09 16:00
Sample ID: B161GR003-A-S01 Date Analyzed: 11/21/09 12:39
Lab Samp ID: K226-04 Dilution Factor: 1
Lab File ID: LK20088A Matrix : SOIL
Ext Btch ID: DSK038S % Moisture : 17.7
Calib. Ref.: LK20080A Instrument ID : GCT105
=====

PARAMETERS	RESULTS (mg/kg)	PQL (mg/kg)	MDL (mg/kg)
DIESEL RANGE ORGANICS	ND	10	2.9

SURROGATE PARAMETERS	% RECOVERY	QC LIMIT
BROMOBENZENE	73	50-150
HEXACOSANE	90	50-150

PQL: Practical Quantitation Limit
Parameter H-C Range
Diesel C10-C24
Motor Oil C20-C34

METHOD SW3520C/3630C/8015B
DIESEL RANGE ORGANICS

=====
Client : BROWN & CALDWELL Date Collected: 11/17/09
Project : FORMER BENICIA ARSENAL Date Received: 11/19/09
Vial No. : 09K226 Date Extracted: 11/20/09 18:30
Sample ID: B1G1GR001-D-W02 Date Analyzed: 11/23/09 15:38
Lab Samp ID: K226-05 Dilution Factor: 0.96
Lab File ID: LK23013A Matrix : WATER
Ext Btch ID: DSK041W % Moisture : NA
Calib. Ref.: LK23004A Instrument ID : GCT105
=====

PARAMETERS	RESULTS (ug/L)	PQL (ug/L)	MDL (ug/L)
DIESEL RANGE ORGANICS	ND	96	23

SURROGATE PARAMETERS	% RECOVERY	QC LIMIT
BROMOBENZENE	81	60-140
HEXACOSANE	76	60-140

PQL: Practical Quantitation Limit
Parameter H-C Range
Diesel C10-C24
Motor Oil C20-C34

METHOD SW3550B/3630C/8015B
DIESEL RANGE ORGANICS

=====
Client : BROWN & CALDWELL Date Collected: 11/18/09
Project : FORMER BENICIA ARSENAL Date Received: 11/19/09
Batch No. : 09K226 Date Extracted: 11/20/09 16:00
Sample ID: B161GR004-A-S01 Date Analyzed: 11/21/09 13:29
Lab Samp ID: K226-06 Dilution Factor: 1
Lab File ID: LK20091A Matrix : SOIL
Ext Btch ID: DSK0388 % Moisture : 12.3
Calib. Ref.: LK20080A Instrument ID : GCT105
=====

PARAMETERS	RESULTS (mg/kg)	PQL (mg/kg)	MDL (mg/kg)
DIESEL RANGE ORGANICS	24	9.5	2.7

SURROGATE PARAMETERS	% RECOVERY	QC LIMIT
BROMOBENZENE	71	50-150
HEXACOSANE	100	50-150

PQL: Practical Quantitation Limit
Parameter H-C Range
Diesel C10-C24
Motor Oil C20-C34

METHOD SW3550B/3630C/8015B
DIESEL RANGE ORGANICS

```

Client       : BROWN & CALDWELL
Project      : FORMER BENICIA ARSENAL
Sample No.   : 09K226
Sample ID    : B161GR005-A-S01
Lab Samp ID  : K226-07
Lab File ID  : LK20097A
Ext Btch ID : DSK038S
Calib. Ref. : LX20094A

Date Collected: 11/18/09
Date Received: 11/19/09
Date Extracted: 11/20/09 16:00
Date Analyzed: 11/21/09 15:09
Dilution Factor: 1
Matrix       : SOIL
% Moisture   : 18.5
Instrument ID : GCT105
  
```

PARAMETERS	RESULTS (mg/kg)	PQL (mg/kg)	MDL (mg/kg)
DIESEL RANGE ORGANICS	16	10	2.9

SURROGATE PARAMETERS	% RECOVERY	QC LIMIT
BROMOBENZENE	70	50-150
HEXACOSANE	92	50-150

PQL: Practical Quantitation Limit
 Parameter H-C Range
 Diesel C10-C24
 Motor Oil C20-C34

METHOD SW3550B/3630C/8015B
DIESEL RANGE ORGANICS

=====
Client : BROWN & CALDWELL Date Collected: 11/18/09
Project : FORMER BENICIA ARSENAL Date Received: 11/19/09
Batch No. : 09K226 Date Extracted: 11/20/09 16:00
Sample ID: B161GR006-A-S01 Date Analyzed: 11/21/09 15:26
Lab Samp ID: K226-08 Dilution Factor: 1
Lab File ID: LK200982 Matrix : SOIL
Ext Btch ID: DSK038S % Moisture : 19.2
Calib. Ref.: LK20094A Instrument ID : GCT105
=====

PARAMETERS	RESULTS (mg/kg)	PQL (mg/kg)	MDL (mg/kg)
DIESEL RANGE ORGANICS	9.7J	10	2.9

SURROGATE PARAMETERS	% RECOVERY	QC LIMIT
BROMOBENZENE	68	50-150
HEXACOSANE	90	50-150

PQL: Practical Quantitation Limit
Parameter H-C Range
Diesel C10-C24
Motor Oil C20-C34

METHOD SW3550B/3630C/8015B
DIESEL RANGE ORGANICS

=====
Client : BROWN & CALDWELL Date Collected: 11/18/09
Project : FORMER BENICIA ARSENAL Date Received: 11/19/09
Batch No. : 09K226 Date Extracted: 11/20/09 16:00
Sample ID: B161GR006-B-S01 Date Analyzed: 11/21/09 13:46
Lab Samp ID: K226-09 Dilution Factor: 1
Lab File ID: LK20092A Matrix : SOIL
Ext Btch ID: DSK038S % Moisture : 16.1
Calib. Ref.: LK20080A Instrument ID : GCT105
=====

PARAMETERS	RESULTS (mg/kg)	FQL (mg/kg)	MDL (mg/kg)
DIESEL RANGE ORGANICS	14	9.9	2.8

SURROGATE PARAMETERS	% RECOVERY	QC LIMIT
BROMOBENZENE	72	50-150
HEXACOSANE	94	50-150

FQL: Practical Quantitation Limit
Parameter H-C Range
Diesel C10-C24
Motor Oil C20-C34

METHOD SW3550B/3630C,8015B
DIESEL RANGE ORGANICS

```

=====
Client      : BROWN & CALDWELL           Date Collected: 11/18/09
Project     : FORMER BENICIA ARSENAL     Date Received: 11/19/09
Batch No.   : 09K226                     Date Extracted: 11/20/09 16:00
Sample ID   : B161GR007-A-S01           Date Analyzed: 11/21/09 16:16
Lab Samp ID: K226-10                    Dilution Factor: 1
Lab File ID: LK20101A                   Matrix          : SOIL
Ext Btch ID: DSK038S                     % Moisture      : 17.3
Calib. Ref.: LK20094A                    Instrument ID    : GCT105
=====

```

PARAMETERS	RESULTS (mg/kg)	PQL (mg/kg)	MDL (mg/kg)
DIESEL RANGE ORGANICS	33	10	2.9

SURROGATE PARAMETERS	% RECOVERY	QC LIMIT
BROMOBENZENE	70	50-150
HEXACOSANE	96	50-150

PQL: Practical Quantitation Limit
Parameter H-C Range
Diesel C10-C24
Motor Oil C20-C34

METHOD SW3550B/3630C/8015B
DIESEL RANGE ORGANICS

Client : BROWN & CALDWELL
Project : FORMER BENICIA ARSENAL
Batch No. : 09K226
Sample ID: MBLK1S
Lab Samp ID: DSK038SB
Lab File ID: LK20085A
Ext Btch ID: DSK038S
Calib. Ref.: LK20080A
Date Collected: NA
Date Received: 11/20/09
Date Extracted: 11/20/09 16:00
Date Analyzed: 11/21/09 11:49
Dilution Factor: 1
Matrix : SOIL
% Moisture : NA
Instrument ID : GCT105

PARAMETERS	RESULTS (mg/kg)	PQL (mg/kg)	MDL (mg/kg)
DIESEL RANGE ORGANICS	ND	8.3	2.4

SURROGATE PARAMETERS	% RECOVERY	QC LIMIT
BROMOBENZENE	83	50-150
HEXACOSANE	96	50-150

PQL: Practical Quantitation Limit
Parameter H-C Range
Diesel C10-C24
Motor Oil C20-C34

METHOD SW3520C/3630C/8015B
DIESEL RANGE ORGANICS

=====
Client : BROWN & CALDWELL Date Collected: NA
Project : FORMER BENICIA ARSENAL Date Received: 11/20/09
Batch No. : 09K226 Date Extracted: 11/20/09 18:30
Sample ID: MBLK1W Date Analyzed: 11/23/09 14:15
Lab Samp ID: DSK041WB Dilution Factor: 1
Lab File ID: LK23008A Matrix : WATER
Ext Btch ID: DSK041W % Moisture : NA
Calib. Ref.: LK23004A Instrument ID : GCT105
=====

PARAMETERS	RESULTS (ug/L)	PQL (ug/L)	MDL (ug/L)
DIESEL RANGE ORGANICS	ND	100	24

SURROGATE PARAMETERS	% RECOVERY	QC LIMIT
BROMOBENZENE	82	60-140
HEXACOSANE	90	60-140

PQL: Practical Quantitation Limit
Parameter H-C Range
Diesel C10-C24
Motor Oil C20-C34

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: BROWN & CALDWELL
PROJECT: FORMER BENICIA ARSENAL
BATCH NO.: 09K226
METHOD: METHOD SW3550B/3630C/8015B

MATRIX: SOIL % MOISTURE: NA
DILUTION FACTOR: 1 1
SAMPLE ID: MBLKLS
LAB SAHP ID: DSK0388L DSK0388C
LAB FILE ID: LK20085A LK20083A LK20084A
DATE EXTRACTED: 11/20/0916:00 11/20/0916:00 11/20/0916:00 DATE COLLECTED: NA
DATE ANALYZED: 11/21/0911:49 11/21/0911:16 11/21/0911:33 DATE RECEIVED: 11/20/09
PREP. BATCH: DSK038S DSK038S
CALIB. REF: LK20080A LK20080A

ACCESSION:

PARAMETER	BLNK RSLT (mg/kg)	SPIKE AMT (mg/kg)	BS RSLT (mg/kg)	BS REC (%)	SPIKE AMT (mg/kg)	BSD RSLT (mg/kg)	BSD REC (%)	RPD (%)	QC LIMIT (%)	MAX RPD (%)
Diesel Range Organics	ND	417	429	103	417	423	102	1	50-150	40

SURROGATE PARAMETER	SPIKE AMT (mg/kg)	BS RSLT (mg/kg)	BS REC (%)	SPIKE AMT (mg/kg)	BSD RSLT (mg/kg)	BSD REC (%)	QC LIMIT (%)
Bromobenzene	83.3	67.1	81	83.3	71.0	85	50-150
Hexachlorocyclopentadiene	20.8	20.5	99	20.8	20.2	97	50-150

EMAX QUALITY CONTROL DATA
ICS/LCD ANALYSIS

CLIENT: BROWN & CALDWELL
PROJECT: FORMER BENICIA ARSENAL
BATCH NO.: 09K226
METHOD: METHOD SW3520C/3630C/8015B

MATRIX: WATER
DILUTION FACTOR: 1
SAMPLE ID: NBLK1W
LAB SAIP ID: DSK041WL DSK041WC
LAB FILE ID: LK23008A LK23007A
DATE EXTRACTED: 11/20/0918:30 11/20/0918:30 DATE COLLECTED: NA
DATE ANALYZED: 11/23/0914:15 11/23/0913:58 DATE RECEIVED: 11/20/09
PREP. BATCH: DSK041W DSK041W
CALIB. REF: LK23004A LK23004A

ACCESSION:

PARAMETER	BLNK RSLT (ug/L)	SPIKE AMT (ug/L)	BS % REC	BS RSLT (ug/L)	SPIKE AMT (ug/L)	BS % REC	BSD RSLT (ug/L)	BSD % REC	RPD (%)	QC LIMIT (%)	MAX RPD (%)
Diesel Range Organics	ND	5000	104	5190	5000	104	5160	103	0	60-140	30

SURROGATE PARAMETER	BS RSLT (ug/L)	SPIKE AMT (ug/L)	BS % REC	BSD RSLT (ug/L)	BSD % REC	QC LIMIT (%)
Bromobenzene	1000	805	80	857	86	60-140
Hexacosane	250	230	92	226	91	60-140

EMAX QUALITY CONTROL DATA
MS/MSD ANALYSIS

CLIENT: BROWN & CALDWELL
PROJECT: FORMER BENICIA ARSENAL
BATCH NO.: 09K226
METHOD: METHOD SW3550B/3630C/8015B

MATRIX: SOIL
DILUTION FACTOR: 1
SAMPLE ID: B161GR006-A-S01 1
LAB SAMPLE ID: K226-08 K226-08S
LAB FILE ID: LK20098A LK20099A LK20100A
DATE EXTRACTED: 11/20/0916:00 11/20/0916:00 11/20/0916:00
DATE ANALYZED: 11/21/0915:26 11/21/0915:42 11/21/0915:59
PREP. BATCH: DSK038S DSK038S
CALIB. REF: LK20094A LK20094A

DATE COLLECTED: 11/18/09
DATE RECEIVED: 11/19/09

PARAMETER	SAMPL RSLT (mg/kg)	SPIKE AMT (mg/kg)	MS % REC	MS RSLT (mg/kg)	SPIKE AMT (mg/kg)	MSD % REC	MSD RSLT (mg/kg)	MSD % REC	RPD (%)	QC LIMIT (%)	MAX RPD (%)
Diesel Range Organics	9.67J	516	101	530	516	93	488	8	50-150	40	

ACCESSION:

SURROGATE PARAMETER	SPIKE AMT (mg/kg)	MS RSLT (mg/kg)	MS % REC	SPIKE AMT (mg/kg)	MSD RSLT (mg/kg)	MSD % REC	QC LIMIT (%)
Bromobenzene	103	84.7	82	103	80.9	79	50-150
Hexacosane	25.7	26.7	104	25.7	24.8	96	50-150

SW3520C/8082
PCBs

```

Client      : BROWN & CALDWELL
Project     : FORMER BENICIA ARSENAL
Batch No.   : 09K226
Sample ID   : B161GR001-D-W01
Lab Samp ID: K226-01
Lab File ID: KK23008A
Ext Btch ID: 60K036W
Calib. Ref.: KK23002A

Date Collected: 11/17/09
Date Received: 11/19/09
Date Extracted: 11/20/09 15:30
Date Analyzed: 11/23/09 19:08
Dilution Factor: 1.01
Matrix      : WATER
% Moisture  : NA
Instrument ID : GCT071
  
```

PARAMETERS	RESULTS (ug/L)	PQL (ug/L)	MDL (ug/L)
PCB-1016	(ND) ND	0.51	0.25 0.25
PCB-1221	(ND) ND	0.51	0.25 0.25
PCB-1232	(ND) ND	0.51	0.25 0.25
PCB-1242	(ND) ND	0.51	0.25 0.25
PCB-1248	(ND) ND	0.51	0.25 0.25
PCB-1254	(ND) ND	1.0	0.25 0.25
PCB-1260	(ND) ND	1.0	0.25 0.25

SURROGATE PARAMETERS	% RECOVERY	QC LIMIT
TETRACHLORO-M-XYLENE	67 (71)	40-140
DECACHLOROBIPHENYL	79 (84)	40-140

PQL: Practical Quantitation Limit
 Left of | is related to first column, Right of | related to second column
 Final result indicated by ()
 * Out side of QC Limit

SW3550B/8082
PCBs

```

Client       : BROWN & CALDWELL
Project      : FORNER BENICIA ARSENAL
Sample No.   : 09K226
Sample ID    : B161GR001-A-S01
Lab Samp ID  : K226-02
Lab File ID  : KK23048A
Ext Btch ID  : 60Y035S
Calib. Ref. : KK23041A

Date Collected: 11/17/09
Date Received: 11/19/09
Date Extracted: 11/20/09 17:55
Date Analyzed: 11/24/09 09:09
Dilution Factor: 1
Matrix       : SOIL
% Moisture   : 18.7
Instrument ID : GCT071
  
```

PARAMETERS	RESULTS (mg/kg)	PQL (mg/kg)	MDL (mg/kg)
PCB-1016	(ND) ND	0.21	0.021 0.021
PCB-1221	(ND) ND	0.21	0.021 0.021
PCB-1232	(ND) ND	0.21	0.021 0.021
PCB-1242	(ND) ND	0.21	0.021 0.021
PCB-1248	(ND) ND	0.21	0.021 0.021
PCB-1254	(ND) ND	0.21	0.021 0.021
PCB-1260	(ND) ND	0.21	0.021 0.021

SURROGATE PARAMETERS	% RECOVERY	QC LIMIT
TETRACHLORO-1,1-XYLENE	(69) 69	40-140
DECAChLOROBIPHENYL	(80) 76	40-140

PQL: Practical Quantitation Limit
 Left of | is related to first column ; Right of | related to second column
 Final result indicated by ()
 * Out side of QC Limit

SW3550B/8082
PCBs

```

=====
Client      : BROWN & CALDWELL           Date Collected: 11/17/09
Project     : FORNER BENICIA ARSENAL     Date Received: 11/19/09
Batch No.   : 09K226                     Date Extracted: 11/20/09 17:55
Sample ID   : B161GR002-A-S01           Date Analyzed: 11/24/09 10:13
Lab Samp ID : K226-03                   Dilution Factor: 1
Lab File ID : KK23051A                  Matrix          : SOIL
Ext Btch ID : 60K035S                   % Moisture      : 19.8
Calib. Ref. : KK23041A                  Instrument ID   : GCT071
=====

```

PARAMETERS	RESULTS (mg/kg)	PQL (mg/kg)	MDL (mg/kg)
PCB-1016	(ND) ND	0.21	0.021 0.021
PCB-1221	(ND) ND	0.21	0.021 0.021
PCB-1232	(ND) ND	0.21	0.021 0.021
PCB-1242	(ND) ND	0.21	0.021 0.021
PCB-1248	(ND) ND	0.21	0.021 0.021
PCB-1254	(ND) ND	0.21	0.021 0.021
PCB-1260	(ND) ND	0.21	0.021 0.021

SURROGATE PARAMETERS	% RECOVERY	QC LIMIT
TETRACHLORO-M-XYLENE	66 (68)	40-140
DECACHLOROBIPHENYL	74 (75)	40-140

PQL: Practical Quantitation Limit
 Left of | is related to first column ; Right of || related to second column
 Final result indicated by ()
 * Out side of QC Limit

SW3550B/8082
PCBs

```

=====
Client       : BROWN & CALDWELL           Date Collected: 11/17/09
Project      : FORRER BENICIA ARSENAL     Date Received: 11/19/09
Sample No.   : 09K226                     Date Extracted: 11/20/09 17:55
Sample ID    : E161GR003-A-S01           Date Analyzed: 11/24/09 10:34
Lab Samp ID  : K226-04                    Dilution Factor: 1
Lab File ID  : KK23052A                   Matrix          : SOIL
Ext Btch ID  : 60K035S                    % Moisture     : 17.7
Calib. Ref.  : KK23041A                   Instrument ID   : GCT071
=====

```

PARAMETERS	RESULTS (mg/kg)	FQL (mg/kg)	MDL (mg/kg)
PCB-1016	(ND) ND	0.20	0.020 0.020
PCB-1221	(ND) ND	0.20	0.020 0.020
PCB-1232	(ND) ND	0.20	0.020 0.020
PCB-1242	(ND) ND	0.20	0.020 0.020
PCB-1248	(ND) ND	0.20	0.020 0.020
PCB-1254	(ND) ND	0.20	0.020 0.020
PCB-1260	(ND) ND	0.20	0.020 0.020

SURROGATE PARAMETERS	% RECOVERY	QC LIMIT
TETRACHLORO-P-XYLENE	67 (68)	40-140
DECACHLOROBIPHENYL	(77) 77	40-140

FQL: Practical Quantitation Limit
 Left of | is related to first column ; Right of | related to second column
 Final result indicated by ()
 * Out side of QC Limit

SW3550B/8082
PCBs

```

=====
Client      : BROWN & CALDWELL           Date Collected: NA
Project     : FORMER BENICIA ARSENAL     Date Received: 11/20/09
Batch No.   : 09K226                     Date Extracted: 11/20/09 17:55
Sample ID   : nBLK1S                     Date Analyzed: 11/24/09 08:06
Lab Samp ID: 60K035SB                    Dilution Factor: 1
Lab File ID: KK23045A                    Matrix          : SOIL
Ext Btch ID: 60K035S                      % Moisture     : NA
Calib. Ref.: KK23041A                     Instrument ID   : GCT071
=====

```

PARAMETERS	RESULTS (mg/kg)	PQL (mg/kg)	MDL (mg/kg)
PCB-1016	(ND) ND	0.17	0.017 0.017
PCB-1221	(ND) ND	0.17	0.017 0.017
PCB-1232	(ND) ND	0.17	0.017 0.017
PCB-1242	(ND) ND	0.17	0.017 0.017
PCB-1248	(ND) ND	0.17	0.017 0.017
PCB-1254	(ND) ND	0.17	0.017 0.017
PCB-1260	(ND) ND	0.17	0.017 0.017

SURROGATE PARAMETERS	% RECOVERY	QC LIMIT
TETRACHLORO-M-XYLENE	79 (80)	40-140
DECACHLOROBIPHENYL	(89) 85	40-140

PQL: Practical Quantitation Limit
 Left of | is related to first column ; Right of | related to second column
 Final result indicated by ()
 * Out side of QC Limit

SW3520C/8082
PCBs

```

=====
Client      : BROWN & CALDWELL
Project     : FORMER BENICIA ARSENAL
Sample No.  : 09K226
Sample ID   : MBLK1W
Lab Samp ID: 60K036WB
Lab File ID: KK23005A
Ext Btch ID: 60K036W
Calib. Ref.: KK23002A

Date Collected: NA
Date Received: 11/20/09
Date Extracted: 11/20/09 15:30
Date Analyzed: 11/23/09 18:05
Dilution Factor: 1
Matrix      : WATER
% Moisture  : NA
Instrument ID : GCT071
=====

```

PARAMETERS	RESULTS (ug/L)	PQL (ug/L)	NDL (ug/L)
PCB-1016	(ND) ND	0.50	0.25 0.25
PCB-1221	(ND) ND	0.50	0.25 0.25
PCB-1232	(ND) ND	0.50	0.25 0.25
PCB-1242	(ND) ND	0.50	0.25 0.25
PCB-1248	(ND) ND	0.50	0.25 0.25
PCB-1254	(ND) ND	1.0	0.25 0.25
PCB-1260	(ND) ND	1.0	0.25 0.25

SURROGATE PARAMETERS	% RECOVERY	QC LIMIT
TETRACHLORO-M-XYLENE	(62) 62	40-140
DECACHLOROBIPHENYL	82 (87)	40-140

PQL: Practical Quantitation Limit
 Left of | is related to first column ; Right of | related to second column
 Final result indicated by ()
 * Out side of QC Limit

SW 3520C/8310
POLYNUCLEAR AROMATIC HYDROCARBONS

=====
Client : BROWN & CALDWELL Date Collected: 11/17/09
Project : FORMER BENICIA ARSENAL Date Received: 11/19/09
Batch No. : 09K226 Date Extracted: 11/20/09 15:30
Sample ID: B161GR001-D-W02 Date Analyzed: 11/23/09 14:00
Lab Samp ID: K226-05 Dilution Factor: .97
Lab File ID: RK23006A Matrix : WATER
Ext Btch ID: PAK004W % Moisture : NA
Calib. Ref.: RK23002A Instrument ID : T-034
=====

PARAMETERS	RESULTS (ug/L)	PQL (ug/L)	MDL (ug/L)
DIBENZO (A, H) ANTHRACENE	(ND) ND	0.39	0.097 0.097

SURROGATE PARAMETERS	% RECOVERY	QC LIMIT
P-TERPHENYL-D14	(100) 93	40-140

PQL: Practical Quantitation Limit
Left of | is related to UV detector; Right of | related to FL detector
Final result indicated by: ()

SW 3550B/8310
POLYNUCLEAR AROMATIC HYDROCARBONS

```
=====  
Client      : BROWN & CALDWELL          Date Collected: 11/18/09  
Project     : FORMER BENICIA ARSENAL    Date Received: 11/19/09  
  Sample No. : 09K226                   Date Extracted: 11/21/09 13:05  
  Sample ID  : B161GR004-A-S01          Date Analyzed: 11/23/09 15:45  
Lab Samp ID: K226-06                    Dilution Factor: 1  
Lab File ID: RK23010A                   Matrix          : SOIL  
Ext Btch ID: PAK005S                    % Moisture     : 12.3  
Calib. Ref.: RK23002A                   Instrument ID   : T-034  
=====
```

PARAMETERS	RESULTS (mg/kg)	PQL (mg/kg)	MDL (mg/kg)
DI-BENZO (A, H) ANTHRACENE	(ND) ND	0.023	0.0046 0.0046
SURROGATE PARAMETERS	% RECOVERY	QC LIMIT	
P-TERPHENYL-D14	(98) 90	40-140	

PQL: Practical Quantitation Limit
Left of | is related to UV detector; Right of | related to FL detector
Final result indicated by ()

SW 3550B/8310
POLYNUCLEAR AROMATIC HYDROCARBONS

=====
Client : BROWN & CALDWELL Date Collected: 11/18/09
Project : FORMER BENICIA ARSENAL Date Received: 11/19/09
Batch No. : 09K226 Date Extracted: 11/21/09 13:05
Sample ID: B161GR005-A-S01 Date Analyzed: 11/23/09 16:11
Lab Samp ID: K226-07 Dilution Factor: 1
Lab File ID: RK23011A Matrix : SOIL
Ext Btch ID: PAK005S % Moisture : 18.5
Calib. Ref.: RK23002A Instrument ID : T-034
=====

PARAMETERS	RESULTS (mg/kg)	PQL (mg/kg)	NDL (mg/kg)
DIBENZO (A, H) ANTHRACENE	(ND) ND	0.025	0.0049 0.0049
SURROGATE PARAMETERS	% RECOVERY	QC LIMIT	
P-TERPHENYL-D14	(96) 83	40-140	

PQL: Practical Quantitation Limit
Left of | is related to UV detector; Right of | related to FL detector
Final result indicated by ()

SW 3550B/8310
POLYNUCLEAR AROMATIC HYDROCARBONS

```
=====
Client      : BROWN & CALDWELL
Project     : FORMER BENICIA ARSENAL
Sample No.  : 09K226
Sample ID   : B161GR006-A-S01
Lab Samp ID: K226-08
Lab File ID: RK23017A
Ext Btch ID: PAK005S
Calib. Ref.: RK23016A
Date Collected: 11/18/09
Date Received: 11/19/09
Date Extracted: 11/21/09 13:05
Date Analyzed: 11/23/09 18:49
Dilution Factor: 1
Matrix      : SOIL
% Moisture  : 19.2
Instrument ID : T-034
=====
```

PARAMETERS	RESULTS (mg/kg)	PQL (mg/kg)	MDL (mg/kg)
DIBENZO(A,H)ANTHRACENE	0.0070J (ND)	0.025	0.0050 0.0050
SURROGATE PARAMETERS	% RECOVERY	QC LIMIT	
P-TERPHENYL-D14	(86) 77	40-140	

PQL: Practical Quantitation Limit
Left of | is related to UV detector; Right of | related to FL detector
Final result indicated by ()

SW 3550B/8310
POLYNUCLEAR AROMATIC HYDROCARBONS

```

=====
Client      : BROWN & CALDWELL           Date Collected: 11/18/09
Project     : FORMER BENICIA ARSENAL     Date Received: 11/19/09
Batch No.   : 09K226                     Date Extracted: 11/21/09 13:05
Sample ID   : B161GR006-B-S01           Date Analyzed: 11/23/09 20:34
Lab Samp ID: K226-09                    Dilution Factor: 1
Lab File ID: RK23021A                   Matrix          : SOIL
Ext Btch ID: PAK005S                    % Moisture      : 16.1
Calib. Ref.: RK23016A                   Instrument ID   : T-034
=====
  
```

PARAMETERS	RESULTS (mg/kg)	PQL (mg/kg)	MDL (mg/kg)
DIBENZO(A,H)ANTHRACENE	0.011J (ND)	0.024	0.0048 0.0048
SURROGATE PARAMETERS		QC LIMIT	
P-TERPHENYL-D14	(90) 80	40-140	

PQL: Practical Quantitation Limit
 Left of | is related to UV detector; Right of | related to FL detector
 Final result indicated by ()

SW 3550B/8310
POLYNUCLEAR AROMATIC HYDROCARBONS

```
=====
Client      : BROWN & CALDWELL          Date Collected: 11/18/09
Project     : FORMER BENICIA ARSENAL    Date Received: 11/19/09
  ch No.    : 09K226                    Date Extracted: 11/21/09 13:05
  ple ID    : B161GR007-A-S01           Date Analyzed: 11/23/09 17:04
Lab Samp ID: K226-10                    Dilution Factor: 1
Lab File ID: RK23013A                   Matrix          : SOIL
Ext Btch ID: PAK005S                    % Moisture     : 17.3
Calib. Ref.: RK23002A                   Instrument ID  : T-034
=====
```

PARAMETERS	RESULTS (mg/kg)	PQL (mg/kg)	MDL (mg/kg)
DIBENZO (A,H) ANTHRACENE	(ND) ND	0.024	0.0048 0.0048
SURROGATE PARAMETERS	% RECOVERY	QC LIMIT	
P-TERPHENYL-D14	(94) 89	40-140	

PQL: Practical Quantitation Limit
Left of | is related to UV detector; Right of | related to FL detector
Final result indicated by ()

SW 3520C/8310
POLYNUCLEAR AROMATIC HYDROCARBONS

=====
Client : BROWN & CALDWELL Date Collected: NA
Project : FORMER BENICIA ARSENAL Date Received: 11/20/09
Batch No. : 09K226 Date Extracted: 11/20/09 15:30
Sample ID: MELK1W Date Analyzed: 11/23/09 12:41
Lab Samp ID: PAK004WB Dilution Factor: 1
Lab File ID: RK23003A Matrix : WATER
Ext Btch ID: PAK004W % Moisture : NA
Calib. Ref.: RK23002A Instrument ID : T-034
=====

PARAMETERS	RESULTS (ug/L)	PQL (ug/L)	NDL (ug/L)
DIBENZO (A, H) ANTHRACENE	(ND) ND	0.40	0.10 0.10
SURROGATE PARAMETERS	% RECOVERY	QC LIMIT	
P-TERPHENYL-D14	(106) 99	40-140	

PQL: Practical Quantitation Limit
Left of | is related to UV detector; Right of | related to FL detector
Final result indicated by ()

SW 3550B/8310
POLYNUCLEAR AROMATIC HYDROCARBONS

```

=====
Client      : BROWN & CALDWELL           Date Collected: NA
Project     : FORMER BENICIA ARSENAL     Date Received: 11/21/09
  ch No.    : 09K226                     Date Extracted: 11/21/09 13:05
  ple ID    : MBLK1S                     Date Analyzed: 11/23/09 15:18
Lab Samp ID: PAK005SB                   Dilution Factor: 1
Lab File ID: RK23009A                   Matrix          : SOIL
Ext Btch ID: PAK005S                     % Moisture      : NA
Calib. Ref.: RK23002A                   Instrument ID   : T-034
=====

```

PARAMETERS	RESULTS (mg/kg)	PQL (mg/kg)	MDL (mg/kg)
DIBENZO (A, H) ANTHRACENE	(ND) ND	0.020	0.0040 0.0040
SURROGATE PARAMETERS			
	% RECOVERY	QC LIMIT	
P-TERPHENYL-D14	(113) 103	40-140	

PQL: Practical Quantitation Limit
 Left of | is related to UV detector; Right of | related to FL detector
 Final result indicated by ()

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: BROWN & CALDWELL
PROJECT: FORMER BENICIA ARSENAL
BATCH NO.: 09K226
METHOD: SW3520C/3630C/83-10

MATRIX: WATER % MOISTURE: NA
DILUTION FACTOR: 1
SAMPLE ID: MELK1W
LAB SAMP ID: PAK004WB PAK004WL PAK004WC
LAB FILE ID: RK23003A RK23004A RK23005A
DATE EXTRACTED: 11/20/0915:30 11/20/0915:30 11/20/0915:30
DATE ANALYZED: 11/23/0912:41 11/23/0913:07 11/23/0913:34
PREP. BATCH: PAK004W PAK004W
CALIB. REF: RK23002A RK23002A

ACCESSION:

PARAMETER Dibenzo (a,h)anthracene

PARAMETER	BS RSLT (ug/L)	BS REC	SPIKE AMT (ug/L)	BS RSLT (ug/L)	BS REC	SPIKE AMT (ug/L)	BSD RSLT (ug/L)	BSD REC	RPD (%)	OC LIMIT (%)	MAX RPD (%)
Dibenzo (a,h)anthracene	(ND) ND	(8.43) 7.46	8.00	(8.43) 7.46	(105) 93	8.00	(8.42) 7.49	(105) 94	(0) 0	55-135	25

SURROGATE PARAMETER p-Terphenyl-d14

SURROGATE PARAMETER	BS RSLT (ug/L)	BS REC	SPIKE AMT (ug/L)	BS RSLT (ug/L)	BS REC	SPIKE AMT (ug/L)	BSD RSLT (ug/L)	BSD REC	OC LIMIT (%)
p-Terphenyl-d14	5.00	(110) 100	5.00	(110) 100	(5.49) 4.92	5.00	(110) 98	(110) 98	55-135

EMAX QUALITY CONTROL I
LCS/LCD ANALYSIS

CLIENT: BROWN & CALDWELL
PROJECT: FORMER BENICIA ARSENAL
BATCH NO.: 09K226
METHOD: SW3503/3630C/8310

MATRIX: SOIL
DILUTION FACTOR: 1 1
SAMPLE ID: MBLKLS
LAB SAMP ID: PAK0055L PAK0055C
LAB FILE ID: RK23007A RK23008A
DATE EXTRACTED: 11/21/09 11:05 11/21/09 13:05
DATE ANALYZED: 11/23/09 14:26 11/23/09 14:52
PREP. BATCH: PAK005S PAK005S
CALIB. REF: RK23002A RK23002A

ACCESSION:

PARAMETER Dibenzo (a,h) anthracene

BLANK RSLT (mg/kg)	SPIKE AMT (mg/kg)	BS RSLT (mg/kg)	BS % REC	SPIKE AMT (mg/kg)	BSD RSLT (mg/kg)	BSD % REC	RPD (%)	QC LIMIT (%)	MAX RPD (%)
(ND) ND	0.222	(0.236) 0.206	(106) 93	0.222	(0.243) 0.214	(109) 96	(3) 4	55-135	40

SURROGATE PARAMETER p-Terphenyl-d14

SPIKE AMT (mg/kg)	BS RSLT (mg/kg)	BS % REC	SPIKE AMT (mg/kg)	BSD RSLT (mg/kg)	BSD % REC	QC LIMIT (%)
0.139	(0.146) 0.133	(105) 96	0.139	(0.149) 0.133	(107) 95	55-135

EMAX QUALITY CONTROL DATA
MS/MSD ANALYSIS

CLIENT: BROWN & CALDWELL
PROJECT: FORMER BENICIA ARSENAL
BATCH NO.: 09K226
METHOD: SW3550B/3630C/8310

MATRIX: SOIL % MOISTURE: 19.2
DILUTION FACTOR: 1
SAMPLE ID: E161GR006-A-S01
LAB SAMP ID: K226-08 K226-08S
LAB FILE ID: RK23017A RK23018A RK23019A
DATE EXTRACTED: 11/21/0913:05 11/21/0913:05 11/21/0913:05
DATE ANALYZED: 11/23/0918:49 11/23/0919:15 11/23/0919:41
PREP. BATCH: PAK005S PAK005S PAK005S
CALLIB. REF: RK23016A RK23016A RK23016A

ACCESSION:

PARAMETER	SAMPL RSLT (mg/kg)	SPIKE AMT (mg/kg)	MS % REC	MSD RSLT (mg/kg)	SPIKE AMT (mg/kg)	MSD RSLT (mg/kg)	MSD % REC	RPD (%)	QC LIMIT (%)	MAX RPD (%)
Dibenzo (a, h) anthracene	0.0070N (ND)	0.275	104 (82)	0.292 (0.226)	0.275	0.305 (0.236)	108 (86)	4 (4)	40-140	40
SURROGATE PARAMETER	SPIKE AMT (mg/kg)	MS RSLT (mg/kg)	MS % REC	SPIKE AMT (mg/kg)	MSD RSLT (mg/kg)	MSD % REC	QC LIMIT (%)			
p-Terphenyl-d14	0.172	(0.188) 0.167	(109) 97	0.172	(0.172) 0.179	(100) 104	40-140			

METHOD 3050B/6010B
METALS BY TRACE ICP

=====
Client : BROWN & CALDWELL Date Collected: 11/16/09 14:00
Project : FORMER BENICIA ARSENAL Date Received: 11/17/09
Sample NO. : 09K183 Date Extracted: 11/18/09 10:10
Sample ID: B051GR001-A-S01 Date Analyzed: 11/18/09 19:11
Lab Samp ID: K183-02 Dilution Factor: 1
Lab File ID: ID8K012023 Matrix : SOIL
Ext Btch ID: IPK043S % Moisture : 18.6
Calib. Ref.: ID8K012013 Instrument ID : EMAXTID8
=====

PARAMETERS	RESULTS (mg/kg)	PQL (mg/kg)	HDL (mg/kg)
Arsenic	9.34	1.02	0.409

METHOD 3050B/6010B
METALS BY TRACE ICP

=====
Client : BROWN & CALDWELL Date Collected: 11/16/09 14:10
Project : FORMER BENICIA ARSENAL Date Received: 11/17/09
SDG NO. : 09K183 Date Extracted: 11/18/09 10:10
Sample ID: B051GR002-A-S01 Date Analyzed: 11/18/09 19:36
Lab Samp ID: K183-03 Dilution Factor: 1
Lab File ID: ID8K012027 Matrix : SOIL
Ext Btch ID: IPK043S % Moisture : 23.8
Calib. Ref.: ID8K012025 Instrument ID : EMAXTID8
=====

PARAMETERS	RESULTS (mg/kg)	PQL (mg/kg)	MDL (mg/kg)
Arsenic	14.3	1.09	0.437

METHOD 3050E/6010B
METALS BY TRACE ICP

=====
Client : BROWN & CALDWELL Date Collected: 11/16/09 14:15
Project : FORMER BENICIA ARSENAL Date Received: 11/17/09
Sample NO. : 09K183 Date Extracted: 11/18/09 10:10
Sample ID: B051GR003-A-S01 Date Analyzed: 11/18/09 19:41
Lab Samp ID: K183-04 Dilution Factor: 1
Lab File ID: ID8K012028 Matrix : SOIL
Ext Btch ID: IPK043S % Moisture : 19.5
Calib. Ref.: ID8K012025 Instrument ID : EMAXTID8
=====

PARAMETERS	RESULTS (mg/kg)	PQL (mg/kg)	MDL (mg/kg)
Arsenic	12.5	1.03	0.414

METHOD 3050B/6010B
METALS BY TRACE ICP

=====
Client : BROWN & CALDWELL Date Collected: 11/16/09 14:20
Project : FORMER BENICIA ARSENAL Date Received: 11/17/09
SDG NO. : 09K183 Date Extracted: 11/18/09 10:10
Sample ID: B051GR004-A-S01 Date Analyzed: 11/18/09 19:46
Lab Samp ID: K183-05 Dilution Factor: 1
Lab File ID: ID8K012029 Matrix : SOIL
Ext Btch ID: IPK043S % Moisture : 20.7
Calib. Ref.: ID8K012025 Instrument ID : EMAXTID8
=====

PARAMETERS	RESULTS (mg/kg)	PQL (mg/kg)	MDL (mg/kg)
Arsenic	12.6	1.05	0.420

METHOD 3050B/6010B
METALS BY TRACE ICP

```
=====
Client      : BROWN & CALDWELL           Date Collected: 11/16/09 14:25
Project     : FORMER BENICIA ARSENAL      Date Received: 11/17/09
Sample NO.  : 09K183                      Date Extracted: 11/18/09 10:10
Sample ID:  B051GR005-A-S01              Date Analyzed: 11/18/09 19:51
Lab Samp ID: K183-06                      Dilution Factor: 1
Lab File ID: ID8K012030                   Matrix          : SOIL
Ext Batch ID: IPK043S                     % Moisture      : 18.9
Calib. Ref.: ID8K012025                   Instrument ID   : EMAXTID8
=====
```

<u>PARAMETERS</u>	<u>RESULTS</u> (mg/kg)	<u>PQL</u> (mg/kg)	<u>MDL</u> (mg/kg)
Arsenic	11.7	1.03	0.411

METHOD 3050B/6010B
METALS BY TRACE ICP

```
=====
Client      : BROWN & CALDWELL           Date Collected: 11/16/09 14:30
Project     : FORMER BENICIA ARSENAL      Date Received: 11/17/09
SDG NO.    : 09K183                      Date Extracted: 11/18/09 10:10
Sample ID: B051GR005-B-S01              Date Analyzed: 11/18/09 19:56
Lab Samp ID: K183-07                     Dilution Factor: 1
Lab File ID: ID8K012031                  Matrix          : SOIL
Ext Btch ID: IPK043S                     % Moisture     : 17.2
Calib. Ref.: ID8K013025                  Instrument ID  : EMAXTID8
=====
```

PARAMETERS	RESULTS (mg/kg)	PQL (mg/kg)	MDL (mg/kg)
Arsenic	9.53	1.01	0.402

METHOD 3050B/6010B
METALS BY TRACE ICP

=====
Client : BROWN & CHLDWELL Date Collected: 11/16/09 14:00
Project : FORMER BENICIA ARSENAL Date Received: 11/17/09
S NO. : 09K183 Date Extracted: 11/18/09 10:10
Sample ID: B051GR001-A-S01DL Date Analyzed: 11/18/09 19:16
Lab Samp ID: K183-02J Dilution Factor: 5
Lab File ID: ID8K012024 Matrix : SOIL
Ext Btch ID: IPK043S % Moisture : 18.6
Calib. Ref.: ID8K012013 Instrument ID : EMAXTID8
=====

<u>PARAMETERS</u>	<u>RESULTS</u> (mg/kg)	<u>PQL</u> (mg/kg)	<u>MDL</u> (mg/kg)
Arsenic	9.74	5.12	2.05

METHOD 3050B/6010B
METALS BY TRACE ICP

Client : BROWN & CALDWELL Date Collected: NA
Project : FORMER BENICIA ARSENAL Date Received: 11/18/09
SDG NO. : 09K183 Date Extracted: 11/18/09 10:10
Sample ID: NBLK1S Date Analyzed: 11/18/09 18:32
Lab Samp ID: IPK043SB Dilution Factor: 1
Lab File ID: ID8K012015 Matrix : SOIL
Ext Btch ID: IPK043S % Moisture : NA
Calib. Ref.: ID8K012013 Instrument ID : EMEXTID8

PARAMETERS	RESULTS (mg/kg)	PQL (mg/kg)	nDL (mg/kg)
Arsenic	ND	0.833	0.333

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: BROWN & CALDWELL
PROJECT: FORMER BENICIA ARSENAL
SDG NO.: 09K183
METHOD: METHOD 3050B/6010B

MATRIX: SOIL
DILTN FACTR: 1 1 NA
SAMPLE ID: MELK15
CONTROL NO.: IPK043SB IPK043SL IPK043SC
LAB FILE ID: ID8K012015 ID8K012016 ID8K012017
DATE TIME EXTRACTD: 11/18/0910:10 11/18/0910:10 11/18/0910:10 DATE COLLECTED: NA
DATE TIME ANALYZD: 11/18/0918:32 11/18/0918:37 11/18/0918:41 DATE RECEIVED: 11/18/09
PREP. BATCH: IPK043S IPK043S IPK043S
CALIB. REF: ID8K012013 ID8K012013 ID8K012013

ACCESSION:

PARAMETER	BLNK RSLT mg/kg	SPIKE AMT mg/kg	BS RSLT mg/kg	BS % REC	SPIKE AMT mg/kg	BSD RSLT mg/kg	BSD % REC	R2D %	QC LIMIT %	MAX RPD %
Arsenic	ND	41.7	43.7	105	41.7	43.4	104	1	80-120	20

EMAX QUALITY CONTROL DATA
MS/MSD ANALYSIS

CLIENT: BROWN & CALDWELL
PROJECT: FORMER BENICIA ARSENAL
SDG NO.: 09K1B3
METHOD: 3050B/6010B

MATRIX: SOIL % MOISTURE: 18.6
DILTN FACTR: 1 1
SAMPLE ID: B051GR001-A-S01
CONTROL NO.: K1B3-02M K1B3-02S
LAB FILE ID: ID8K012018 ID8K012019
DATE TIME EXTRACTD: 11/18/0910:10 11/18/0910:10
DATE TIME ANALYZD: 11/18/0919:11 11/18/0918:51
PREP. BATCH: IPK043S IPK043S
CALIB. REF: ID8K012013 ID8K012013

ACCESSION:

PARAMETER	SMPLE RSLT mg/kg	SPIKE AMT mg/kg	MS RSLT mg/kg	MS % REC	SPIKE AMT mg/kg	MSD RSLT mg/kg	MSD % REC	RPD %	QC LIMIT %	MAX RPD %
Arsenic	9.34	51.2	55.9	91	51.2	55.5	90	1	80-120	20

EMMA QUALITY CONTROL DATA
MS/MSD ANALYSIS

CLIENT: BROWN & CALDWELL
PROJECT: FORMER BENICIA ARSENAL
SDG NO.: 09K183
METHOD: METHOD 3050B/6010B

MATRIX: SOIL
DILUTN FACTR: 1
SAMPLE ID: B051GR001--S01
CONTROL NO.: K183-02 K183-02V
LAB FILE ID: ID8K012020 ID8K012021
DATE TIME EXTRACTD: 11/18/0910:10 11/18/0910:10
DATE COLLECTED: 11/16/09 14:00
DATE TIME ANALYZD: 11/18/0919:11 11/18/0919:01
DATE RECEIVED: 11/17/09
PREP. BATCH: IPK043S IPK043S
CALIB. REF: ID8K012013 ID8K012013

% MOISTURE: 18.6

ACCESSION:

PARAMETER	SMPLE mg/kg	SPIKE AMT mg/kg	MS RSLT mg/kg	MS % REC	SPIKE AMT mg/kg	MSD RSLT mg/kg	MSD % REC	RPD	QC LIMIT %	MAX RPD
Arsenic	9.34	51.2	55.5	90	51.2	55.2	90	1	80-120	20

EMAX QUALITY CONTROL DATA
ANALYTICAL SPIKE ANALYSIS

CLIENT: BROWN & CALDWELL
PROJECT: FORMER BENICIA ARSENAL
SDG NO.: 09K183
METHOD: METHOD 3050B/6010B

MATRIX: SOIL % MOISTURE: 18.6
DILTN FACTR: 1
SAMPLE ID: B051GR001-A-S01
CONTROL NO.: K183-02 K183-02A
LAB FILE ID: ID8K012023 ID8K012022
DATE TIME EXTCTD: 11/18/0910:10 11/19/0910:10 DATE COLLECTED: 11/16/09 14:00
DATE TIME ANALYZD: 11/18/0919:11 11/19/0919:06 DATE RECEIVED: 11/17/09
PREP. BATCH: IFK043S IFK043S
CALIB. REF: ID8K012013 ID8K012013

ACCESSION:

PARAMETER	SMPL RSLT (mg/kg)	SPIKE AMT (mg/kg)	AS RSLT (mg/kg)	AS REC %	QC LIMIT (%)
Arsenic	9.34	51.2	65.6	110	80-120

EMAX QUALITY CONTROL DATA
SERIAL DILUTION ANALYSIS

CLIENT: BROWN & CALDWELL
PROJECT: FORMER BENICIA ARSENAL
BATCH NO.: 09K183
METHOD: METHOD 3050B/6010B

MATRIX: SOIL
DILUTION FACTOR: 1
SAMPLE ID: B051GR001-A-S01 5 B051GR001-A-S01DL
EMAX SAMP ID: K183-02 K183-02J
LAB FILE ID: ID8K012024 ID8K012024
DATE EXTRACTED: 11/18/0910:10 11/18/0910:10 DATE COLLECTED: 11/16/09 14:00
DATE ANALYZED: 11/18/0919:11 11/18/0919:16 DATE RECEIVED: 11/17/09
PREP. BATCH: IPK043S IPK043S
CALIB. REF: ID8K012013 ID8K012013

% MOISTURE: 18.6

ACCESSION:

PARAMETER	SMPL RSLT (mg/kg)	SERIAL DIL RSLT (mg/kg)	DIF RSLT %	QC LIMIT (%)
Arsenic	9.34	9.74	4	10

METHOD 3005A/6010B
DISSOLVED METALS BY TRACE ICP

=====
Client : BROWN & CALDWELL Date Collected: 11/16/09 13:00
Project : FORMER BENICIA ARSENAL Date Received: 11/17/09
SDG NO. : 09X183 Date Extracted: 11/17/09 15:45
Sample ID: B051GR001-D-W01 Date Analyzed: 11/18/09 02:28
Lab Samp ID: K183-01 Dilution Factor: 1
Lab File ID: ID8K011101 Matrix : WATER
Ext Btch ID: IPK042W % Moisture : NA
Calib. Ref.: ID8K011090 Instrument ID : EMAXTID8
=====

PARAMETERS	RESULTS (mg/L)	PQL (mg/L)	MDL (mg/L)
Arsenic	ND	0.0100	0.00500

METHOD 3005A/6010B
DISSOLVED METALS BY TRACE ICP

```
=====
Client   : BROWN & CALDWELL           Date Collected: 11/17/09 11:45
Project  : FORMER BENICIA ARSENAL      Date Received: 11/17/09
Sample NO. : 09K183                    Date Extracted: 11/17/09 15:45
Sample ID: 1D-INF-160TG                Date Analyzed: 11/18/09 02:13
Lab Samp ID: K194-01                   Dilution Factor: 1
Lab File ID: ID8K011098                Matrix : WATER
Ext Btch ID: IPK042W                    % Moisture : NA
Calib. Ref.: ID8K011090                Instrument ID : EMAXTID8
=====
```

PARAMETERS	RESULTS (mg/L)	PQL (mg/L)	MDL (mg/L)
Arsenic	14.4	0.0100	0.00500

METHOD 3005A/6010B
DISSOLVED METALS BY TRACE ICP

=====
Client : BROWN & CALDWELL Date Collected: 11/17/09 11:45
Project : FORMER BENICIA ARSENAL Date Received: 11/17/09
SDG NO. : 09K183 Date Extracted: 11/17/09 15:45
Sample ID: 1D-INF-160TGDL Date Analyzed: 11/18/09 02:18
Lab Samp ID: K194-01J Dilution Factor: 5
Lab File ID: ID8K011099 Matrix : WATER
Ext Btch ID: IPK042W % Moisture : NA
Calib. Ref.: ID8K011090 Instrument ID : EMEXTID8
=====

PARAMETERS	RESULTS (mg/L)	PQL (mg/L)	MDL (mg/L)
Arsenic	13.9	0.0500	0.0250

METHOD 3005A/6010E
DISSOLVED METALS BY TRACE ICP

=====
Client : BROWN & CALDWELL Date Collected: NA
Project : FORMER BENICIA ARSENAL Date Received: 11/17/09
S NO. : 09K183 Date Extracted: 11/17/09 15:45
Sample ID: HBLK1W Date Analyzed: 11/18/09 01:45
Lab Samp ID: IPK042WB Dilution Factor: 1
Lab File ID: ID8K011092 Matrix : WATER
Ext Btch ID: IPK042W % Moisture : NA
Calib. Ref.: ID8K011090 Instrument ID : EMAXTID8
=====

PARAMETERS	RESULTS (mg/L)	PQL (mg/L)	MDL (mg/L)
Arsenic	ND	0.0100	0.00500

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: BROWN & CALDWELL
PROJECT: FORMER BENICIA ARSENAL
SDG NO.: 09K183
METHOD: METHOD 3005A/6010B

MATRIX: WATER % MOISTURE: NA
DILTN FACTR: 1 1
SAMPLE ID: MBK1W
CONTROL NO.: IPK042WB IPK042WL IPK042WC
LAB FILE ID: ID8K011092 ID8K011093 ID8K011094
DATE TIME EXTRACTD: 11/17/0915:45 11/17/0915:45 11/17/0915:45
DATE TIME ANALYZD: 11/18/0901:45 11/18/0901:50 11/18/0901:54
PREP. BATCH: IPK042W IPK042W IPK042W
CALIB. REF: ID8K011090 ID8K011093 ID8K011090

ACCESSION:

PARAMETER	BLNK RSLT mg/L	SPIKE AMT mg/L	BS RSLT mg/L	BS % REC	SPIKE AMT mg/L	BSD RSLT mg/L	BSD % REC	RPD	QC LIMIT %	MAX RPD %
Arsenic	ND	.5	.56	112	.5	.56	112	0	80-120	20

EMAX QUALITY CONTROL DATA
ANALYTICAL SPIKE ANALYSIS

CLIENT: BROWN & CALDWELL
PROJECT: FORMER BENICIA ARSENAL
SDG NO.: 09K183
METHOD: METHOD 3005A/6010B

MATRIX: WATER % MOISTURE: NA
DILTN FACTR: 1
SAMPLE ID: LD-INF-160TG K194-01A
CONTROL NO.: ID8K011098 ID8K011097
LAB FILE ID: 11/17/0915:45 11/17/0915:45 DATE COLLECTED: 11/17/09 11:45
DATE TIME EXTRACTD: 11/18/0902:13 11/18/0902:09 DATE RECEIVED: 11/17/09
PREP. BATCH: IPK042W IPK042W
CALIB. REF: ID8K011090 ID8K011090

ACCESSION:

PARAMETER SMPL RSLT SPIKE AMT AS RSLT AS OC LIMIT
(mg/L) (mg/L) % REC (%)

14.4 14.8 82 80-120

5

Arsenic

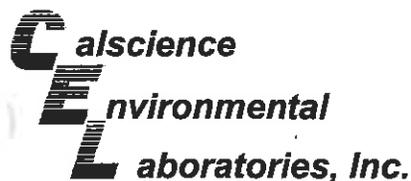
EMAX QUALITY CONTROL DATA
SERIAL DILUTION ANALYSIS

CLIENT: BROWN & CALDWELL
PROJECT: FORMER BENICIA ARSENAL
BATCH NO.: 09K183
METHOD: 3005A/60103

MATRIX: WATER % MOISTURE: NA
DILUTION FACTOR: 1
SAMPLE ID: ID-INF-160TG 5 ID-INF-160TGDL
EMAX SAMP ID: K194-01 K194-01J
LAB FILE ID: ID8K011099 ID8K011099
DATE EXTRACTED: 11/17/0915:45 11/17/0915:45 DATE COLLECTED: 11/17/09 11:45
DATE ANALYZED: 11/18/0902:13 11/18/0902:18 DATE RECEIVED: 11/17/09
PREP. BATCH: IPK042W IPK042W
CALIB. REF: ID8K011090 ID8K011090

ACCESSION:

PARAMETER SMPLE RSLT SERIAL DIL RSLT DIF RSLT QC LIMIT
(mg/L) (mg/L) (%) (%)
----- 14.4 13.9 4 10
Arsenic



December 02, 2009

Richard Beauvil
EMAX Laboratories, Inc.
1835 205th Street
Torrance, CA 90501-1510

Subject: **Calscience Work Order No.: 09-11-2138**
Client Reference: **Former Benicia Arsenal-IDW / 09K184**

Dear Client:

Enclosed is an analytical report for the above-referenced project. The samples included in this report were received 11/25/2009 and analyzed in accordance with the attached chain-of-custody.

Unless otherwise noted, all analytical testing was accomplished in accordance with the guidelines established in our Quality Systems Manual, applicable standard operating procedures, and other related documentation. The original report of subcontracted analysis, if any, is provided herein, and follows the standard Calscience data package. The results in this analytical report are limited to the samples tested and any reproduction thereof must be made in its entirety.

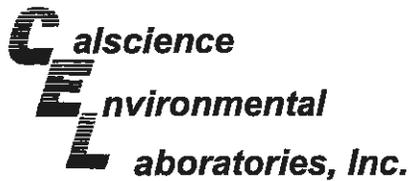
If you have any questions regarding this report, please do not hesitate to contact the undersigned.

Sincerely,

A handwritten signature in black ink that reads "Ranjit K. Clarke".

Calscience Environmental
Laboratories, Inc.
Ranjit Clarke
Project Manager

A handwritten signature in black ink, partially overlapping the footer text.

**Analytical Report**

EMAX Laboratories, Inc.
1835 205th Street
Torrance, CA 90501-1510

Date Received: 11/25/09
Work Order No: 09-11-2138
Preparation: T22.11.5. All
Method: EPA 6010B

Project: Former Benicia Arsenal-IDW / 09K184

Page 1 of 1

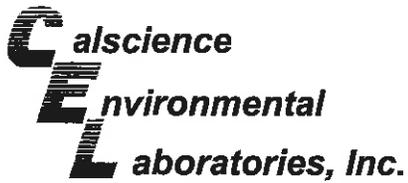
Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B051-BIN-21293	09-11-2138-1-A	11/16/09 14:35	Solid	ICP 5300	11/30/09	11/30/09 14:10	091130LA3L

Parameter	Result	RL	DF	Qual	Units
Lead	8.12	0.100	1		mg/L

Method Blank	097-05-006-4,900	N/A	Solid	ICP 5300	11/30/09	11/30/09 13:47	091130LA3L
--------------	------------------	-----	-------	----------	----------	-------------------	------------

Parameter	Result	RL	DF	Qual	Units
Lead	ND	0.100	1		mg/L

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers



Quality Control - Spike/Spike Duplicate



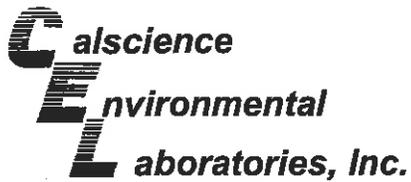
EMAX Laboratories, Inc. 1835 205th Street Torrance, CA 90501-1510	Date Received: 11/25/09 Work Order No: 09-11-2138 Preparation: T22.11.5. All Method: EPA 6010B
---	---

Project Former Benicia Arsenal-IDW / 09K184

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
09-11-1717-3	Solid	ICP 5300	11/25/09	11/30/09	091130SA3

<u>Parameter</u>	<u>MS %REC</u>	<u>MSD %REC</u>	<u>%REC CL</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
Lead	104	102	75-125	1	0-20	

RPD - Relative Percent Difference , CL - Control Limit



Quality Control - LCS/LCS Duplicate



EMAX Laboratories, Inc.
1835 205th Street
Torrance, CA 90501-1510

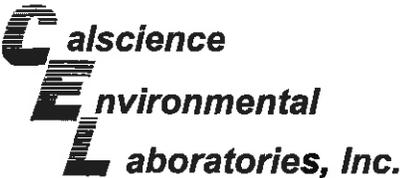
Date Received: N/A
Work Order No: 09-11-2138
Preparation: T22.11.5. All
Method: EPA 6010B

Project: Former Benicia Arsenal-IDW / 09K184

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
097-05-006-4.900	Solid	ICP 5300	11/30/09	11/30/09	091130LA3L

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Lead	107	105	80-120	2	0-20	

RPD - Relative Percent Difference, CL - Control Limit



Glossary of Terms and Qualifiers



Work Order Number: 09-11-2138

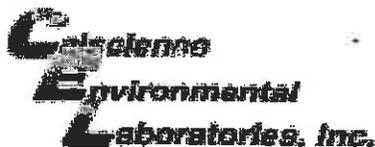
<u>Qualifier</u>	<u>Definition</u>
*	See applicable analysis comment.
1	Surrogate compound recovery was out of control due to a required sample dilution, therefore, the sample data was reported without further clarification.
2	Surrogate compound recovery was out of control due to matrix interference. The associated method blank surrogate spike compound was in control and, therefore, the sample data was reported without further clarification.
3	Recovery of the Matrix Spike (MS) or Matrix Spike Duplicate (MSD) compound was out of control due to matrix interference. The associated LCS and/or LCSD was in control and, therefore, the sample data was reported without further clarification.
4	The MS/MSD RPD was out of control due to matrix interference. The LCS/LCSD RPD was in control and, therefore, the sample data was reported without further clarification.
5	The PDS/PDSD associated with this batch of samples was out of control due to a matrix interference effect. The associated batch LCS/LCSD was in control and, hence, the associated sample data was reported with no further corrective action required.
A	Result is the average of all dilutions, as defined by the method.
B	Analyte was present in the associated method blank.
C	Analyte presence was not confirmed on primary column.
E	Concentration exceeds the calibration range.
H	Sample received and/or analyzed past the recommended holding time.
J	Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.
ME	LCS Recovery Percentage is within LCS ME Control Limit range.
N	Nontarget Analyte.
ND	Parameter not detected at the indicated reporting limit.
Q	Spike recovery and RPD control limits do not apply resulting from the parameter concentration in the sample exceeding the spike concentration by a factor of four or greater.
U	Undetected at the laboratory method detection limit.
X	% Recovery and/or RPD out-of-range.
Z	Analyte presence was not confirmed by second column or GC/MS analysis.
	Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture.

CHAIN OF CUSTODY

2138

EMAX LABORATORIES, INC. 1835 W. 205th Street, Torrance, CA 90501 Tel #: 310-618-8889 Fax #: 310-618-0818 Email: info@emaxlabs.com		PO NUMBER: SAMPLE STORAGE		EMAX CONTROL NO. *	
CLIENT: <u>Brown & Caldwell</u> PROJECT: <u>Former Benicia Arsenal - IDW</u> COORDINATOR: <u>Richard Bevard</u> TEL: <u>PHAX</u> FAX: <u>PHAX</u> EMAIL:		MATRIX CODE DW-Drinking Water OW-Ground Water WW-Wastewater SW-Solid Waste SL-Sludge SP-Soil/Sediment WP-Wipes PP-Pure Products AR-Air Q-		PROJECT CODE:	
SEND REPORT TO: <u>Richard Bevard</u> COMPANY: <u>PHAX</u> ADDRESS:		ANALYSIS REQUIRED STLC PB		PRESERVATIVE CODE Rush <input checked="" type="checkbox"/> hrs. Rush <input checked="" type="checkbox"/> 3 days <input type="checkbox"/> 7 days <input type="checkbox"/> 14 days <input type="checkbox"/> 21 days <input type="checkbox"/> 30 days <input type="checkbox"/> days	
SAMPLE ID CLIENT: <u>BOSI-BIN-21293</u> LOCATION: <u>Benicia</u> DATE: <u>11/21/09</u> TIME: <u>1435</u>		CONTAINER NO. <u>1</u> SIZE <u>802</u> TYPE <u>JWR SS</u>		COMMENTS <u>09K184</u>	
LAB 1 2 3 4 5 6 7 8 9 0		MATRIX CODE QC		PRESERVATIVE CODE	
INSTRUCTIONS <u>Email results to rbeauvi@emaxlabs.com</u> <u>Results needed by Wednesday Afternoon</u>		COOLER #		Temp. (°C)	
SAMPLER <u>[Signature]</u>		RECEIVED BY <u>[Signature]</u>		Sample #s <u>Subbed to Calswance</u>	
RELINQUISHED BY <u>[Signature]</u>		COURIER/AIRBILL Date: <u>11/25/09</u> 1455 Time: <u>1700</u>		Date:	

NOTICE: Turn-around-time (TAT) for samples shall not begin until all discrepancies have been resolved. For samples received and discrepancies resolved after 1500 hrs. TAT shall start at 0600 hrs the next business day. The client is responsible for all cost associated with sample disposal. Samples shall be disposed of as soon as practical (but not prior to fifteen (15) calendar days) after issuance of analytical report unless a different sample disposal schedule is pre-arranged with EMAX. Disposal fee for samples defaced by CA Title 22 as non-hazardous shall be \$5.00 per sample. EMAX will return hazardous samples to the client at the client's expense unless directed in writing otherwise.



WORK ORDER #: 09-11-2138

SAMPLE RECEIPT FORM

Cooler 1 of 1

CLIENT: EMAX

DATE: 11/25/09

TEMPERATURE: (Criteria: 0.0°C – 6.0°C, not frozen)

Temperature 3.8 °C – 0.8°C (CF) = 3.0 °C Blank Sample

Sample(s) outside temperature criteria (PM/APM contacted by: _____).

Sample(s) outside temperature criteria but received on ice/chilled on same day of sampling.

Received at ambient temperature, placed on ice for transport by Courier.

Ambient Temperature: Air Filter Metals Only PCBs Only Initial: AM

CUSTODY SEALS INTACT:

Cooler _____ No (Not Intact) Not Present N/A Initial: AM

Sample _____ No (Not Intact) Not Present Initial: WSC

SAMPLE CONDITION:

	Yes	No	N/A
Chain-Of-Custody (COC) document(s) received with samples.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
COC document(s) received complete.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Collection date/time, matrix, and/or # of containers logged in based on sample labels.			
<input type="checkbox"/> COC not relinquished. <input type="checkbox"/> No date relinquished. <input type="checkbox"/> No time relinquished.			
Sampler's name indicated on COC.....	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Sample container label(s) consistent with COC.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample container(s) intact and good condition.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Correct containers and volume for analyses requested.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Analyses received within holding time.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Proper preservation noted on COC or sample container.....	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="checkbox"/> Unpreserved vials received for Volatiles analysis			
Volatile analysis container(s) free of headspace.....	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Tedlar bag(s) free of condensation.....	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

CONTAINER TYPE:

Solid: 4ozCGJ 8ozCGJ 16ozCGJ Sleeve EnCores® TerraCores® _____

Water: VOA VOA_h VOA_{na2} 125AGB 125AGB_h 125AGB_p 1AGB 1AGB_{na2} 1AGB_s

500AGB 500AGJ 500AGJ_s 250AGB 250CGB 250CGB_s 1PB 500PB 500PB_{na}

250PB 250PB_n 125PB 125PB_{znna} 100PJ 100PJ_{na2} _____ _____ _____

Air: Tedlar® Summa® Other: _____ Trip Blank Lot#: _____

Container: C: Clear A: Amber P: Plastic G: Glass J: Jar B: Bottle Z: Ziploc/Resealable Bag E: Envelop

Preservative: h: HCL n: HNO3 na₂:Na₂S₂O₃ Na: NaOH p: H₃PO₄ s: H₂SO₄ znna: ZnAc₂+NaOH f: Field-filtered

Checked by: WSC
 Reviewed by: YL
 Scanned by: WSC

COMPANY_NAME	PROJECT_ID	WORK_ORD	CEL_SAM	CLIENT_SAMPLE
EMAX Laboratories, Inc.	r Benicia Arsenal-IDW / 09K184	09-11-2138	1	B051-BIN-21293
EMAX Laboratories, Inc.	r Benicia Arsenal-IDW / 09K184	09-11-2138	4900	Method Blank
EMAX Laboratories, Inc.	r Benicia Arsenal-IDW / 09K184	09-11-2138	3	09-11-1717-3
EMAX Laboratories, Inc.	r Benicia Arsenal-IDW / 09K184	09-11-2138	3	09-11-1717-3
EMAX Laboratories, Inc.	r Benicia Arsenal-IDW / 09K184	09-11-2138	4900	y Control Sample
EMAX Laboratories, Inc.	r Benicia Arsenal-IDW / 09K184	09-11-2138	4900	Sample Duplicate

MATRIX	TYPE	DATE_CO	DATE_RE	DATE_EX	DATE_AN	TIME_ANA	METHOD
Solid		11/16/09	11/25/09	11/30/09	11/30/09	2:10 PM	EPA 6010B
Solid	MB			11/30/09	11/30/09	1:47 PM	EPA 6010B
Solid	MS	11/19/09	11/20/09	11/25/09	11/30/09	1:53 PM	EPA 6010B
Solid	MSD	11/19/09	11/20/09	11/25/09	11/30/09	1:54 PM	EPA 6010B
Solid	LCS			11/30/09	11/30/09	1:48 PM	EPA 6010B
Solid	LCD			11/30/09	11/30/09	1:49 PM	EPA 6010B

EXTRACTION	NCAS_NUM	COMPOUND_NAME	CONCENT	DETECTIO	MDL	UNITS
T22.11.5. All	7439-92-1	Lead	8.12	0.100	0.0693	mg/L
T22.11.5. All	7439-92-1	Lead	ND	0.100	0.0693	mg/L
T22.11.5. All	7439-92-1	Lead	104	0.100	0.0693	%REC
T22.11.5. All	7439-92-1	Lead	102	0.100	0.0693	%REC
T22.11.5. All	7439-92-1	Lead	107	0.100	0.0693	%REC
T22.11.5. All	7439-92-1	Lead	105	0.100	0.0693	%REC

QUALIFIER	DILUTION	COMMENT	CONTROL	RPD	RPD_CONTROL_LIMIT
	1				
	1				
	1		75-125	1	0-20
	1		75-125	1	0-20
	1		80-120	2	0-20
	1		80-120	2	0-20



SDG Login Review Sheet

Date: 11/17/2009

Client Code: BC_0905

Client: Brown & Caldwell
Project: Former Benicia Arsenal-IDW

EMAX PM: Richard Beauvil

RB
11/18/09

Send Report To: Attn: Greg Cole
Company: Brown & Caldwell
Address: 10540 White Rock Road, Ste 180
Rancho Cordova CA 95670
NA

SDG: 09K184

DATE/ TIME RECEIVED: 11/17/2009 9:30

DUE DATE: 12/8/2009

Lwks ID	Control #	Sample ID	Matrix	Coll Date	Time	Lwks Method	Analysis
EP12098	K184-01	B051-BIN-21293 ✓	SOIL ✓	11/16/2009	14:35 ✓	MTLCAMS	Metals CAM ✓
	K184-01	B051-BIN-21293	SOIL	11/16/2009	14:35	HGS	Mercury ✓
	K184-01	B051-BIN-21293	SOIL	11/16/2009	14:35	MCD	Moisture Content Determination ✓
	K184-01	B051-BIN-21293	SOIL	11/16/2009	14:35	TPHDMS	TPH Diesel & Motor Oil ✓
	K184-01	B051-BIN-21293	SOIL	11/16/2009	14:35	TPHGROS	Gasoline Range Organics ✓
	K184-01	B051-BIN-21293	SOIL	11/16/2009	14:35	VOS	Volatile Organics by GC/MS ✓
	K184-01	B051-BIN-21293	SOIL	11/16/2009	14:35	SVS	Semivolatile Organics by GCMS ✓

202

CHAIN OF CUSTODY

EMAX CONTROL NO. * 09/18/04

PO NUMBER: 130759

PROJECT CODE:

EMAX LABORATORIES, INC.
1855 W. 205th Street, Torrance, CA 90501
Tel #: 310-618-8888; Fax #: 310-618-9818
Email: info@emaxlabs.com

CLIENT: *Bram & Colwell*

PROJECT: *Basic - Bldg. 51 DA USACE*

COORDINATOR: *Wendy Linell*

TEL: *(916) 853-5325*

SETUP REPORT TO: *Wendy Linell cc: Greg Memon*

COMPANY: *Bram & Colwell*

ADDRESS: *10670 White Rock Rd. Ste. 180*

EMAX PM: *Raulo Cordova, CA 95670*

Richard Beavril

LAB	CLIENT	LOCATION	DATE	TIME	NO.	SIZE	TYPE	CONTAINER	MATRIX CODE	QC	PRESERVATIVE CODE				COMMENTS
											CAM-17 Metals	VOCs & 8260	SVOCs & 8270	TPHD, G, M, O, 8260	
1	BOSL-BIN-21293	Basin	11/16/09	1425	4	802	GAS	S	S		Y	Y	Y	Y	5 day TAT
2															
3															
4															
5															
6															
7															
8															
9															

Instructions

(1) Please hold TCLP

(2) Silica gel cleanup reqd. Please run full TPH screen

Cooler # 1011

Temp. (C) 5.7

Sample #s

SAMPLER: *Greg Memon*

RELINQUISHED BY: *[Signature]*

DATE: 11/16/09 17:50

TIME: 11/17/09 09:50

COURIER/BILL: *Ted Ex*

RECEIVED BY: *[Signature]*

NOTICE: Torrance (TAT) for samples shall not begin until all discrepancies have been resolved. For samples received and discrepancies resolved after 1500 hrs, TAT shall start at 0800 for the next business day. The client is responsible for all cost associated with sample disposal. Samples shall be disposed of as soon as practical (but not prior to fifteen (15) calendar days) after issuance of analytical report unless a different sample disposal schedule is pre-arranged with EMAX. Disposal fee for samples defined by CA Title 22 as non-hazardous shall be \$2.00 per sample. EMAX will return hazardous samples to the client at the client's expense unless directed in writing otherwise.



SAMPLE RECEIPT FORM 1

Type of Delivery	Delivered By/Airbill	ECN
<input type="checkbox"/> EMAX Courier		09K184
<input type="checkbox"/> Client Delivery		Receipt
<input checked="" type="checkbox"/> Third Party FEDEX	870023271630	Date 11-17-09
		Time 0951

COC Inspection

<input checked="" type="checkbox"/> Client Name	<input type="checkbox"/> Client PM/FC	<input checked="" type="checkbox"/> Sampler Name	<input checked="" type="checkbox"/> Sampling Date/Time/Location	<input type="checkbox"/> Sample ID	<input type="checkbox"/> Matrix
<input type="checkbox"/> Address	<input checked="" type="checkbox"/> Tel # / Fax #	<input type="checkbox"/> Courier Signature	<input checked="" type="checkbox"/> Analysis Required	<input type="checkbox"/> Preservative (if any)	<input type="checkbox"/> FAT
Safety Issues	<input checked="" type="checkbox"/> None	<input type="checkbox"/> High concentrations expected	<input type="checkbox"/> Superfund Site samples	<input type="checkbox"/> Rad screening required	

Comments:

Packaging Inspection

Container	<input checked="" type="checkbox"/> Cooler	<input type="checkbox"/> Box	<input type="checkbox"/> Other
Condition	<input checked="" type="checkbox"/> Custody Seal	<input checked="" type="checkbox"/> Intact	<input type="checkbox"/> Damaged
Packaging	<input checked="" type="checkbox"/> Bubble Pack	<input type="checkbox"/> Styrofoam	<input type="checkbox"/> Popcorn
Temperatures (Cool, ≤6 °C but not frozen)	<input checked="" type="checkbox"/> Cooler 1 3.7 °C	<input type="checkbox"/> Cooler 2 _____ °C	<input type="checkbox"/> Cooler 3 _____ °C
	<input type="checkbox"/> Cooler 6 _____ °C	<input type="checkbox"/> Cooler 7 _____ °C	<input type="checkbox"/> Cooler 8 _____ °C

Comments: PM was informed on non-compliant coolers immediately.

DISCREPANCIES				
LSID	LSCID	Sample Label ID/COC ID	Discrepancy Code	Corrective Action Code
01	01-04		#1	Can Metals

REVIEWS

Sample Labeling	SRF	PM
Date 11/17/09	Date 11/17/09	Date 11/18/09

LEGEND:

- | | | |
|--|--|--|
| <p>Code Description- Sample Management</p> <ul style="list-style-type: none"> A1 Analysis is not indicated in COC A2 Analysis is not indicated in label A3 Analysis is inconsistent in COC vis-à-vis label A4 _____ B1 Sample ID is not indicated in COC B2 Sample ID is not indicated in label B3 Sample ID is inconsistent in COC vis-à-vis label B4 _____ C1 Wrong container C2 Broken container C3 Leaking container C4 _____ | <p>Code Description-Sample Management</p> <ul style="list-style-type: none"> D1 Date and/or time is not indicated in COC D2 Date and/or time is not indicated in label D3 Date and/or time is inconsistent in COC vis-à-vis label E1 Insufficient preservative E2 Improper preservation F1 Insufficient Sample F2 Bubble is > 6mm G1 Temperature is out of range G2 Out of Holding Time G3 >20 % solid particle H1 LABEL REQUIRED FOR ARSENIC ANALYSIS ONLY H2 _____ | <p>Code Description-Project Management</p> <ul style="list-style-type: none"> R1 Hold sample(s); wait for further instructions R2 Proceed as indicated in COC R3 Refer to attached instruction R4 Cancel the analysis R5 _____ R6 _____ |
|--|--|--|

METHOD SW3550B/3630C/8015B
DIESEL RANGE ORGANICS

```

=====
Client      : BROWN & CALDWELL           Date Collected: 11/16/09
Project     : FORMER BENICIA ARSENAL-IDW Date Received: 11/17/09
Batch No.   : 09K184                     Date Extracted: 11/20/09 16:00
Sample ID   : B051-BIN-21293             Date Analyzed: 11/21/09 17:39
Lab Samp ID : K184-01                    Dilution Factor: 1
Lab File ID : LK20106A                   Matrix          : SOIL
Ext Btch ID : DSK038S                    % Moisture     : 14.7
Calib. Ref. : LK20094A                   Instrument ID  : GCT105
=====

```

PARAMETERS	RESULTS (mg/kg)	PQL (mg/kg)	MDL (mg/kg)
DIESEL RANGE ORGANICS	59	9.7	2.8
RESIDUAL RANGE ORGANICS	370	20	2.7

SURROGATE PARAMETERS	% RECOVERY	QC LIMIT
BROMOBENZENE	73	50-150
HEXACOSANE	124	50-150

PQL: Practical Quantitation Limit
 Parameter H-C Range
 Diesel C10-C24
 Motor Oil C20-C34

METHOD SW3550B/3630C/8015B
DIESEL RANGE ORGANICS

```

=====
Client      : BROWN & CALDWELL           Date Collected: NA
Project     : FORMER BENICIA ARSENAL-IDW Date Received: 11/20/09
  h No.     : 09K184                     Date Extracted: 11/20/09 16:00
Sample ID   : MBLK1S                     Date Analyzed: 11/21/09 11:49
Lab Samp ID: DSK038SB                   Dilution Factor: 1
Lab File ID: LK20085A                   Matrix          : SOIL
Ext Btch ID: DSK038S                    % Moisture     : NA
Calib. Ref.: LK20080A                   Instrument ID  : GCT105
=====

```

PARAMETERS	RESULTS (mg/kg)	PQL (mg/kg)	MDL (mg/kg)
DIESEL RANGE ORGANICS	ND	8.3	2.4
RESIDUAL RANGE ORGANICS	ND	17	2.3

SURROGATE PARAMETERS	% RECOVERY	QC LIMIT
BROMOBENZENE	83	50-150
HEXACOSANE	96	50-150

PQL: Practical Quantitation Limit
 Parameter H-C Range
 Diesel C10-C24
 Motor Oil C20-C34

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: CROWN & CALDWELL
PROJECT: FORMER BENICIA ARSENAL-IDW
BATCH NO.: 3FK1B4
METHOD: METHOD SW3550B/3630C/8015B

MATRIX: SOIL
DILUTION FACTOR: 1
SAMPLE ID: MBLK1S
LAB SAMPLE ID: DSK038SL DSK038SC
LAB FILE ID: LK20083A LK20084A
DATE EXTRACTED: 11/20/0916:00 11/20/0916:00
DATE ANALYZED: 11/21/0911:49 11/21/0911:33
PREP. BATCH: DSK038S DSK038S
CALIB. REF: LK20080A LK20080A

ACCESSION:

PARAMETER Diesel Range Organics

BLNK RSLT (mg/kg)	SPIKE AMT (mg/kg)	BS RSLT (mg/kg)	BS % REC	SPIKE AMT (mg/kg)	BSD RSLT (mg/kg)	BSD % REC	RPD (%)	QC LIMIT (%)	MAX RPD (%)
ND	417	429	103	417	423	102	1	50-150	40

SURROGATE PARAMETER Bromobenzene Hexacosane

SPIKE AMT (mg/kg)	BS RSLT (mg/kg)	BS % REC	SPIKE AMT (mg/kg)	BSD RSLT (mg/kg)	BSD % REC	QC LIMIT (%)
83.3	67.1	81	83.3	71.0	85	50-150
20.8	20.5	99	20.8	20.2	97	50-150

SW5030B/B260B
VOLATILE ORGANICS BY GC/MS

```

=====
Client      : BROWN & CALDWELL
Project     : FORMER BENICIA ARSENAL-IDW
Sample No.  : 09K184
Sample ID   : B051-BIN-21293
Lab Samp ID : K184-01R
Lab File ID : RKP430
Ext Btch ID : V002K22
Calib. Ref.: RKP006

Date Collected: 11/16/09
Date Received: 11/17/09
Date Extracted: 11/19/09 19:13
Date Analyzed: 11/19/09 19:13
Dilution Factor: 1
Matrix       : SOIL
% Moisture   : 14.7
Instrument ID : T-002
=====

```

PARAMETERS	RESULTS (mg/kg)	PQL (mg/kg)	MDL (mg/kg)
1,1,1,2-TETRACHLOROETHANE	ND	0.012	0.0023
1,1,1-TRICHLOROETHANE	ND	0.012	0.0023
1,1,2,2-TETRACHLOROETHANE	ND	0.012	0.0023
1,1,2-TRICHLOROETHANE	ND	0.012	0.0023
1,1-DICHLOROETHANE	ND	0.012	0.0023
1,1-DICHLOROETHENE	ND	0.012	0.0023
1,1-DICHLOROPROPENE	ND	0.023	0.0023
1,2,3-TRICHLOROBENZENE	ND	0.012	0.0023
1,2,3-TRICHLOROPROPANE	ND	0.012	0.0023
1,2,4-TRICHLOROBENZENE	ND	0.012	0.0023
1,2,4-TRIMETHYLBENZENE	ND	0.012	0.0023
1,2-DIBROMO-3-CHLOROPROPANE	ND	0.023	0.0023
1,2-DIBROMOETHANE	ND	0.012	0.0023
1,2-DICHLOROBENZENE	ND	0.012	0.0023
1,2-DICHLOROETHANE	ND	0.012	0.0023
1,2-DICHLOROPROPANE	ND	0.012	0.0023
1,3,5-TRIMETHYLBENZENE	ND	0.012	0.0023
1,3-DICHLOROBENZENE	ND	0.012	0.0023
1,3-DICHLOROPROPANE	ND	0.012	0.0023
1,4-DICHLOROBENZENE	ND	0.012	0.0023
2,2-DICHLOROPROPANE	ND	0.012	0.0023
2-BUTANONE	ND	0.12	0.0059
2-CHLOROTOLUENE	ND	0.012	0.0023
2-HEXANONE	ND	0.023	0.0059
4-CHLOROTOLUENE	ND	0.012	0.0023
4-METHYL-2-PENTANONE	ND	0.023	0.0059
ACETONE	ND	0.023	0.0059
BENZENE	ND	0.012	0.0023
BROMOBENZENE	ND	0.012	0.0023
BROMOCHLOROMETHANE	ND	0.012	0.0023
BROMODICHLOROMETHANE	ND	0.012	0.0023
BROMOFORM	ND	0.012	0.0023
BROMOMETHANE	ND	0.023	0.0023
CARBON DISULFIDE	ND	0.012	0.0023
CARBON TETRACHLORIDE	ND	0.012	0.0023
CHLOROBENZENE	ND	0.012	0.0023
DIBROMOCHLOROMETHANE	ND	0.012	0.0023
CHLOROETHANE	ND	0.023	0.0023
CHLOROFORM	ND	0.012	0.0023
CHLOROMETHANE	ND	0.023	0.0023
CIS-1,2-DICHLOROETHENE	ND	0.012	0.0023
CIS-1,3-DICHLOROPROPENE	ND	0.012	0.0023
DIBROMOMETHANE	ND	0.012	0.0023
DICHLORODIFLUOROMETHANE	ND	0.012	0.0023
DIPE	ND	0.059	0.0023
ETBE	ND	0.059	0.0023
ETHYLBENZENE	ND	0.012	0.0023
HEXACHLOROBUTADIENE	ND	0.012	0.0023
IODOMETHANE	ND	0.012	0.0059
ISOPROPYLBENZENE	ND	0.012	0.0023
METHYLENE CHLORIDE	ND	0.023	0.0023
MTBE	ND	0.012	0.0023
M/P-XYLENES	ND	0.023	0.0023
NAPHTHALENE	ND	0.023	0.0023
N-BUTYLBENZENE	ND	0.012	0.0023
O-XYLENE	ND	0.012	0.0023
P-ISOPROPYLTOLUENE	ND	0.012	0.0023
SEC-BUTYLBENZENE	ND	0.012	0.0023
STYRENE	ND	0.012	0.0023
TAME	ND	0.059	0.0023
TERT-BUTYLBENZENE	ND	0.012	0.0023
TETRACHLOROETHENE	ND	0.012	0.0023
TOLUENE	ND	0.012	0.0023
TRANS-1,2-DICHLOROETHENE	ND	0.012	0.0023
TRANS-1,3-DICHLOROPROPENE	ND	0.012	0.0023
TRICHLOROETHENE	ND	0.012	0.0023
TRICHLOROFUOROMETHANE	ND	0.012	0.0023
VINYL ACETATE	ND	0.059	0.0023
VINYL CHLORIDE	ND	0.012	0.0023
N113	ND	0.047	0.0023
M/PPYLBENZENE	ND	0.012	0.0023

SURROGATE PARAMETERS	RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	108	70-130
TOLUENE-D8	106	70-130
BROMOFLUOROBENZENE	101	70-130

PQL: Practical Quantitation Limit

SW5030B/8260B
VOLATILE ORGANICS BY GC/MS

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=====
Client      : BROWN & CALDWELL           Date Collected: NA
Project     : FORMER BENICIA ARSENAL-IDW Date Received: 11/19/09
Sample No.  : 09K184                     Date Extracted: 11/19/09 15:30
Sample ID   : MBLK1S                      Date Analyzed: 11/19/09 15:30
Lab Samp ID : V002K22Q                    Dilution Factor: 1
Lab File ID : RKP423                       Matrix          : SOIL
Ext Btch ID : V002K22                      % Moisture     : NA
Calib. Ref. : RKP006                       Instrument ID   : T-002
=====

```

PARAMETERS	RESULTS (mg/kg)	PQL (mg/kg)	MDL (mg/kg)
1,1,1,2-TETRACHLOROETHANE	ND	0.010	0.0020
1,1,1-TRICHLOROETHANE	ND	0.010	0.0020
1,1,2,2-TETRACHLOROETHANE	ND	0.010	0.0020
1,1,2-TRICHLOROETHANE	ND	0.010	0.0020
1,1-DICHLOROETHANE	ND	0.010	0.0020
1,1-DICHLOROETHENE	ND	0.010	0.0020
1,1-DICHLOROPROPENE	ND	0.020	0.0020
1,2,3-TRICHLOROBENZENE	ND	0.010	0.0020
1,2,3-TRICHLOROPROPANE	ND	0.010	0.0020
1,2,4-TRICHLOROBENZENE	ND	0.010	0.0020
1,2,4-TRIMETHYLBENZENE	ND	0.010	0.0020
1,2-DIBROMO-3-CHLOROPROPANE	ND	0.020	0.0020
1,2-DIBROMOETHANE	ND	0.010	0.0020
1,2-DICHLOROBENZENE	ND	0.010	0.0020
1,2-DICHLOROETHANE	ND	0.010	0.0020
1,2-DICHLOROPROPANE	ND	0.010	0.0020
1,3,5-TRIMETHYLBENZENE	ND	0.010	0.0020
1,3-DICHLOROBENZENE	ND	0.010	0.0020
1,3-DICHLOROPROPANE	ND	0.010	0.0020
1,4-DICHLOROBENZENE	ND	0.010	0.0020
2,2-DICHLOROPROPANE	ND	0.010	0.0020
2-BUTANONE	ND	0.10	0.0050
2-CHLOROTOLUENE	ND	0.010	0.0020
2-HEXANONE	ND	0.020	0.0050
4-CHLOROTOLUENE	ND	0.010	0.0020
4-METHYL-2-PENTANONE	ND	0.020	0.0050
ACETONE	ND	0.020	0.0050
BENZENE	ND	0.010	0.0020
BROMOBENZENE	ND	0.010	0.0020
DIBROMOCHLOROMETHANE	ND	0.010	0.0020
DIBROMODICHLOROMETHANE	ND	0.010	0.0020
BROMOFORM	ND	0.010	0.0020
BROMOMETHANE	ND	0.020	0.0020
CARBON DISULFIDE	ND	0.010	0.0020
CARBON TETRACHLORIDE	ND	0.010	0.0020
CHLOROBENZENE	ND	0.010	0.0020
DIBROMOCHLOROMETHANE	ND	0.010	0.0020
CHLOROETHANE	ND	0.020	0.0020
CHLOROFORM	ND	0.010	0.0020
CHLOROMETHANE	ND	0.020	0.0020
CIS-1,2-DICHLOROETHENE	ND	0.010	0.0020
CIS-1,3-DICHLOROPROPENE	ND	0.010	0.0020
DIBROMOMETHANE	ND	0.010	0.0020
DICHLORODIFLUOROMETHANE	ND	0.010	0.0020
DIPE	ND	0.050	0.0020
ETBE	ND	0.050	0.0020
ETHYLBENZENE	ND	0.010	0.0020
HEXACHLOROBUTADIENE	ND	0.010	0.0020
IODOMETHANE	ND	0.010	0.0050
ISOPROPYLBENZENE	ND	0.010	0.0020
METHYLENE CHLORIDE	0.0029J	0.020	0.0020
MTBE	ND	0.010	0.0020
M,P-XYLENES	ND	0.020	0.0020
NAPHTHALENE	ND	0.020	0.0020
N-BUTYLBENZENE	ND	0.010	0.0020
O-XYLENE	ND	0.010	0.0020
P-ISOPROPYLTOLUENE	ND	0.010	0.0020
SEC-BUTYLBENZENE	ND	0.010	0.0020
STYRENE	ND	0.010	0.0020
TAME	ND	0.050	0.0020
TERT-BUTYLBENZENE	ND	0.010	0.0020
TETRACHLOROETHENE	ND	0.010	0.0020
TOLUENE	ND	0.010	0.0020
TRANS-1,2-DICHLOROETHENE	ND	0.010	0.0020
TRANS-1,3-DICHLOROPROPENE	ND	0.010	0.0020
TRICHLOROETHENE	ND	0.010	0.0020
TRICHLOROFLUOROMETHANE	ND	0.010	0.0020
VINYL ACETATE	ND	0.050	0.0020
VINYL CHLORIDE	ND	0.010	0.0020
N113	ND	0.040	0.0020
ISOPROPYLBENZENE	ND	0.010	0.0020

SURROGATE PARAMETERS	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	105	70-130
TOLUENE-D8	104	70-130
BROMOFLUOROBENZENE	88	70-130

PQL: Practical Quantitation Limit

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: BROWN & CALDWELL
PROJECT: FORMER BENICIA ARSENAL-IDW
BATCH NO.: 09K184
METHOD: SW5030B/8260E

MATRIX: SOIL
DILUTION FACTOR: 1 1
SAMPLE ID: MBLK1S
LAB SAMP ID: V002K22Q
LAB FILE ID: RKP419
DATE EXTRACTED: 11/19/0915:30
DATE ANALYZED: 11/19/0915:30
PREP. BATCH: V002K22
CALIB. REF: RKP006

% MOISTURE: NA
DATE COLLECTED: NA
DATE RECEIVED: 11/19/09

PARAMETER	BLANK RSLT (mg/kg)	SPIKE AMT (mg/kg)	BS RSLT (mg/kg)	BS % REC	SPIKE AMT (mg/kg)	BSD RSLT (mg/kg)	BSD % REC	RPD (%)	QC LIMIT (%)	MAX RPD (%)
1,1,1,2-Tetrachloroethane	ND	0.0500	0.0446	89	0.0500	0.0471	94	6	70-130	25
1,1,1-Trichloroethane	ND	0.0500	0.0459	92	0.0500	0.0509	102	10	70-130	25
1,1,2,2-Tetrachloroethane	ND	0.0500	0.0442	88	0.0500	0.0466	93	5	70-130	25
1,1,2-Trichloroethane	ND	0.0500	0.0444	89	0.0500	0.0465	93	5	70-130	25
1,1-Dichloroethane	ND	0.0500	0.0445	89	0.0500	0.0486	97	9	70-130	25
1,1-Dichloroethane	ND	0.0500	0.0453	91	0.0500	0.0503	101	10	70-130	25
1,1-Dichloropropene	ND	0.0500	0.0420	84	0.0500	0.0471	94	11	70-130	25
1,2,3-Trichlorobenzene	ND	0.0500	0.0434	87	0.0500	0.0485	97	11	70-130	25
1,2,3-Trichloropropene	ND	0.0500	0.0424	85	0.0500	0.0457	91	7	70-130	25
1,2,4-Trichlorobenzene	ND	0.0500	0.0459	92	0.0500	0.0501	100	9	70-130	25
1,2,4-Trimethylbenzene	ND	0.0500	0.0406	81	0.0500	0.0443	89	9	70-130	25
1,2-Dibromo-3-chloropropane	ND	0.0500	0.0452	90	0.0500	0.0504	101	11	70-130	25
1,2-Dibromobenzene	ND	0.0500	0.0459	92	0.0500	0.0468	94	2	70-130	25
1,2-Dichlorobenzene	ND	0.0500	0.0416	83	0.0500	0.0451	90	8	70-130	25
1,2-Dichloroethane	ND	0.0500	0.0455	91	0.0500	0.0481	96	6	70-130	25
1,2-Dichloropropane	ND	0.0500	0.0454	91	0.0500	0.0463	93	2	70-130	25
1,3,5-Trimethylbenzene	ND	0.0500	0.0399	80	0.0500	0.0463	93	15	70-130	25
1,3-Dichlorobenzene	ND	0.0500	0.0402	80	0.0500	0.0443	89	10	70-130	25
1,3-Dichloropropane	ND	0.0500	0.0445	89	0.0500	0.0473	95	6	70-130	25
1,4-Dichlorobenzene	ND	0.0500	0.0413	83	0.0500	0.0460	92	11	70-130	25
2,2-Dichloropropane	ND	0.0500	0.0462	92	0.0500	0.0530	106	14	70-130	25
2-Butanone	ND	0.200	0.194	97	0.200	0.208	104	7	65-140	30
2-Chlorotoluene	ND	0.0500	0.0400	80	0.0500	0.0477	95	18	70-130	25
2-Hexanone	ND	0.200	0.207	103	0.200	0.211	106	2	65-135	30
4-Chlorotoluene	ND	0.0500	0.0386	77	0.0500	0.0365	73	5	70-130	25
4-Methyl-2-Pentanone	ND	0.200	0.201	100	0.200	0.200	100	0	65-135	30
Acetone	ND	0.200	0.196	98	0.200	0.208	104	6	60-145	30
Benzene	ND	0.0500	0.0442	88	0.0500	0.0461	92	4	70-130	25
Bromobenzene	ND	0.0500	0.0423	85	0.0500	0.0457	91	8	70-130	25
Bromochloromethane	ND	0.0500	0.0435	87	0.0500	0.0466	93	7	70-130	25
Bromodichloromethane	ND	0.0500	0.0444	89	0.0500	0.0451	90	1	70-130	25
Bromoform	ND	0.0500	0.0414	83	0.0500	0.0436	87	5	70-130	25
Bromomethane	ND	0.0500	0.0435	87	0.0500	0.0452	90	4	55-145	25
Carbon Disulfide	ND	0.0500	0.0419	84	0.0500	0.0476	95	13	65-135	30
Carbon Tetrachloride	ND	0.0500	0.0457	91	0.0500	0.0493	99	8	70-130	25
Chlorobenzene	ND	0.0500	0.0437	87	0.0500	0.0460	92	5	70-130	25
Dibromochloromethane	ND	0.0500	0.0428	86	0.0500	0.0440	88	3	70-130	25
Chloroethane	ND	0.0500	0.0486	97	0.0500	0.0497	99	2	70-130	25
Chloroform	ND	0.0500	0.0458	92	0.0500	0.0501	100	9	70-130	25
Chloromethane	ND	0.0500	0.0417	83	0.0500	0.0430	86	3	60-130	25
cis-1,2-Dichloroethane	ND	0.0500	0.0436	87	0.0500	0.0481	96	10	70-130	25
cis-1,3-Dichloropropene	ND	0.0500	0.0462	92	0.0500	0.0492	96	4	70-130	25
Dibromomethane	ND	0.0500	0.0444	89	0.0500	0.0462	92	4	70-130	25
Dichlorodifluoromethane	ND	0.0500	0.0550	106	0.0500	0.0554	111	4	50-140	25
DIFE	ND	0.0500	0.0453J	91	0.0500	0.0494J	99	9	50-150	30
ETBE	ND	0.0500	0.0447J	89	0.0500	0.0485J	97	8	50-150	30
Ethylbenzene	ND	0.0500	0.0436	87	0.0500	0.0468	94	7	70-130	25
Hexachlorobutadiene	ND	0.0500	0.0428	86	0.0500	0.0500	100	15	60-135	25

SURROGATE PARAMETER	SPIKE AMT (mg/kg)	BS (mg/kg)	BS RSLT (mg/kg)	% REC	BS REC	SPIKE AMT (mg/kg)	BSD RSLT (mg/kg)	% REC	BSD REC	QC LIMIT (%)
Iodomethane	ND	0.0500	0.0500	0.0595	119	0.0500	0.0643	129	8	40-160
Isopropylbenzene	ND	0.0500	0.0500	0.0422	84	0.0500	0.0471	94	11	70-130
Methylene Chloride	0.00290J	0.0500	0.0500	0.0414	83	0.0500	0.0441	88	6	50-135
MTBE	ND	0.0500	0.0500	0.0447	89	0.0500	0.0489	98	9	65-135
m/p-Xylenes	ND	0.100	0.100	0.0876	88	0.100	0.0955	96	9	70-130
Naphthalene	ND	0.0500	0.0500	0.0465	93	0.0500	0.0507	101	9	70-130
n-Butylbenzene	ND	0.0500	0.0500	0.0408	82	0.0500	0.0445	89	9	70-130
o-Xylene	ND	0.0500	0.0500	0.0431	86	0.0500	0.0451	90	5	70-130
P-isopropyltoluene	ND	0.0500	0.0500	0.0413	83	0.0500	0.0462	92	11	70-130
Sec-Butylbenzene	ND	0.0500	0.0500	0.0400	80	0.0500	0.0458	92	14	70-130
Styrene	ND	0.0500	0.0500	0.0434	87	0.0500	0.0478	96	10	70-130
TAME	ND	0.0500	0.0500	0.0445J	89	0.0500	0.0491J	98	10	40-160
Tert-Butylbenzene	ND	0.0500	0.0500	0.0413	83	0.0500	0.0468	94	13	70-130
Tetrachloroethene	ND	0.0500	0.0500	0.0414	83	0.0500	0.0452	90	9	70-130
Toluene	ND	0.0500	0.0500	0.0444	89	0.0500	0.0494	99	11	70-130
Trans-1,2-Dichloroethene	ND	0.0500	0.0500	0.0432	86	0.0500	0.0470	94	8	70-130
Trans-1,3-Dichloropropene	ND	0.0500	0.0500	0.0493	99	0.0500	0.0496	99	1	70-130
Trichloroethene	ND	0.0500	0.0500	0.0435	87	0.0500	0.0465	93	7	70-130
Trichlorofluoromethane	ND	0.0500	0.0500	0.0521	104	0.0500	0.0529	106	1	50-155
Vinyl Acetate	ND	0.0500	0.0500	0.0531	106	0.0500	0.0554	111	4	65-135
Vinyl Chloride	ND	0.0500	0.0500	0.0438	88	0.0500	0.0442	88	1	65-135
Freon113	ND	0.0500	0.0500	0.0506	101	0.0500	0.0578	116	13	70-130
n-Propylbenzene	ND	0.0500	0.0500	0.0402	80	0.0500	0.0450	90	11	70-130

SURROGATE PARAMETER	SPIKE AMT (mg/kg)	BS (mg/kg)	BS RSLT (mg/kg)	% REC	BS REC	SPIKE AMT (mg/kg)	BSD RSLT (mg/kg)	% REC	BSD REC	QC LIMIT (%)
1,2-Dichloroethane-d4	0.0500	0.0502	0.0502	100	100	0.0500	0.0505	101	101	70-130
Toluene-d8	0.0500	0.0542	0.0542	108	108	0.0500	0.0521	104	104	70-130
Bromofluorobenzene	0.0500	0.0455	0.0455	91	91	0.0500	0.0439	88	88	70-130

SW 3550B/8270C
SEMI VOLATILE ORGANICS BY GC/MS

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Client      : BROWN & CALDWELL           Date Collected: 11/16/09
Project     : FORNER BENICIA ARSENAL-IDW Date Received: 11/17/09
Job No.    : 09K184                     Date Extracted: 11/21/09 14:00
Sample ID  : B051-BIN-21293             Date Analyzed: 11/24/09 12:39
Lab Samp ID: K184-01                    Dilution Factor: 2
Lab File ID: RKH435                      Matrix          : SOIL
Ext Btch ID: SVK049S                    % Moisture     : 14.7
Calib. Ref.: RIH307                     Instrument ID   : T-OE7
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PARAMETERS	RESULTS (mg/kg)	PQL (mg/kg)	MDL (mg/kg)
1,2,4-TRICHLOROBENZENE	ND	1.2	0.40
1,2-DICHLOROBENZENE	ND	1.2	0.40
1,3-DICHLOROBENZENE	ND	1.2	0.40
1,4-DICHLOROBENZENE	ND	1.2	0.40
2,4,5-TRICHLOROPHENOL	ND	2.3	0.40
2,4,6-TRICHLOROPHENOL	ND	1.2	0.42
2,4-DICHLOROPHENOL	ND	1.2	0.40
2,4-DIMETHYLPHENOL	ND	1.2	0.40
2,4-DINITROPHENOL	ND	2.3	0.40
2,4-DINITROTOLUENE	ND	1.2	0.40
2,6-DINITROTOLUENE	ND	1.2	0.40
2-CHLORONAPHTHALENE	ND	1.2	0.40
2-CHLOROPHENOL	ND	1.2	0.40
2-METHYLNAPHTHALENE	ND	1.2	0.40
2-METHYLPHENOL	ND	1.2	0.40
2-NITROANILINE	ND	2.3	0.40
2-NITROPHENOL	ND	1.2	0.40
3,3'-DICHLOROBENZIDINE	ND	1.2	0.40
3-NITROANILINE	ND	2.3	0.40
4,6-DINITRO-2-METHYLPHENOL	ND	2.3	0.40
4-BROMOPHENYL-PHENYLETHER	ND	1.2	0.40
4-CHLORO-3-METHYLPHENOL	ND	1.2	0.40
4-CHLOROANILINE	ND	1.2	0.40
4-CHLOROPHENYL-PHENYLETHER	ND	1.2	0.40
4-METHYLPHENOL (1)	ND	1.2	0.40
4-NITROANILINE	ND	2.3	0.40
4-NITROPHENOL	ND	2.3	0.40
ANILINE	ND	1.2	0.40
ACETIC ACID	0.46J	2.3	0.40
BENZYL ALCOHOL	ND	1.2	0.40
BIS(2-CHLOROETHOXY)METHANE	ND	1.2	0.40
BIS(2-CHLOROETHYL)ETHER	ND	1.2	0.40
BIS(2-CHLOROISOPROPYL)ETHER	ND	1.2	0.40
BIS(2-ETHYLHEXYL) PHTHALATE	ND	1.2	0.40
BUTYLBENZYLPHTHALATE	ND	1.2	0.40
DI-N-BUTYLPHTHALATE	ND	1.2	0.40
DI-N-OCTYLPHTHALATE	ND	1.2	0.40
DIBENZOFURAN	ND	1.2	0.40
DIETHYLPHTHALATE	ND	1.2	0.40
DIMETHYLPHTHALATE	ND	1.2	0.40
HEXACHLOROBENZENE	ND	1.2	0.40
HEXACHLOROBUTADIENE	ND	1.2	0.40
HEXACHLOROCYCLOPENTADIENE	ND	1.2	0.45
HEXACHLOROETHANE	ND	1.2	0.40
ISOPHORONE	ND	1.2	0.40
N-NITROSO-DI-N-PROPYLAMINE	ND	1.2	0.40
N-NITROSODIMETHYLAMINE	ND	1.2	0.40
N-NITROSODIPHENYLAMINE (2)	ND	1.2	0.40
NITROBENZENE	ND	1.2	0.40
PENTACHLOROPHENOL	ND	2.3	0.42
PHENOL	ND	1.2	0.40

SURROGATE PARAMETERS	% RECOVERY	QC LIMIT
2,4,6-TRIBROMOPHENOL	119	20-125
2-FLUOROBIPHENYL	75	35-125
2-FLUOROPHENOL	90	20-125
NITROBENZENE-D5	64	40-125
PHENOL-D5	94	20-125
TERPHENYL-D14	93	35-125

PQL: Practical Quantitation Limit
(1): Cannot be separated from 3-Methylphenol
(2): Cannot be separated from Diphenylamine

SW 3550B/8270C
SEMI VOLATILE ORGANICS BY GC/MS

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Client      : BROWN & CALDWELL           Date Collected: NA
Project     : FORMER BENICIA ARSENAL-IDW Date Received: 11/21/09
Batch No.   : 09K184                     Date Extracted: 11/21/09 14:00
Sample ID   : MBLK1S                     Date Analyzed: 11/24/09 11:45
Lab Samp ID : SVK049SB                   Dilution Factor: 1
Lab File ID : RKH432                     Matrix          : SOIL
Ext Btch ID : SVK049S                    % Moisture     : NA
Calib. Ref.: RIH307                     Instrument ID  : T-OE7
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PARAMETERS	RESULTS (mg/kg)	PQL (mg/kg)	MDL (mg/kg)
1,2,4-TRICHLOROBENZENE	ND	0.50	0.17
1,2-DICHLOROBENZENE	ND	0.50	0.17
1,3-DICHLOROBENZENE	ND	0.50	0.17
1,4-DICHLOROBENZENE	ND	0.50	0.17
2,4,5-TRICHLOROPHENOL	ND	1.0	0.17
2,4,6-TRICHLOROPHENOL	ND	0.50	0.18
2,4-DICHLOROPHENOL	ND	0.50	0.17
2,4-DIMETHYLPHENOL	ND	0.50	0.17
2,4-DINITROPHENOL	ND	1.0	0.17
2,4-DINITROTOLUENE	ND	0.50	0.17
2,6-DINITROTOLUENE	ND	0.50	0.17
2-CHLORONAPHTHALENE	ND	0.50	0.17
2-CHLOROPHENOL	ND	0.50	0.17
2-METHYLNAPHTHALENE	ND	0.50	0.17
2-METHYLPHENOL	ND	0.50	0.17
2-NITROANILINE	ND	1.0	0.17
2-NITROPHENOL	ND	0.50	0.17
3,3'-DICHLOROBENZIDINE	ND	0.50	0.17
3-NITROANILINE	ND	1.0	0.17
4,6-DINITRO-2-METHYLPHENOL	ND	1.0	0.17
4-BROMOPHENYL-PHENYLETHER	ND	0.50	0.17
4-CHLORO-3-METHYLPHENOL	ND	0.50	0.17
4-CHLOROANILINE	ND	0.50	0.17
4-CHLOROPHENYL-PHENYLETHER	ND	0.50	0.17
4-METHYLPHENOL (1)	ND	0.50	0.17
4-NITROANILINE	ND	1.0	0.17
4-NITROPHENOL	ND	1.0	0.17
ANILINE	ND	0.50	0.17
BENZOIC ACID	ND	1.0	0.17
BENZYL ALCOHOL	ND	0.50	0.17
BIS(2-CHLOROETHOXY)METHANE	ND	0.50	0.17
BIS(2-CHLOROETHYL)ETHER	ND	0.50	0.17
BIS(2-CHLOROISOPROPYL)ETHER	ND	0.50	0.17
BIS(2-ETHYLHEXYL)PHTHALATE	ND	0.50	0.17
BUTYLBENZYLPHTHALATE	ND	0.50	0.17
DI-N-BUTYLPHTHALATE	ND	0.50	0.17
DI-N-OCTYLPHTHALATE	ND	0.50	0.17
DIBENZOFURAN	ND	0.50	0.17
DIETHYLPHTHALATE	ND	0.50	0.17
DIMETHYLPHTHALATE	ND	0.50	0.17
HEXACHLOROBENZENE	ND	0.50	0.17
HEXACHLOROBUTADIENE	ND	0.50	0.17
HEXACHLOROCYCLOPENTADIENE	ND	0.50	0.19
HEXACHLOROETHANE	ND	0.50	0.17
ISOPHORONE	ND	0.50	0.17
N-NITROSO-DI-N-PROPYLAMINE	ND	0.50	0.17
N-NITROSODIMETHYLAMINE	ND	0.50	0.17
N-NITROSODIPHENYLAMINE (2)	ND	0.50	0.17
NITROBENZENE	ND	0.50	0.17
PENTACHLOROPHENOL	ND	1.0	0.18
PHENOL	ND	0.50	0.17
SURROGATE PARAMETERS	% RECOVERY	QC LIMIT	
2,4,6-TRIBROMOPHENOL	62	20-125	
2-FLUOROBIPHENYL	49	35-125	
2-FLUOROPHENOL	57	20-125	
NITROBENZENE-D5	45	40-125	
PHENOL-D5	58	20-125	
TERPHENYL-D14	65	35-125	

PQL: Practical Quantitation Limit

(1): Cannot be separated from 3-Methylphenol

(2): Cannot be separated from Diphenylamine

ENAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: BROWN & CALDWELL
PROJECT: FORMER BENICIA ARSENAL-IDW
BATCH NO.: 09K184
METHOD: SW 3550B/8270C

MATRIX: SOIL
DILUTION FACTOR: 1
SAMPLE ID: SVK049SB SVK049SL SVK049SC
LAB FILE ID: RKH432 RKH433 RKH434
DATE ANALYZED: 11/21/0914:00 11/21/0914:00 11/21/0914:00
PREP. BATCH: SVK049S SVK049S SVK049S
CALIB. REF: RH307 RH307 RH307

DATE COLLECTED: NA
DATE RECEIVED: 11/21/09

ACCESSION:

PARAMETER	BLNK RSLT (mg/kg)	SPIKE AMT (mg/kg)	BS RSLT (mg/kg)	BS REC %	SPIKE AMT (mg/kg)	BSD RSLT (mg/kg)	BSD REC %	RPD (%)	QC LIMIT (%)	MAX RPD (%)
1,2,4-Trichlorobenzene	ND	2.22	1.24	56	2.22	1.20	54	4	35-125	35
1,2-Dichlorobenzene	ND	2.22	1.26	57	2.22	1.23	55	3	35-125	35
1,3-Dichlorobenzene	ND	2.22	1.22	55	2.22	1.17	53	4	35-125	35
1,4-Dichlorobenzene	ND	2.22	1.23	55	2.22	1.19	54	3	35-125	35
2,4,5-Trichlorophenol	ND	2.22	1.60	72	2.22	1.36	61	16	20-125	40
2,4,6-Trichlorophenol	ND	2.22	1.54	69	2.22	1.28	58	18	20-125	40
2,4-Dichlorophenol	ND	2.22	1.43	64	2.22	1.35	61	6	20-125	40
2,4-Dimethylphenol	ND	2.22	1.43	65	2.22	1.40	63	2	20-125	40
2,4-Dinitrophenol	ND	2.22	1.38	62	2.22	1.35	61	2	20-125	40
2,4-Dinitrotoluene	ND	2.22	1.69	76	2.22	1.43	65	17	40-125	55
2,6-Dinitrotoluene	ND	2.22	1.58	71	2.22	1.37	62	15	40-125	55
2-Chloronaphthalene	ND	2.22	1.36	61	2.22	1.22	55	11	35-125	35
2-Chlorophenol	ND	2.22	1.50	68	2.22	1.34	60	11	20-125	40
2-Methylnaphthalene	ND	2.22	1.47	66	2.22	1.31	59	11	40-130	35
2-Methylphenol	ND	2.22	1.43	64	2.22	1.33	60	7	20-125	40
2-Nitroaniline	ND	2.22	1.26	57	2.22	1.17	53	24	40-125	35
2-Nitrophenol	ND	2.22	1.42	64	2.22	1.27	57	1	20-125	40
3,3'-Dichlorobenzidine	ND	2.22	1.55	70	2.22	1.41	63	1	20-125	40
3-Nitroaniline	ND	2.22	1.90	85	2.22	1.31	59	16	40-125	35
4,6-Dinitro-2-Methylphenol	ND	2.22	1.95	88	2.22	1.95	88	3	20-125	40
4-Bromophenyl-phenylether	ND	2.22	1.73	78	2.22	1.80	81	4	35-125	35
4-Chloro-3-methylphenol	ND	2.22	1.49	67	2.22	1.45	65	3	20-125	40
4-Chloroaniline	ND	2.22	1.31	59	2.22	1.26	57	4	20-125	40
4-Chlorophenyl-phenylether	ND	2.22	1.61	73	2.22	1.33	60	19	35-150	35
4-Methylphenol	ND	2.22	1.31	59	2.22	1.27	57	3	20-125	40
4-Nitroaniline	ND	2.22	1.68	76	2.22	1.45	65	14	40-125	35
4-Nitrophenol	ND	2.22	1.23	55	2.22	1.35	61	12	20-125	40
Aniline	ND	2.22	1.32	60	2.22	1.17	53	5	35-125	35
Benzoic Acid	ND	2.22	1.47	66	2.22	1.26	57	5	20-125	40
Benzyl Alcohol	ND	2.22	1.44	65	2.22	1.37	62	7	45-125	30
bis(2-Chloroethoxy)methane	ND	2.22	1.44	65	2.22	1.44	65	0	25-125	40
bis(2-Chloroethyl) ether	ND	2.22	1.20	54	2.22	1.19	53	1	25-125	40
bis(2-Chloroisopropyl) ether	ND	2.22	1.26	57	2.22	1.20	54	5	25-125	40
bis(2-Ethylhexyl)phthalate	ND	2.22	1.49	67	2.22	1.58	71	6	45-130	35
Butylbenzylphthalate	ND	2.22	1.58	71	2.22	1.58	71	0	40-130	35
Di-n-butylphthalate	ND	2.22	2.09	94	2.22	2.25	101	7	45-130	35
Di-n-octylphthalate	ND	2.22	1.73	81	2.22	1.68	76	6	45-130	35
Dibenzofuran	ND	2.22	1.49	67	2.22	1.21	55	21	50-125	30
Diethylphthalate	ND	2.22	1.87	84	2.22	1.60	72	16	45-130	35
Dimethylphthalate	ND	2.22	1.56	70	2.22	1.30	58	18	45-130	35
Hexachlorobenzene	ND	2.22	1.71	77	2.22	1.84	83	7	35-125	40
Hexachlorobutadiene	ND	2.22	1.18	53	2.22	1.18	53	1	25-125	50
Hexachlorocyclopentadiene	ND	2.22	1.33	60	2.22	1.17	53	13	25-125	40
Hexachloroethane	ND	2.22	1.19	54	2.22	1.25	56	5	25-125	40
Isophorone	ND	2.22	1.42	64	2.22	1.35	61	5	30-125	30
n-Nitroso-di-n-propylamine	ND	2.22	1.34	60	2.22	1.29	58	4	35-125	30
n-Nitrosodimethylamine	ND	2.22	1.01	46	2.22	1.04	47	3	35-125	35
n-Nitrosodiphenylamine	ND	2.22	1.13	51	2.22	1.27	57	11	35-125	35

Nitrobenzene ND 2.22 1.19 54 2.22 1.21 54 2 40-125 35
 Pentachlorophenol ND 2.22 1.79 81 2.22 1.78 80 1 20-125 40
 Phenol ND 2.22 1.44 65 2.22 1.37 62 5 20-125 40

SURROGATE PARAMETER	SPIKE AMT (mg/kg)	BS RSLT (mg/kg)	BS % REC	SPIKE AMT (mg/kg)	BSD RSLT (mg/kg)	BSD % REC	QC LIMIT (%)
2,4,6-Tribromophenol	4.17	3.57	86	4.17	3.90	94	20-125
2-Fluorobiphenyl	1.39	0.835	60	1.39	0.730	53	35-135
2-Fluorophenol	4.17	2.61	63	4.17	2.54	61	20-125
Nitrobenzene-d5	1.39	0.752	54	1.39	0.768	55	40-125
Phenol-d5	4.17	2.81	67	4.17	2.68	64	20-125
Terphenyl-d14	1.39	1.03	74	1.39	1.14	82	35-125

METHOD 3050B/6010B
 METALS BY TRACE ICP

```

=====
Client      : BROWN & CALDWELL           Date Collected: 11/16/09 14:35
Project     : FORMER BENICIA ARSENAL-IDW Date Received: 11/17/09
NO.        : 09K184                     Date Extracted: 11/18/09 10:10
Sample ID   : B051-BIN-21293            Date Analyzed: 11/18/09 20:01
Lab Samp ID : K184-01                   Dilution Factor: 1
Lab File ID : ID8K012032                Matrix          : SOIL
Ext Btch ID : IPK043S                    % Moisture     : 14.7
Calib. Ref. : ID8K012025                Instrument ID  : EMAXTID8
=====
  
```

PARAMETERS	RESULTS (mg/kg)	PQL (mg/kg)	MDL (mg/kg)
Antimony	ND	9.77	0.977
Arsenic	5.35	0.977	0.390
Barium	163	0.977	0.196
Beryllium	0.237J	0.977	0.196
Cadmium	0.820J	0.977	0.0973
Chromium	30.1	0.977	0.196
Cobalt	10.2	0.977	0.196
Copper	35.2	0.977	0.196
Lead	97.9	0.977	0.196
Molybdenum	ND	4.89	0.489
Nickel	34.2	0.977	0.196
Selenium	ND	0.977	0.489
Silver	ND	0.977	0.244
Thallium	ND	0.977	0.489
Vanadium	57.6	0.977	0.489
Zinc	145	0.977	0.489

METHOD 3050B/6010B
 METALS BY TRACE ICP

```

=====
Client      : BROWN & CALDWELL           Date Collected: NA
Project     : FORMER BENICIA ARSENAL-IDW Date Received: 11/18/09
SDG NO.    : 09K184                     Date Extracted: 11/18/09 10:10
Sample ID   : MBLK1S                     Date Analyzed: 11/18/09 18:32
Lab Samp ID: IPK043SB                    Dilution Factor: 1
Lab File ID: ID8K012015                  Matrix          : SOIL
Ext Btch ID: IPK043S                     % Moisture      : NA
Calib. Ref.: ID8K012013                  Instrument ID   : EMAXTID8
=====
  
```

PARAMETERS	RESULTS (mg/kg)	PQL (mg/kg)	MDL (mg/kg)
Antimony	ND	8.33	0.833
Arsenic	ND	0.833	0.333
Barium	ND	0.833	0.167
Beryllium	ND	0.833	0.167
Cadmium	ND	0.833	0.0830
Chromium	ND	0.833	0.167
Cobalt	ND	0.833	0.167
Copper	ND	0.833	0.167
Lead	0.296J	0.833	0.167
Molybdenum	ND	4.17	0.417
Nickel	0.296J	0.833	0.167
Selenium	ND	0.833	0.417
Silver	ND	0.833	0.208
Thallium	ND	0.833	0.417
Vanadium	ND	0.833	0.417
Zinc	1.00	0.833	0.417

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: BROWN & CALDWELL
PROJECT: FORMER BENICIA ARSENAL-IDW
SDG NO.: 09K184
METHOD: METHOD 3050B/6010A

MATRIX: SOIL
DILTN FACTR: 1 1
SAMPLE ID: MBLK1S
CONTROL NO.: IPK043SB IPK043SL IPK043SC
LAB FILE ID: ID8K012015 ID8K012016 ID8K012017
DATE EXTRACTD: 11/18/0910:10 11/18/0910:10 11/18/0910:10
DATE RECEIVED: 11/18/0918:32 11/18/0918:37 11/18/0918:41
PREP. BATCH: IPK043S IPK043S IPK043S
CALIB. REF: ID8K012013 ID8K012013 ID8K012013

ACCESSION:

PARAMETER	BLANK RSLT mg/kg	SPIKE AMT mg/kg	BS RSLT mg/kg	BS % REC	SPIKE AMT mg/kg	BSD RSLT mg/kg	BSD % REC	RPD %	QC LIMIT %	MAX RPD %
Antimony	ND	209	221	106	209	219	105	1	80-120	20
Arsenic	ND	41.7	43.7	105	41.7	43.4	104	1	80-120	20
Barium	ND	41.7	37.8	91	41.7	38.2	92	1	80-120	20
Beryllium	ND	41.7	40.4	97	41.7	40.8	98	1	80-120	20
Cadmium	ND	41.7	41.3	99	41.7	41.2	99	0	80-120	20
Chromium	ND	41.7	39.6	95	41.7	39.1	94	1	80-120	20
Cobalt	ND	41.7	40.6	97	41.7	40.3	97	1	80-120	20
Copper	ND	41.7	41.2	99	41.7	40.6	97	1	80-120	20
Lead	.296J	41.7	39.6	95	41.7	39.5	95	0	80-120	20
Molybdenum	ND	41.7	41.3	99	41.7	40.8	98	1	80-120	20
Nickel	.296J	41.7	40.6	97	41.7	40.2	96	1	80-120	20
Selenium	ND	41.7	42.7	103	41.7	42.7	102	0	80-120	20
Silver	ND	41.7	42.3	101	41.7	41.7	100	1	80-120	20
Thallium	ND	41.7	38.4	92	41.7	38.4	92	0	80-120	20
Vanadium	ND	41.7	41.1	99	41.7	40.7	98	1	80-120	20
Zinc	1	41.7	43	103	41.7	42.7	102	1	80-120	20

METHOD SW5035/8015B
 GASOLINE RANGE ORGANICS BY PURGE & TRAP

```

=====
Client      : BROWN & CALDWELL           Date Collected: 11/16/09
Project     : FORMER BENICIA ARSENAL-IDW Date Received: 11/17/09
Batch No.   : 09K184                     Date Extracted: 11/20/09 13:33
Sample ID   : B051-BIN-21293             Date Analyzed: 11/20/09 13:33
Lab Samp ID: K184-01                     Dilution Factor: 1
Lab File ID: EK19046A                    Matrix          : SOIL
Ext Btch ID: VMK017S                      % Moisture     : 14.7
Calib. Ref.: EK19036A                    Instrument ID  : GCT039
=====
  
```

PARAMETERS	RESULTS (mg/kg)	PQL (mg/kg)	MDL (mg/kg)
GRO(2MP-124TMB)	ND	1.2	0.59
SURROGATE PARAMETERS			
	% RECOVERY	QC LIMIT	
BROMOFLUOROBENZENE	91	65-135	

PQL : Practical Quantitation Limit
 QC LIMIT : Bromofluorobenzene 65-135
 * : Exceeded the QC limit due to matrix interference
 E : Exceeded the calibration range

METHOD SW5035/8015B
GASOLINE RANGE ORGANICS BY PURGE & TRAP

=====
Client : BROWN & CALDWELL Date Collected: NA
Project : FORMER BENICIA ARSENAL-IDW Date Received: 11/20/09
Sample No. : 09K184 Date Extracted: 11/20/09 06:21
Sample ID: MBLK1S Date Analyzed: 11/20/09 06:21
Lab Samp ID: VMK017SB Dilution Factor: 1
Lab File ID: EK19033A Matrix : SOIL
Ext Btch ID: VMK017S % Moisture : NA
Calib. Ref.: EK19023A Instrument ID : GCT039
=====

PARAMETERS	RESULTS (mg/kg)	PQL (mg/kg)	MDL (mg/kg)
GRO(2MP-124TMB)	ND	1.0	0.50
SURROGATE PARAMETERS	% RECOVERY	QC LIMIT	
BROMOFLUOROBENZENE	99	65-135	

PQL : Practical Quantitation Limit
QC LIMIT : Bromofluorobenzene 65-135
* : Exceeded the QC limit due to matrix interference
E : Exceeded the calibration range

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: BROWN & CALDWELL
PROJECT: FORMER BENICIA ARSENAL-IDW
BATCH NO.: 09K184
METHOD: METHOD SW5035/8015B

MATRIX: SOIL
DILUTION FACTOR: 1 1 1
SAMPLE ID: MEYK1S
LAB SAMP ID: VMK017SB VMK017SL VMK017SC
LAB FILE ID: EK19033A EK19031A EK19032A
DATE EXTRACTED: 11/20/0906:21 11/20/0905:05 11/20/0905:43
DATE ANALYZED: 11/20/0906:21 11/20/0905:05 11/20/0905:43
PREP. BATCH: VMK017S VMK017S
CALIB. REF: EK19023A EK19023A EK19023A

ACCESSION:

PARAMETER	BLNK RSLT (mg/kg)	SPIKE AMT (mg/kg)	BS RSLT (mg/kg)	BS % REC	SPIKE AMT (mg/kg)	BSD RSLT (mg/kg)	BSD % REC	RPD (%)	QC LIMIT (%)	MAX RPD (%)
GRO (ZMP-124TMB)	ND	25.0	24.3	97	25.0	24.3	97	0	60-140	30

SURROGATE PARAMETER	SPIKE AMT (mg/kg)	BS RSLT (mg/kg)	BS % REC	SPIKE AMT (mg/kg)	BSD RSLT (mg/kg)	BSD % REC	QC LIMIT (%)
Bromofluorobenzene	2.00	2.31	115	2.00	2.27	113	65-135

SW
MERCURY B D VAPOR

Client : BROWN & CALDWELL
 Project : FORMER BENICIA ARSENAL-IDW
 Batch No. : 09K184

Matrix : SOIL
 Instrument ID : TI047

SAMPLE ID	EMAX SAMPLE ID	RESULTS (mg/kg)	DLF	MOIST	PQL (mg/kg)	MDL (mg/kg)	Analysis DATE/TIME	Extraction DATE/TIME	LFID	CAL REF	PREP BATCH	Collection DATE/TIME	Received DATE/TIME
MBLK1S	HGK027SB	ND	1	NA	0.0750	0.0270	11/19/0919:49	11/19/0913:00	M47K015074	M47K015068	HGK027S	NA	11/19/09
LCS1S	HGK027SL	0.684	1	NA	0.0750	0.0270	11/19/0919:51	11/19/0913:00	M47K015075	M47K015068	HGK027S	NA	11/19/09
LCD1S	HGK027SC	0.690	1	NA	0.0750	0.0270	11/19/0919:53	11/19/0913:00	M47K015076	M47K015068	HGK027S	NA	11/19/09
R051-BIN-21293AS	K184-01A	0.935	1	14.7	0.0879	0.0317	11/19/0919:55	11/19/0913:00	M47K015077	M47K015068	HGK027S	11/16/09	11/17/09
R051-BIN-21293	K184-01	0.157	1	14.7	0.0879	0.0317	11/19/0919:57	11/19/0913:00	M47K015078	M47K015068	HGK027S	11/16/09	11/17/09
R051-BIN-21293DL	K184-01J	ND	5	14.7	0.440	0.158	11/19/0920:00	11/19/0913:00	M47K015079	M47K015068	HGK027S	11/16/09	11/17/09
R051-BIN-21293MS	K184-01M	0.929	1	14.7	0.0879	0.0317	11/19/0920:06	11/19/0913:00	M47K015082	M47K015080	HGK027S	11/16/09	11/17/09
R051-BIN-21293MSD	K184-01S	0.903	1	14.7	0.0879	0.0317	11/19/0920:08	11/19/0913:00	M47K015083	M47K015080	HGK027S	11/16/09	11/17/09

METHOD 1311/3005A/6010B
TCLP LEAD BY TRACE ICP

```
=====
Client      : BROWN & CALDWELL           Date Collected: 11/16/09 14:35
Project     : FORMER BENICIA ARSENAL-IDW Date Received: 11/17/09
SDG NO.    : 09K184B                     Date Extracted: 12/04/09 13:00
Sample ID   : B051-BIN-21293             Date Analyzed: 12/05/09 00:56
Lab Samp ID: K184-01                     Dilution Factor: 5
Lab File ID: ID8L004129                   Matrix          : LEACHATE
Ext Btch ID: IPL008W                       % Moisture     : NA
Calib. Ref.: ID8L004123                   Instrument ID  : EMAXTID8
=====
```

PARAMETERS	RESULTS (mg/L)	PQL (mg/L)	MDL (mg/L)
Lead	0.0214J	0.0500	0.0150

TCLP EXTRACTION DATE: 12/03/09 14:00

METHOD 1311/3005A/6010B
TCLP LEAD BY TRACE ICP

=====
Client : BROWN & CALDWELL Date Collected: 11/16/09 14:35
Project : FORMER BENICIA ARSENAL-IDW Date Received: 11/17/09
NO. : 09K184B Date Extracted: 12/04/09 13:00
Sample ID: B051-BIN-21293DL Date Analyzed: 12/05/09 01:01
Lab Samp ID: K184-01J Dilution Factor: 25
Lab File ID: ID8L004130 Matrix : WATER
Ext Btch ID: IPL008W % Moisture : NA
Calib. Ref.: ID8L004123 Instrument ID : EM-XTID8
=====

PARAMETERS	RESULTS (mg/L)	PQL (mg/L)	MDL (mg/L)
Lead	ND	0.250	0.0750

METHOD 1311/3005A/6010B
TCLP LEAD BY TRACE ICP

```
=====  
Client      : BROWN & CALDWELL          Date Collected: NA  
Project     : FORMER BENICIA ARSENAL-IDW Date Received: 12/04/09  
SDG NO.    : 09K184B                   Date Extracted: 12/04/09 13:00  
Sample ID   : MBLK1W                    Date Analyzed: 12/04/09 22:43  
Lab Samp ID: IPL008WE                   Dilution Factor: 1  
Lab File ID: ID8L004105                 Matrix          : WATER  
Ext Btch ID: IPL008W                    % Moisture     : NA  
Calib. Ref.: ID8L004103                 Instrument ID   : EMAXTID8  
=====
```

PARAMETERS	RESULTS (mg/L)	PQL (mg/L)	MDL (mg/L)
Lead	ND	0.0100	0.00300

METHOD 1311/3005A/6010B
TCLP LEAD BY TRACE ICP

```
=====  
Client      : BROWN & CALDWELL           Date Collected: NA  
Project     : FORMER BENICIA ARSENAL-IDW  Date Received: 12/04/09  
NO.         : 09K184B                    Date Extracted: 12/04/09 13:00  
Sample ID   : MBLK1S                      Date Analyzed: 12/05/09 00:36  
Lab Samp ID: TXL002SB                     Dilution Factor: 5  
Lab File ID: ID8L004125                   Matrix          : LEACHATE  
Ext Btch ID: IPL008W                       % Moisture      : NA  
Calib. Ref.: ID8L004123                   Instrument ID   : EMAXTID8  
=====
```

PARAMETERS	RESULTS (mg/L)	PQL (mg/L)	MDL (mg/L)
Lead	ND	0.0500	0.0150

TCLP EXTRACTION DATE: 12/03/09 14:00

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: BROWN & CALDWELL
 PROJECT: FORMER BENICIA ARSENAL-IDW
 SDG NO.: 09K184B
 METHOD: METHOD 1311/3005A/6010B

MATRIX: WATER
 DILTN FACTR: 1
 SAMPLE ID: MELK1W
 CONTROL NO.: IPL008WL IPL008WC
 LAB FILE ID: ID8L004106 ID8L004107
 DATE TIME EXTCTD: 12/04/0913:00 12/04/0913:00
 DATE TIME ANALYZD: 12/04/0922:43 12/04/0922:53
 PREP. BATCH: IPL008W IPL008W
 CALIB. REF: ID8L004103 ID8L004103

ACCESSION:

PARAMETER
 Lead

PARAMETER	BS RSLT mg/L	SPIKE AMT mg/L	BS RSLT mg/L	BS % REC	SPIKE AMT mg/L	BSD RSLT mg/L	BSD % REC	RPD %	QC LIMIT %	MAX RPD %
Lead	ND	.5	.467	93	.5	.482	96	3	80-120	20

% MOISTURE: NA
 DATE COLLECTED: NA
 DATE RECEIVED: 12/04/09

EMAX QUALITY CONTROL DATA
MS/MSD ANALYSIS

CLIENT: BROWN & CALDWELL
PROJECT: FORMER BENICIA ARSENAL-IDW
SDG NO.: 09K184B
METHOD: 1311/3005A/6010B

MATRIX: LEACHATE
DILTN FACTR: 5 5 % MOISTURE: NA
SAMPLE ID: B051-BIN-21293
CONTROL NO.: K184-01 K184-01S
LAB FILE ID: ID8L004129 ID8L004126 ID8L004127
DATE TIME EXTRACTD: 12/04/0913:00 12/04/0913:00 12/04/0913:00 DATE COLLECTED: 11/16/09 14:35
DATE TIME ANALYZD: 12/05/0900:56 12/05/0900:41 12/05/0900:46 DATE RECEIVED: 11/17/09
PREP. BATCH: IFL008W IFL008W IFL008W
CALIB. REF: ID8L004123 ID8L004123 ID8L004123

ACCESSION:

PARAMETER	SMP L RSLT mg/L	SFIKE AMT mg/L	MS RSLT mg/L	MS % REC	SPIKE AMT mg/L	MSD RSLT mg/L	MSD % REC	RPD %	QC LIMIT %	MAX RPD %
Lead	.0214J	2.5	2.36	93	2.5	2.35	93	U	75-125	20

EMAX QUALITY CONTROL DATA
ANALYTICAL SPIKE ANALYSIS

CLIENT: BROWN & CALDWELL
PROJECT: FORMER BENICIA ARSENAL-IDW
SDG NO.: 09K-84B
METHOD: METHOD 1311/3005A/6010B

MATRIX: LEACHATE
DILTN FACTR: 5
SAMPLE ID: B051-BIN-21293
CONTROL NO.: K184-01A
LAB FILE ID: ID8L004129
DATE TIME EXTRACTD: 12/04/0913:00
DATE TIME ANALYZD: 12/05/0900:56
PREP. BATCH: IFL008W
CALIB. REF: ID8L004123

ACCESSION:

PARAMETER	SMPLE RSLT (mg/L)	SPIKE AMT (mg/L)	AS RSLT (mg/L)	AS REC (%)	QC LIMIT (%)
Lead	.0214U	2.5	2.37	94	75-125

EMAX QUALITY CONTROL DATA
SERIAL DILUTION ANALYSIS

CLIENT: BROWN & CALDWELL
PROJECT: FORMER BENICIA ARSENAL-IDW
BATCH NO.: 09K184B
METHOD: 1311/3005A/6010B

MATRIX: LEACHATE
DILUTION FACTOR: 5
SAMPLE ID: B051-BIN-21293
EMAX SAMP ID: K184-01
LAB FILE ID: ID8L004129
DATE EXTRACTED: 12/04/0913:00
DATE ANALYZED: 12/05/0900:56
PREP. BATCH: IFL008W
CALIB. REF: ID8L004123

% MOISTURE: NA

25
B051-BIN-21293DL
K184-01J
ID8L004130
12/04/0913:00
12/05/0901:01
IFL008W
ID8L004123

DATE COLLECTED: 11/16/09 14:35
DATE RECEIVED: 11/17/09

ACCESSION:

PARAMETER	SMPL RSLT (mg/L)	SERIAL DIL	RSLT (mg/L)	DIF RSLT %	QC LIMIT (%)
Lead	0.0214J	ND	NA	NA	10

TCLP EXTRACTION DATE: 12/03/09 14:00



SDG Login Review Sheet

Date: 12/3/2009

Client Code: BC_0905_
Client: Brown & Caldwell
Project: Former Benicia Arsenal-IDW
EMAX PM: Richard Beauvil

RB
12/3/09

Send Report To: Attn: Greg Cole
Company: Brown & Caldwell
Address: 10540 White Rock Road, Ste 180
Rancho Cordova CA 95670
NA

SDG: 09K184B

DATE/ TIME RECEIVED: 11/17/2009 9:30

DUE DATE: 12/24/2009

Lwks ID	Control #	Sample ID	Matrix	Coll Date	Time	Lwks Method	Analysis
EP14296	K184-01	B051-BIN-21293	SOIL	11/16/2009	14:35	PBTS	Lead TCLP

CHANGE ORDER FORM

SDG 09K184 B TAT 72 Hr Project Code BC_0905_
 Requested by Richard B. Date Requested 12/3/09 Due Date 12/7/09

Analytical Requirements				
AXO	EMAX Control Number	Sample Prep. Methods	Analytical Methods	Special Instructions
B	09K184-01	1311/3010A	6010B	TCLP Pb.

A-additional
 X-cancelled
 O-others (specify)

Richard Beauvil

From: Linck, Wendy [WLinck@BrwnCald.com]
Sent: Wednesday, December 02, 2009 5:25 PM
To: Richard Beauvil
Cc: Menna, Greg
Subject: Request to add TCLP for Pb on this sample - 09K184
Importance: High

Richard,

We now need a TCLP for lead performed on this sample. Would you please expedite this request? Please let us know when we should expect results. Thank you.

Wendy Linck - Geologist | Brown and Caldwell
Environmental Services Manager, Sacramento
10540 White Rock Road, Suite 180
Rancho Cordova, CA 95670

WLinck@brwncald.com
(916) 853-5325 office direct
(916) 838-2504 mobile



Please consider the environment before printing this email.

From: Richard Beauvil [mailto:RBeauvil@emaxlabs.com]
Sent: Wednesday, December 02, 2009 1:46 PM
To: Menna, Greg
Cc: Linck, Wendy
Subject: 09K184 results

Richard Beauvil
Project Manager/Safety Officer
EMAX Laboratories, Inc.
1835 205th Street
Torrance, CA 90501
Tel: 310-618-8889

12/3/2009

2 of 2

CHAIN OF CUSTODY

EMAX
 LABORATORIES, INC.
 1835 W. 205th Street, Torrance, CA 90501
 Tel #: 310-618-8869 Fax #: 310-618-9818
 Email: info@emaxlabs.com

PO NUMBER: 130757
 SAMPLE STORAGE

EMAX CONTROL NO. * 09K184

PROJECT CODE:

CLIENT: **Bram & Caldwell**
 PROJECT: **Buena Bldg. 51 NA USACE**
 COORDINATOR: **Wendy Lindl**
 TEL: **(916) 853-5325** FAX: **Wendy Lindl cc: Greg Munoz**
 SEND REPORT TO: **Wendy Lindl**
 COMPANY: **Bram & Caldwell**
 ADDRESS: **10670 White Rock Rd. Ste. 180**
Rancho Cordova, CA 95670
 EMAX PM: **Richard Beauvil**

LAB	SAMPLE ID	CLIENT	LOCATION	SAMPLING		CONTAINER	MATRIX CODE	QC	ANALYSIS REQUESTED				TAT
				DATE	TIME				NO.	SIZE	TYPE	IC-MS	
1	BOSI-BIN-21293	Buena	Buena	11/16/09	1435	M 8oz. Glass	S		Y	Y	Y	X	5 day TAT
2													
3													
4													
5													
6													
7													
8													
9													
10													

INSTRUCTIONS:
 1) Please hold TCLP
 2) Silica gel cleanup reqd. Please run full TPH screen

SAMPLER: **Greg Munoz**
 RELINQUISHED BY: 
 DATE/TIME: 11/16/09 1750
 COURIER/AIRBILL: **Ted Ex**
 RECEIVED BY: 
 DATE/TIME: 11/17/09 0950

NOTICES: Transmittals as (TAT) for every fee shall not begin until all of specimens have been received. For samples received and cleanup within 14 days of receipt, TAT shall be 5 days. For samples received and cleanup after 14 days, TAT shall be 7 days. The cost of express shipping for all cost associated with sample disposal. Samples shall be disposed of as soon as practical (but not prior to 60 days (15 calendar days) after issuance of analytical report unless a different sample disposal schedule is pre-arranged with EMAX. Disposal of samples shall be at the discretion of EMAX. EMAX will not be responsible for any hazardous samples to the client at the client's expense unless directed in writing otherwise.



SAMPLE RECEIPT FORM 1

Type of Delivery	Delivered By/Airbill	ECN <u>09K184</u>
<input type="checkbox"/> EMAX Courier		Recipient <u>F-LUNA</u>
<input type="checkbox"/> Client Delivery		Date <u>11-17-09</u>
<input checked="" type="checkbox"/> Third Party <u>FEDEX</u>	<u>870023271630</u>	Time <u>0931</u>

COC Inspection

<input checked="" type="checkbox"/> Client Name	<input type="checkbox"/> Client PM/PC	<input checked="" type="checkbox"/> Sampler Name	<input type="checkbox"/> Sampling Date/Time/Location	<input type="checkbox"/> Sample ID	<input type="checkbox"/> Matrix
<input type="checkbox"/> Address	<input type="checkbox"/> Tel // Fax #	<input type="checkbox"/> Courier Signature	<input type="checkbox"/> Analysis Required	<input type="checkbox"/> Preservative (if any)	<input type="checkbox"/> FAT
Safety Issues	<input checked="" type="checkbox"/> None	<input type="checkbox"/> High concentrations expected	<input type="checkbox"/> Superfund Site samples	<input type="checkbox"/> Rad screening required	

Comments:

Packaging Inspection

Container	<input type="checkbox"/> Cooler	<input type="checkbox"/> Box	<input type="checkbox"/> Other
Condition	<input checked="" type="checkbox"/> Custody Seal	<input checked="" type="checkbox"/> Intact	<input type="checkbox"/> Damaged
Packaging	<input checked="" type="checkbox"/> Bubble Pack	<input type="checkbox"/> Styrofoam	<input type="checkbox"/> Paper
Temperatures (Cool, ≤6 °C but not frozen)	<input checked="" type="checkbox"/> Cooler 1 <u>13.7</u> °C	<input type="checkbox"/> Cooler 2 _____ °C	<input type="checkbox"/> Cooler 3 _____ °C
	<input type="checkbox"/> Cooler 6 _____ °C	<input type="checkbox"/> Cooler 7 _____ °C	<input type="checkbox"/> Cooler 8 _____ °C
		<input type="checkbox"/> Cooler 9 _____ °C	<input type="checkbox"/> Cooler 10 _____ °C

Comments: PM was informed on non-compliant coolers immediately.

DISCREPANCIES				
LSID	LSCID	Sample Label ID/COC ID	Discrepancy Code	Corrective Action Code
<u>01</u>	<u>01-04</u>		<u>#1</u>	<u>non metals</u>

REVIEWS

Sample Labeling <u>[Signature]</u>	SRF <u>[Signature]</u>	PM <u>[Signature]</u>
Date <u>11/17/09</u>	Date <u>11/17/09</u>	Date <u>11/18/09</u>

LEGEND:

<p>Code Description-Sample Management</p> <p>A1 Analysis is not indicated in COC</p> <p>A2 Analysis is not indicated in label</p> <p>A3 Analysis is inconsistent in COC vis-à-vis label</p> <p>A4 _____</p> <p>B1 Sample ID is not indicated in COC</p> <p>B2 Sample ID is not indicated in label</p> <p>B3 Sample ID is inconsistent in COC vis-à-vis label</p> <p>B4 _____</p> <p>C1 Wrong container</p> <p>C2 Broken container</p> <p>C3 Leaking container</p> <p>C4 _____</p>	<p>Code Description-Sample Management</p> <p>D1 Date and/or time is not indicated in COC</p> <p>D2 Date and/or time is not indicated in label</p> <p>D3 Date and/or time is inconsistent in COC vis-à-vis label</p> <p>E1 Insufficient preservative</p> <p>E2 Improper preservation</p> <p>F1 Insufficient Sample</p> <p>F2 Bubble is > 6mm</p> <p>G1 Temperature is out of range</p> <p>G2 Out of Holding Time</p> <p>G3 >20 % solid particle</p> <p>H1 <u>LABEW REQD FOR ARSENIC ANALYSIS ONLY</u></p> <p>H2 _____</p>	<p>Code Description-Project Management</p> <p>R1 Hold sample(s); wait for further instructions</p> <p>R2 Proceed as indicated in COC</p> <p>R3 Refer to attached instruction</p> <p>R4 Cancel the analysis</p> <p>R5 _____</p> <p>R6 _____</p>
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METHOD SW3550B/3630C/8015B
DIESEL RANGE ORGANICS

```

=====
Client      : BROWN & CALDWELL           Date Collected: 11/18/09
Project     : FORMER BENICIA ARSENAL-IDW Date Received: 11/19/09
Batch No.   : 09K227                     Date Extracted: 11/20/09 16:00
Sample ID   : B161-BIN-COMP              Date Analyzed: 11/21/09 17:06
Lab Samp ID: K227-01                     Dilution Factor: 1
Lab File ID: LK20104A                    Matrix          : SOIL
Ext Btch ID: DSK038S                      % Moisture     : 14.8
Calib. Ref.: LK20094A                    Instrument ID   : GCT105
=====

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PARAMETERS	RESULTS (mg/kg)	PQL (mg/kg)	MDL (mg/kg)
DIESEL RANGE ORGANICS	650	9.7	2.8
RESIDUAL RANGE ORGANICS	1000	20	2.7

SURROGATE PARAMETERS	% RECOVERY	QC LIMIT
BROMOBENZENE	71	50-150
HEXACOSANE	82	50-150

PQL: Practical Quantitation Limit
Parameter H-C Range
Diesel C10-C24
Motor Oil C20-C34

METHOD SW3550B/3630C/8015B
DIESEL RANGE ORGANICS

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=====
Client      : BROWN & CALDWELL                      Date Collected: NA
Project     : FORMER BENICIA ARSENAL-IDW             Date Received: 11/20/09
Lab No.     : 09K227                                 Date Extracted: 11/20/09 16:00
Sample ID   : MBLK1S                                 Date Analyzed: 11/21/09 11:49
Lab Samp ID: DSK038SB                               Dilution Factor: 1
Lab File ID: LK20085A                               Matrix          : SOIL
Ext Btch ID: DSK038S                               % Moisture     : NA
Calib. Ref.: LK20080A                               Instrument ID  : GCT105
=====

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PARAMETERS	RESULTS (mg/kg)	PQL (mg/kg)	MDL (mg/kg)
DIESEL RANGE ORGANICS	ND	8.3	2.4
RESIDUAL RANGE ORGANICS	ND	17	2.3

SURROGATE PARAMETERS	% RECOVERY	QC LIMIT
BROMOBENZENE	83	50-150
HEXACOSANE	96	50-150

PQL: Practical Quantitation Limit
Parameter H-C Range
Diesel C10-C24
Motor Oil C20-C34

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: BROWN & CALDWELL
PROJECT: FORMER BENICIA ARSENAL-IDW
BATCH NO.: 09K227
METHOD: METHOD SW3550B/3630C/8015B

MATRIX: SOIL
DILUTION FACTOR: 1
SAMPLE ID: MBLK1S
LAB SAMP ID: DSK0388B
LAB FILE ID: LK20083A
DATE EXTRACTED: 11/20/0916:00
DATE ANALYZED: 11/21/0911:49
PREP. BATCH: DSK0388
CALIB. REF: LK20080A

% MOISTURE: NA
DATE COLLECTED: NA
DATE RECEIVED: 11/20/09

ACCESSION:

PARAMETER	BLNK RSLT (mg/kg)	SPIKE AMT (mg/kg)	BS RSLT (mg/kg)	BS % REC	SPIKE AMT (mg/kg)	BSD RSLT (mg/kg)	BSD % REC	RPD (%)	OC LIMIT (%)	MAX RPD (%)
Diesel Range Organics	ND	417	429	103	417	423	102	1	50-150	40

SURROGATE PARAMETER	SPIKE AMT (mg/kg)	BS RSLT (mg/kg)	BS % REC	SPIKE AMT (mg/kg)	BSD RSLT (mg/kg)	BSD % REC	OC LIMIT (%)
Bromobenzene	83.3	67.1	81	83.3	71.0	85	50-150
Hexacosane	20.8	20.5	99	20.8	20.2	97	50-150

SW5030B/8260B
VOLATILE ORGANICS BY GC/MS

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=====
Client      : BROWN & CALDWELL
Project     : FORMER BENICIA ARSENAL-IDW
Sample No.  : 09K227
Sample ID   : B161-BIN-COMP
Lab Samp ID : K227-01
Lab File ID : RKP434
Ext Btch ID : V002K22
Calib. Ref.: RKP006

Date Collected: 11/18/09
Date Received: 11/19/09
Date Extracted: 11/19/09 21:20
Date Analyzed: 11/19/09 21:20
Dilution Factor: 1
Matrix       : SOIL
% Moisture   : 14.8
Instrument ID : T-002
=====

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PARAMETERS	RESULTS (mg/kg)	PQL (mg/kg)	MDL (mg/kg)
1,1,1,2-TETRACHLOROETHANE	ND	0.012	0.0023
1,1,1-TRICHLOROETHANE	ND	0.012	0.0023
1,1,2,2-TETRACHLOROETHANE	ND	0.012	0.0023
1,1,2-TRICHLOROETHANE	ND	0.012	0.0023
1,1-DICHLOROETHANE	ND	0.012	0.0023
1,1-DICHLOROETHENE	ND	0.012	0.0023
1,1-DICHLOROPROPENE	ND	0.023	0.0023
1,2,3-TRICHLOROBENZENE	ND	0.012	0.0023
1,2,3-TRICHLOROPROPANE	ND	0.012	0.0023
1,2,4-TRICHLOROBENZENE	ND	0.012	0.0023
1,2,4-TRIMETHYLBENZENE	0.080	0.012	0.0023
1,2-DIBROMO-3-CHLOROPROPANE	ND	0.023	0.0023
1,2-DIBROMOETHANE	ND	0.012	0.0023
1,2-DICHLOROBENZENE	0.034	0.012	0.0023
1,2-DICHLOROETHANE	ND	0.012	0.0023
1,2-DICHLOROPROPANE	ND	0.012	0.0023
1,3,5-TRIMETHYLBENZENE	0.0034J	0.012	0.0023
1,3-DICHLOROBENZENE	ND	0.012	0.0023
1,3-DICHLOROPROPANE	ND	0.012	0.0023
1,4-DICHLOROBENZENE	0.0034J	0.012	0.0023
2,2-DICHLOROPROPANE	ND	0.012	0.0023
2-BUTANONE	ND	0.12	0.0059
2-CHLOROTOLUENE	ND	0.012	0.0023
2-HEXANONE	ND	0.023	0.0059
4-CHLOROTOLUENE	ND	0.012	0.0023
4-METHYL-2-PENTANONE	ND	0.023	0.0059
ACETONE	0.013J	0.023	0.0059
BENZENE	ND	0.012	0.0023
BENZENE	ND	0.012	0.0023
BROMOBENZENE	ND	0.012	0.0023
DICHLOROMETHANE	ND	0.012	0.0023
DICHLORODICHLOROMETHANE	ND	0.012	0.0023
DIBROMODICHLOROMETHANE	ND	0.012	0.0023
BROMOFORM	ND	0.012	0.0023
BROMOMETHANE	ND	0.023	0.0023
CARBON DISULFIDE	ND	0.012	0.0023
CARBON TETRACHLORIDE	ND	0.012	0.0023
CHLOROBENZENE	ND	0.012	0.0023
DIBROMOCHLOROMETHANE	ND	0.012	0.0023
CHLOROETHANE	ND	0.023	0.0023
CHLOROFORM	ND	0.012	0.0023
CHLOROMETHANE	ND	0.023	0.0023
CIS-1,2-DICHLOROETHENE	0.0065J	0.012	0.0023
CIS-1,3-DICHLOROPROPENE	ND	0.012	0.0023
DIBROMOMETHANE	ND	0.012	0.0023
DICHLORODIFLUOROMETHANE	ND	0.012	0.0023
DIPE	ND	0.059	0.0023
DTBE	ND	0.059	0.0023
ETHYLBENZENE	ND	0.012	0.0023
HEXACHLOROBUTADIENE	ND	0.012	0.0023
IODOMETHANE	ND	0.012	0.0059
ISOPROPYLBENZENE	0.0043J	0.012	0.0023
METHYLENE CHLORIDE	0.0025J	0.023	0.0023
MTBE	ND	0.012	0.0023
M/P-XYLENES	0.0072J	0.023	0.0023
NAPHTHALENE	0.041	0.023	0.0023
N-BUTYLBENZENE	0.014	0.012	0.0023
O-XYLENE	ND	0.012	0.0023
P-ISOPROPYLTOLUENE	0.0050J	0.012	0.0023
SEC-BUTYLBENZENE	0.0067J	0.012	0.0023
STYRENE	ND	0.012	0.0023
TAME	ND	0.059	0.0023
TERT-BUTYLBENZENE	ND	0.012	0.0023
TETRACHLOROETHENE	ND	0.012	0.0023
TOLUENE	ND	0.012	0.0023
TRANS-1,2-DICHLOROETHENE	ND	0.012	0.0023
TRANS-1,3-DICHLOROPROPENE	ND	0.012	0.0023
TRICHLOROETHENE	ND	0.012	0.0023
TRICHLOROFLUOROMETHANE	ND	0.012	0.0023
VINYL ACETATE	ND	0.059	0.0023
VINYL CHLORIDE	ND	0.012	0.0023
XYLENES	ND	0.047	0.0023
XYLENES	0.014	0.012	0.0023

SURROGATE PARAMETERS	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	108	70-130
TOLUENE-D8	109	70-130
BROMOFLUOROBENZENE	106	70-130

PQL: Practical Quantitation Limit

SW5030B/8260B
VOLATILE ORGANICS BY GC/MS

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=====
Client       : BROWN & CALDWELL
Project      : FORMER BENICIA ARSENAL-IDW
Job No.     : 09K227
Sample ID    : MBLK1S
Lab Samp ID  : V002K22Q
Lab File ID  : RKP423
Ext Btch ID : V002K22
Calib. Ref. : RKP006

Date Collected: NA
Date Received: 11/19/09
Date Extracted: 11/19/09 15:30
Date Analyzed: 11/19/09 15:30
Dilution Factor: 1
Matrix       : SOIL
% Moisture   : NA
Instrument ID : T-002
=====
  
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PARAMETERS	RESULTS (mg/kg)	PQL (mg/kg)	MDL (mg/kg)
1,1,1,2-TETRACHLOROETHANE	ND	0.010	0.0020
1,1,1-TRICHLOROETHANE	ND	0.010	0.0020
1,1,2,2-TETRACHLOROETHANE	ND	0.010	0.0020
1,1,2-TRICHLOROETHANE	ND	0.010	0.0020
1,1-DICHLOROETHANE	ND	0.010	0.0020
1,1-DICHLOROBETHENE	ND	0.010	0.0020
1,1-DICHLOROPROPENE	ND	0.020	0.0020
1,2,3-TRICHLOROBENZENE	ND	0.010	0.0020
1,2,3-TRICHLOROPROPANE	ND	0.010	0.0020
1,2,4-TRICHLOROBENZENE	ND	0.010	0.0020
1,2,4-TRIMETHYLBENZENE	ND	0.010	0.0020
1,2-DIBROMO-3-CHLOROPROPANE	ND	0.020	0.0020
1,2-DIBROMOETHANE	ND	0.010	0.0020
1,2-DICHLOROBENZENE	ND	0.010	0.0020
1,2-DICHLOROETHANE	ND	0.010	0.0020
1,2-DICHLOROPROPANE	ND	0.010	0.0020
1,3,5-TRIMETHYLBENZENE	ND	0.010	0.0020
1,3-DICHLOROBENZENE	ND	0.010	0.0020
1,3-DICHLOROPROPANE	ND	0.010	0.0020
1,4-DICHLOROBENZENE	ND	0.010	0.0020
2,2-DICHLOROPROPANE	ND	0.010	0.0020
2-BUTANONE	ND	0.10	0.0050
2-CHLOROTOLUENE	ND	0.010	0.0020
2-HEXANONE	ND	0.020	0.0050
4-CHLOROTOLUENE	ND	0.010	0.0020
4-METHYL-2-PENTANONE	ND	0.020	0.0050
ACETONE	ND	0.020	0.0050
BENZENE	ND	0.010	0.0020
BROMOBENZENE	ND	0.010	0.0020
DICHLOROMETHANE	ND	0.010	0.0020
DIBROMODICHLOROMETHANE	ND	0.010	0.0020
BROMOFORM	ND	0.010	0.0020
BROMOMETHANE	ND	0.020	0.0020
CARBON DISULFIDE	ND	0.010	0.0020
CARBON TETRACHLORIDE	ND	0.010	0.0020
CHLOROBENZENE	ND	0.010	0.0020
DIBROMOCHLOROMETHANE	ND	0.010	0.0020
CHLOROETHANE	ND	0.020	0.0020
CHLOROFORM	ND	0.010	0.0020
CHLOROMETHANE	ND	0.020	0.0020
CIS-1,2-DICHLOROETHENE	ND	0.010	0.0020
CIS-1,3-DICHLOROPROPENE	ND	0.010	0.0020
DIBROMOMETHANE	ND	0.010	0.0020
DICHLORODIFLUOROMETHANE	ND	0.010	0.0020
DIPPE	ND	0.050	0.0020
ETBE	ND	0.050	0.0020
ETHYLBENZENE	ND	0.010	0.0020
HEXACHLOROBUTADIENE	ND	0.010	0.0020
IODOMETHANE	ND	0.010	0.0050
ISOPROPYLBENZENE	ND	0.010	0.0020
METHYLENE CHLORIDE	0.0029J	0.020	0.0020
MTBE	ND	0.010	0.0020
M/P-XYLENES	ND	0.020	0.0020
NAPHTHALENE	ND	0.020	0.0020
N-BUTYLBENZENE	ND	0.010	0.0020
O-XYLENE	ND	0.010	0.0020
P-ISOPROPYLTOLUENE	ND	0.010	0.0020
SEC-BUTYLBENZENE	ND	0.010	0.0020
STYRENE	ND	0.010	0.0020
TAME	ND	0.050	0.0020
TERT-BUTYLBENZENE	ND	0.010	0.0020
TETRACHLOROETHENE	ND	0.010	0.0020
TOLUENE	ND	0.010	0.0020
TRANS-1,2-DICHLOROETHENE	ND	0.010	0.0020
TRANS-1,3-DICHLOROPROPENE	ND	0.010	0.0020
TRICHLOROETHENE	ND	0.010	0.0020
TRICHLOROFUOROMETHANE	ND	0.010	0.0020
VINYL ACETATE	ND	0.050	0.0020
VINYL CHLORIDE	ND	0.010	0.0020
1,1,1-TRICHLOROETHANE	ND	0.040	0.0020
1,2-DICHLOROETHANE	ND	0.010	0.0020

SURROGATE PARAMETERS	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	105	70-130
TOLUENE-D8	104	70-130
BROMOFLUOROBENZENE	88	70-130

PQL: Practical Quantitation Limit

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: BROWN & CALDWELL
PROJECT: FORMER BENICIA ARSENAL-IDW
BATCH NO.: 09K227
METHOD: SW5030B/8260B

MATRIX: SOIL
DILUTION FACTOR: 1 1
SAMPLE ID: MBLK15
LAB SAMP ID: V002K22Q
LAB FILE ID: RKP419
DATE EXTRACTED: 11/19/0915:30
DATE ANALYZED: 11/19/0915:30
PREP. BATCH: V002K22
CALIB. REF: RKP006

% MOISTURE: NA

DATE COLLECTED: NA
DATE RECEIVED: 11/19/09

PARAMETER	BLANK RSLT (mg/kg)	SPIKE AMT (mg/kg)	BS RSLT (mg/kg)	BS REC %	SPIKE AMT (mg/kg)	BSD RSLT (mg/kg)	BSD REC %	RPD (%)	QC LIMIT (%)	MAX RPD (%)
1,1,1,2-Tetrachloroethane	ND	0.0500	0.0446	89	0.0500	0.0471	94	6	70-130	25
1,1,1-Trichloroethane	ND	0.0500	0.0459	92	0.0500	0.0509	102	10	70-130	25
1,1,2,2-Tetrachloroethane	ND	0.0500	0.0442	88	0.0500	0.0466	93	5	70-130	25
1,1,2-Trichloroethane	ND	0.0500	0.0444	89	0.0500	0.0465	93	5	70-130	25
1,1-Dichloroethane	ND	0.0500	0.0445	89	0.0500	0.0486	97	9	70-130	25
1,1-Dichloroethene	ND	0.0500	0.0453	91	0.0500	0.0503	101	10	70-130	25
1,1-Dichloropropene	ND	0.0500	0.0420	84	0.0500	0.0471	94	11	70-130	25
1,2,3-Trichlorobenzene	ND	0.0500	0.0434	87	0.0500	0.0485	97	11	70-130	25
1,2,3-Trichloropropene	ND	0.0500	0.0424	85	0.0500	0.0457	91	7	70-130	25
1,2,4-Trichlorobenzene	ND	0.0500	0.0459	92	0.0500	0.0501	100	9	70-130	25
1,2,4-Trimethylbenzene	ND	0.0500	0.0406	81	0.0500	0.0443	89	9	70-130	25
1,2-Dibromo-3-chloropropane	ND	0.0500	0.0452	90	0.0500	0.0504	101	11	70-130	25
1,2-Dibromoethane	ND	0.0500	0.0459	92	0.0500	0.0468	94	2	70-130	25
1,2-Dichlorobenzene	ND	0.0500	0.0415	83	0.0500	0.0451	90	8	70-130	25
1,2-Dichloroethane	ND	0.0500	0.0455	91	0.0500	0.0481	96	6	70-130	25
1,2-Dichloropropene	ND	0.0500	0.0454	91	0.0500	0.0463	93	2	70-130	25
1,3,5-Trimethylbenzene	ND	0.0500	0.0399	80	0.0500	0.0463	93	15	70-130	25
1,3-Dichlorobenzene	ND	0.0500	0.0402	80	0.0500	0.0443	89	10	70-130	25
1,3-Dichloropropene	ND	0.0500	0.0445	89	0.0500	0.0473	95	6	70-130	25
1,4-Dichlorobenzene	ND	0.0500	0.0413	83	0.0500	0.0460	92	11	70-130	25
2,2-Dichloropropene	ND	0.0500	0.0462	92	0.0500	0.0530	106	14	70-130	25
2-Butanone	ND	0.200	0.194	97	0.200	0.208	104	7	65-140	30
2-Chlorotoluene	ND	0.0500	0.0400	80	0.0500	0.0477	95	18	70-130	25
2-Hexanone	ND	0.200	0.207	103	0.200	0.211	106	2	65-135	30
4-Chlorotoluene	ND	0.0500	0.0386	77	0.0500	0.0365	73	5	70-130	25
4-Methyl-2-Pentanone	ND	0.200	0.201	100	0.200	0.200	100	0	65-135	30
Acetone	ND	0.200	0.196	98	0.200	0.208	104	6	60-145	30
Benzene	ND	0.0500	0.0442	88	0.0500	0.0461	92	4	70-130	25
Bromobenzene	ND	0.0500	0.0423	85	0.0500	0.0457	91	8	70-130	25
Bromochloromethane	ND	0.0500	0.0435	87	0.0500	0.0466	93	7	70-130	25
Bromodichloromethane	ND	0.0500	0.0444	89	0.0500	0.0451	90	1	70-130	25
Bromoform	ND	0.0500	0.0414	83	0.0500	0.0436	87	5	70-130	25
Bromomethane	ND	0.0500	0.0435	87	0.0500	0.0452	90	4	55-145	25
Carbon Disulfide	ND	0.0500	0.0419	84	0.0500	0.0476	95	13	65-135	30
Carbon Tetrachloride	ND	0.0500	0.0457	91	0.0500	0.0493	99	8	70-130	25
Chlorobenzene	ND	0.0500	0.0437	87	0.0500	0.0460	92	5	70-130	25
Dibromochloromethane	ND	0.0500	0.0428	86	0.0500	0.0440	88	3	70-130	25
Chloroethane	ND	0.0500	0.0486	97	0.0500	0.0497	99	9	70-130	25
Chloroform	ND	0.0500	0.0458	92	0.0500	0.0501	100	2	70-130	25
Chloromethane	ND	0.0500	0.0417	83	0.0500	0.0430	86	3	60-130	25
cis-1,2-Dichloroethene	ND	0.0500	0.0436	87	0.0500	0.0481	96	10	70-130	25
cis-1,3-Dichloropropene	ND	0.0500	0.0462	92	0.0500	0.0482	96	4	70-130	25
Dibromomethane	ND	0.0500	0.0444	89	0.0500	0.0462	92	4	70-130	25
Dichlorodifluoromethane	ND	0.0500	0.0530	106	0.0500	0.0554	111	4	50-140	25
DIPE	ND	0.0500	0.0453J	91	0.0500	0.0494J	99	9	50-150	30
ETBE	ND	0.0500	0.0447J	89	0.0500	0.0485J	97	8	50-150	30
Ethylbenzene	ND	0.0500	0.0436	87	0.0500	0.0468	94	7	70-130	25
Hexachlorobutadiene	ND	0.0500	0.0428	86	0.0500	0.0500	100	15	60-135	25

Iodomethane	ND	0.0500	0.0595	119	0.0500	0.0643	129	8	40-160	25
Isopropylbenzene	ND	0.0500	0.0422	84	0.0500	0.0471	94	11	70-130	25
Methylchloride	0.00290J	0.0500	0.0414	83	0.0500	0.0441	88	6	50-135	30
MTBE	ND	0.0500	0.0447	89	0.0500	0.0489	98	9	65-135	30
m/p-Xylenes	ND	0.100	0.0876	88	0.100	0.0955	96	9	70-130	25
Napthalene	ND	0.0500	0.0465	93	0.0500	0.0507	101	9	70-130	25
n-Butylbenzene	ND	0.0500	0.0408	82	0.0500	0.0445	89	9	70-130	25
o-Xylene	ND	0.0500	0.0431	86	0.0500	0.0451	90	9	70-130	25
p-Isopropyltoluene	ND	0.0500	0.0413	83	0.0500	0.0462	92	11	70-130	25
Sec-Butylbenzene	ND	0.0500	0.0400	80	0.0500	0.0458	92	14	70-130	25
Styrene	ND	0.0500	0.0434	87	0.0500	0.0478	96	10	70-130	25
TAME	ND	0.0500	0.0445J	89	0.0500	0.0491J	98	10	40-160	30
Tert-Butylbenzene	ND	0.0500	0.0413	83	0.0500	0.0468	94	13	70-130	25
Tetrachloroethene	ND	0.0500	0.0414	83	0.0500	0.0452	90	5	70-130	25
Toluene	ND	0.0500	0.0444	89	0.0500	0.0494	99	11	70-130	25
Trans-1,2-Dichloroethene	ND	0.0500	0.0432	86	0.0500	0.0470	94	8	70-130	25
Trans-1,3-Dichloropropene	ND	0.0500	0.0493	99	0.0500	0.0496	99	1	70-130	25
Trichloroethene	ND	0.0500	0.0435	87	0.0500	0.0465	93	7	70-130	25
Trichlorofluoromethane	ND	0.0500	0.0521	104	0.0500	0.0529	106	1	50-155	25
Vinyl Acetate	ND	0.0500	0.0531	106	0.0500	0.0554	111	4	65-135	30
Vinyl Chloride	ND	0.0500	0.0438	88	0.0500	0.0442	88	1	65-135	30
Freon113	ND	0.0500	0.0506	101	0.0500	0.0578	116	13	70-130	25
n-Propylbenzene	ND	0.0500	0.0402	80	0.0500	0.0450	90	11	70-130	25

SURROGATE PARAMETER	SPIKE AMT		BS		SPIKE AMT		BSD RSLT		BSD		QC LIMIT (%)
	(mg/kg)	(mg/kg)	% REC	(mg/kg)	(mg/kg)	% REC	(mg/kg)	% REC	(%)		
1,2-Dichloroethane-d4	0.0500	0.0502	100	0.0500	0.0505	101	70-130				
Toluene-d8	0.0500	0.0542	108	0.0500	0.0521	104	70-130				
Bromofluorobenzene	0.0500	0.0455	91	0.0500	0.0439	88	70-130				

SW 3550B/8270C
SEMI VOLATILE ORGANICS BY GC/MS

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=====
Client      : BROWN & CALDWELL           Date Collected: 11/18/09
Project     : FORMER BERNICIA ARSENAL-IDW Date Received: 11/19/09
Sample No.  : 09K227                     Date Extracted: 11/21/09 14:00
Sample ID   : B161-BIN-COMP              Date Analyzed: 11/24/09 12:57
Lab Samp ID : K227-01                     Dilution Factor: 2
Lab File ID : RKH436                       Matrix          : SOIL
Ext Btch ID : SVK049S                      % Moisture     : 14.8
Calib. Ref. : RIH307                       Instrument ID   : T-0E7
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PARAMETERS	RESULTS (mg/kg)	PQL (mg/kg)	MDL (mg/kg)
1,2,4-TRICHLOROBENZENE	ND	1.2	0.40
1,2-DICHLOROBENZENE	ND	1.2	0.40
1,3-DICHLOROBENZENE	ND	1.2	0.40
1,4-DICHLOROBENZENE	ND	1.2	0.40
2,4,5-TRICHLOROPHENOL	ND	2.3	0.40
2,4,6-TRICHLOROPHENOL	ND	1.2	0.42
2,4-DICHLOROPHENOL	ND	1.2	0.40
2,4-DIMETHYLPHENOL	ND	1.2	0.40
2,4-DINITROPHENOL	ND	2.3	0.40
2,4-DINITROPOLUENE	ND	1.2	0.40
2,6-DINITROPOLUENE	ND	1.2	0.40
2-CHLORONAPHTHALENE	ND	1.2	0.40
2-CHLOROPHENOL	ND	1.2	0.40
2-METHYLNAPHTHALENE	ND	1.2	0.40
2-METHYLPHENOL	ND	1.2	0.40
2-NITROANILINE	ND	2.3	0.40
2-NITROPHENOL	ND	1.2	0.40
3,3'-DICHLOROBENZIDINE	ND	1.2	0.40
3-NITROANILINE	ND	2.3	0.40
4,6-DINITRO-2-METHYLPHENOL	ND	2.3	0.40
4-BROMOPHENYL-PHENYLETHER	ND	1.2	0.40
4-CHLORO-3-METHYLPHENOL	ND	1.2	0.40
4-CHLOROANILINE	ND	1.2	0.40
4-CHLOROPHENYL-PHENYLETHER	ND	1.2	0.40
4-METHYLPHENOL (1)	ND	1.2	0.40
4-NITROANILINE	ND	2.3	0.40
4-NITROPHENOL	ND	2.3	0.40
ANILINE	ND	1.2	0.40
ACETIC ACID	ND	2.3	0.40
BUTYL ALCOHOL	ND	1.2	0.40
BIS(2-CHLOROETHOXY)METHANE	ND	1.2	0.40
BIS(2-CHLOROETHYL)ETHER	ND	1.2	0.40
BIS(2-CHLOROISOPROPYL)ETHER	ND	1.2	0.40
BIS(2-ETHYLHEXYL)PHTHALATE	ND	1.2	0.40
BUTYLBENZYLPHTHALATE	ND	1.2	0.40
DI-N-BUTYLPHTHALATE	ND	1.2	0.40
DI-N-OCTYLPHTHALATE	ND	1.2	0.40
DIBENZOPURAN	ND	1.2	0.40
DIETHYLPHTHALATE	ND	1.2	0.40
DIMETHYLPHTHALATE	ND	1.2	0.40
HEXACHLOROBENZENE	ND	1.2	0.40
HEXACHLOROBUTADIENE	ND	1.2	0.40
HEXACHLOROCYCLOPENTADIENE	ND	1.2	0.45
HEXACHLOROETHANE	ND	1.2	0.40
ISOPHORONE	ND	1.2	0.40
N-NITROSO-DI-N-PROPYLAMINE	ND	1.2	0.40
N-NITROSODIMETHYLAMINE	ND	1.2	0.40
N-NITROSODIPHENYLAMINE (2)	ND	1.2	0.40
NITROBENZENE	ND	1.2	0.40
PENTACHLOROPHENOL	ND	2.3	0.42
PHENOL	ND	1.2	0.40

SURROGATE PARAMETERS	RECOVERY	QC LIMIT
2,4,6-TRIBROMOPHENOL	92	20-125
2-FLUOROBIPHENYL	64	35-125
2-FLUOROPHENOL	72	20-125
NITROBENZENE-D5	72	40-125
PHENOL-D5	74	20-125
TERPHENYL-D14	83	35-125

PQL: Practical Quantitation Limit

(1): Cannot be separated from 3-Methylphenol

(2): Cannot be separated from Diphenylamine

SW 3550B/8270C
SEMI VOLATILE ORGANICS BY GC/MS

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=====
Client      : BROWN & CALDWELL           Date Collected: NA
Project     : FORMER BENICIA ARSENAL-IDW Date Received: 11/21/09
Batch No.   : 09K227                     Date Extracted: 11/21/09 14:00
Sample ID   : MBLK1S                     Date Analyzed: 11/24/09 11:45
Lab Samp ID : SVK049SB                   Dilution Factor: 1
Lab File ID : RKH432                     Matrix          : SOIL
Ext Btch ID: SVK049S                     % Moisture     : NA
Calib. Ref.: RIH307                     Instrument ID   : T-OE7
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PARAMETERS	RESULTS (mg/kg)	PQL (mg/kg)	MDL (mg/kg)
1,2,4-TRICHLOROBENZENE	ND	0.50	0.17
1,2-DICHLOROBENZENE	ND	0.50	0.17
1,3-DICHLOROBENZENE	ND	0.50	0.17
1,4-DICHLOROBENZENE	ND	0.50	0.17
2,4,5-TRICHLOROPHENOL	ND	1.0	0.17
2,4,6-TRICHLOROPHENOL	ND	0.50	0.18
2,4-DICHLOROPHENOL	ND	0.50	0.17
2,4-DIMETHYLPHENOL	ND	0.50	0.17
2,4-DINITROPHENOL	ND	1.0	0.17
2,4-DINITROTOLUENE	ND	0.50	0.17
2,6-DINITROTOLUENE	ND	0.50	0.17
2-CHLORONAPHTHALENE	ND	0.50	0.17
2-CHLOROPHENOL	ND	0.50	0.17
2-METHYLNAPHTHALENE	ND	0.50	0.17
2-METHYLPHENOL	ND	0.50	0.17
2-NITROANILINE	ND	1.0	0.17
2-NITROPHENOL	ND	0.50	0.17
3,3'-DICHLOROBENZIDINE	ND	0.50	0.17
3-NITROANILINE	ND	1.0	0.17
4,6-DINITRO-2-METHYLPHENOL	ND	1.0	0.17
4-BROMOPHENYL-PHENYLETHER	ND	0.50	0.17
4-CHLORO-3-METHYLPHENOL	ND	0.50	0.17
4-CHLOROANILINE	ND	0.50	0.17
4-CHLOROPHENYL-PHENYLETHER	ND	0.50	0.17
4-METHYLPHENOL (1)	ND	0.50	0.17
4-NITROANILINE	ND	1.0	0.17
4-NITROPHENOL	ND	1.0	0.17
ANILINE	ND	0.50	0.17
BENZOIC ACID	ND	1.0	0.17
BENZYL ALCOHOL	ND	0.50	0.17
BIS (2-CHLOROETHOXY) METHANE	ND	0.50	0.17
BIS (2-CHLOROETHYL) ETHER	ND	0.50	0.17
BIS (2-CHLOROISOPROPYL) ETHER	ND	0.50	0.17
BIS (2-ETHYLHEXYL) PHTHALATE	ND	0.50	0.17
BUTYLBENZYLPHTHALATE	ND	0.50	0.17
DI-N-BUTYLPHTHALATE	ND	0.50	0.17
DI-N-OCTYLPHTHALATE	ND	0.50	0.17
DIBENZOFURAN	ND	0.50	0.17
DIETHYLPHTHALATE	ND	0.50	0.17
DIMETHYLPHTHALATE	ND	0.50	0.17
HEXACHLOROBENZENE	ND	0.50	0.17
HEXACHLOROBUTADIENE	ND	0.50	0.17
HEXACHLOROCYCLOPENTADIENE	ND	0.50	0.19
HEXACHLOROETHANE	ND	0.50	0.17
ISOPHORONE	ND	0.50	0.17
N-NITROSO-DI-N-PROPYLAMINE	ND	0.50	0.17
N-NITROSODIMETHYLAMINE	ND	0.50	0.17
N-NITROSODIPHENYLAMINE (2)	ND	0.50	0.17
NITROBENZENE	ND	0.50	0.17
PENTACHLOROPHENOL	ND	1.0	0.18
PHENOL	ND	0.50	0.17

SURROGATE PARAMETERS	RECOVERY	QC LIMIT
2,4,6-TRIBROMOPHENOL	62	20-125
2-FLUOROBIPHENYL	49	35-125
2-FLUOROPHENOL	57	20-125
NITROBENZENE-D5	45	40-125
PHENOL-D5	58	20-125
TERPHENYL-D14	65	35-125

PQL: Practical Quantitation Limit

(1): Cannot be separated from 3-Methylphenol
(2): Cannot be separated from Diphenylamine

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: BROWN & CALDWELL
PROJECT: FORMER BENICIA ARSENAL-IDW
BATCH NO.: C9K227
METHOD: SW 3550B/8270C

MATRIX: SOIL
DILUTION FACTOR: 1 1
SAMPLE ID: MBLKLS SVK049SL SVK049SC
LAB SMP ID: SVK049SB RKH433 RKH434
LAB FILE ID: RKH433
DATE EXTRACTED: 11/21/09 11:21:00 11/21/09 14:00
DATE ANALYZED: 11/24/09 11:45 11/24/09 12:21
PREP. BATCH: SVK049S SVK049S
CALIB. REF: KIH307 KIH307

ACCESSION:

PARAMETER	BLNK RSLT (mg/kg)	SPIKE AMT (mg/kg)	BS RSLT (mg/kg)	BS % REC	SPIKE AMT (mg/kg)	BSD RSLT (mg/kg)	BSD % REC	RPD (%)	QC LIMIT (%)	MAX RPD (%)
1,2,4-Trichlorobenzene	ND	2.22	1.24	56	2.22	1.20	54	4	35-125	35
1,2-Dichlorobenzene	ND	2.22	1.26	57	2.22	1.23	55	3	35-125	35
1,3-Dichlorobenzene	ND	2.22	1.22	55	2.22	1.17	53	4	35-125	35
1,4-Dichlorobenzene	ND	2.22	1.23	55	2.22	1.19	54	3	35-125	35
2,4,5-Trichlorophenol	ND	2.22	1.60	72	2.22	1.36	61	16	20-125	40
2,4,6-Trichlorophenol	ND	2.22	1.54	69	2.22	1.28	58	18	20-125	40
2,4-Dichlorophenol	ND	2.22	1.43	64	2.22	1.35	61	6	20-125	40
2,4-Dimethylphenol	ND	2.22	1.43	65	2.22	1.40	63	2	20-125	40
2,4-Dinitrophenol	ND	2.22	1.38	62	2.22	1.35	61	2	20-125	40
2,4-Dinitrotoluene	ND	2.22	1.69	76	2.22	1.43	65	17	40-125	35
2,6-Dinitrotoluene	ND	2.22	1.58	71	2.22	1.37	62	15	40-125	35
2-Chloronaphthalene	ND	2.22	1.36	61	2.22	1.22	55	11	35-125	35
2-Chlorophenol	ND	2.22	1.50	68	2.22	1.34	60	11	20-125	40
2-Methylnaphthalene	ND	2.22	1.47	66	2.22	1.31	59	11	40-130	35
2-Methylphenol	ND	2.22	1.43	64	2.22	1.33	60	7	20-125	40
2-Nitroaniline	ND	2.22	1.17	51	2.22	1.17	51	24	40-125	35
2-Nitrophenol	ND	2.22	1.49	67	2.22	1.27	57	1	20-125	40
3,3'-Dichlorobenzidine	ND	2.22	1.26	57	2.22	1.41	63	1	20-125	40
3-Nitroaniline	ND	2.22	1.42	64	2.22	1.41	63	1	20-125	40
4,6-Dinitro-2-Methylphenol	ND	2.22	1.55	70	2.22	1.31	59	16	40-125	35
4-Bromophenyl-phenylether	ND	2.22	1.90	85	2.22	1.95	88	3	20-125	40
4-Chloro-3-Methylphenol	ND	2.22	1.73	78	2.22	1.80	81	4	35-125	35
4-Chloroaniline	ND	2.22	1.49	67	2.22	1.45	65	3	20-125	40
4-Chlorophenyl-phenylether	ND	2.22	1.31	59	2.22	1.26	57	4	20-125	40
4-Methylphenol	ND	2.22	1.61	73	2.22	1.33	60	19	35-150	35
4-Nitroaniline	ND	2.22	1.31	59	2.22	1.27	57	3	20-125	40
4-Nitrophenol	ND	2.22	1.68	76	2.22	1.45	65	14	40-125	35
Aniline	ND	2.22	1.53	68	2.22	1.35	61	12	20-125	40
Benzoic Acid	ND	2.22	1.23	55	2.22	1.17	53	5	35-125	35
Benzyl Alcohol	ND	2.22	1.32	60	2.22	1.26	57	5	20-125	40
bis(2-Chloroethoxy)methane	ND	2.22	1.47	66	2.22	1.37	62	7	45-125	30
bis(2-Chloroethyl) ether	ND	2.22	1.44	65	2.22	1.44	65	0	25-125	40
bis(2-Chloroisopropyl) ether	ND	2.22	1.20	54	2.22	1.19	53	1	25-125	40
bis(2-Ethylhexyl)phthalate	ND	2.22	1.26	57	2.22	1.20	54	5	25-125	40
Butylbenzylphthalate	ND	2.22	1.49	67	2.22	1.58	71	6	45-130	35
Di-n-butylphthalate	ND	2.22	1.58	71	2.22	1.58	71	0	40-130	35
Di-n-octylphthalate	ND	2.22	2.09	94	2.22	2.25	101	7	45-130	35
Dibenzofuran	ND	2.22	1.79	81	2.22	1.68	76	6	45-130	35
Diethylphthalate	ND	2.22	1.49	67	2.22	1.21	55	21	50-125	30
Dimethylphthalate	ND	2.22	1.87	84	2.22	1.60	72	16	45-130	35
Hexachlorobutadiene	ND	2.22	1.56	70	2.22	1.50	58	18	45-130	35
Hexachlorocyclopentadiene	ND	2.22	1.71	77	2.22	1.84	83	7	35-125	35
Hexachloroethane	ND	2.22	1.18	53	2.22	1.18	53	1	25-125	50
Isophorone	ND	2.22	1.33	60	2.22	1.17	53	13	25-125	40
n-Nitroso-di-n-propylamine	ND	2.22	1.19	54	2.22	1.25	56	5	25-125	40
n-Nitrosodimethylamine	ND	2.22	1.42	64	2.22	1.35	61	5	30-125	30
n-Nitrosodiphenylamine	ND	2.22	1.34	60	2.22	1.29	58	4	35-125	30
n-Nitrosodiphenylamine	ND	2.22	1.01	46	2.22	1.04	47	3	35-125	35
n-Nitrosodiphenylamine	ND	2.22	1.13	51	2.22	1.27	57	11	35-125	35

Nitrobenzene	ND	2.22	1.19	54	2.22	1.21	54	2	40-125	35
Pentachlorophenol	ND	2.22	1.79	81	2.22	1.78	80	1	20-125	40
Phenol	ND	2.22	1.44	65	2.22	1.37	62	5	20-125	40

SURROGATE PARAMETER	SPIKE AMT (mg/kg)	BS RSLT (mg/kg)	BS % REC	SPIKE AMT (mg/kg)	BSD RSLT (mg/kg)	BSD % REC	QC LIMIT (%)
2,4,6-Tribromophenol	4.17	3.57	86	4.17	3.90	94	20-125
2-Fluorobiphenyl	1.39	0.835	60	1.39	0.730	53	35-135
2-Fluorophenol	4.17	2.61	63	4.17	2.54	61	20-125
Nitrobenzene-d5	1.39	0.752	54	1.39	0.768	55	40-125
Phenol-d5	4.17	2.81	67	4.17	2.68	64	20-125
Terphenyl-d14	1.39	1.03	74	1.39	1.14	82	35-125

METHOD 3050B/6010B
METALS BY TRACE ICP

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=====
Client      : BROWN & CALDWELL           Date Collected: 11/18/09 14:55
Project     : FORMER BENICIA ARSENAL-IDW Date Received: 11/19/09
NO.        : 09K227                     Date Extracted: 11/19/09 11:50
Sample ID:  B161-BIN-COMP                Date Analyzed: 11/19/09 20:39
Lab Samp ID: K227-01                     Dilution Factor: 0.974
Lab File ID: ID8K014039                   Matrix          : SOIL
Ext Btch ID: IPK054S                     % Moisture     : 14.8
Calib. Ref.: ID8K014029                   Instrument ID  : EMAXTID8
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PARAMETERS	RESULTS (mg/kg)	PQL (mg/kg)	MDL (mg/kg)
Antimony	2.60J	9.52	0.952
Arsenic	11.9	0.952	0.381
Barium^	94.0	47.6	0.952
Beryllium	0.696J	0.952	0.191
Cadmium	0.506J	0.952	0.0949
Chromium	52.7	0.952	0.191
Cobalt	14.0	0.952	0.191
Copper	19.2	0.952	0.191
Lead	26.2	0.952	0.191
Molybdenum	0.629J	4.77	0.477
Nickel	37.5	0.952	0.191
Selenium	1.06	0.952	0.477
Silver	ND	0.952	0.238
Thallium	ND	0.952	0.477
Vanadium^	69.8	47.6	2.38
Zinc^	75.2	47.6	2.38

^: Analyzed at DF 5 on 11/20/09 16:10 | File ID ID8K015019

METHOD 3050B/6010B
 METALS BY TRACE ICP

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=====
Client      : BROWN & CALDWELL           Date Collected: NA
Project     : FORMER BENICIA ARSENAL-IDW Date Received: 11/19/09
SDG NO.    : 09K227                     Date Extracted: 11/19/09 11:50
Sample ID   : MBLK1S                     Date Analyzed: 11/19/09 20:00
Lab Samp ID: IPK054SB                    Dilution Factor: 1
Lab File ID: ID8K014031                  Matrix          : SOIL
Ext Btch ID: IPK054S                     % Moisture     : NA
Calib. Ref.: ID8K014029                  Instrument ID  : EMLXTID8
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PARAMETERS	RESULTS (mg/kg)	PQL (mg/kg)	MDL (mg/kg)
Antimony	ND	8.33	0.833
Arsenic	ND	0.833	0.333
Barium	ND	0.833	0.167
Beryllium	ND	0.833	0.167
Cadmium	ND	0.833	0.0830
Chromium	ND	0.833	0.167
Cobalt	ND	0.833	0.167
Copper	ND	0.833	0.167
Lead	0.591J	0.833	0.167
Molybdenum	ND	4.17	0.417
Nickel	0.310J	0.833	0.167
Selenium	ND	0.833	0.417
Silver	ND	0.833	0.208
Thallium	ND	0.833	0.417
Vanadium	ND	0.833	0.417
Zinc	0.945	0.833	0.417

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: BROWN & CALDWELL
PROJECT: FORMER BENICIA ARSENAL-IDW
SDG NO.: 09K227
METHOD: METHOD 3050B/6010B

MATRIX: SOIL
DILUT FACTR: 1 1
SAMPLE ID: 1BLKLS
CONTROL NO.: IPK054SB IPK054SL IPK054SC
LAB FILE ID: ID8K014031 ID8K014032 ID8K014033
DATE EXTRACTD: 11/19/0911:50 11/19/0911:50 11/19/0911:50
DATE ANALYZED: 11/19/0920:00 11/19/0920:05 11/19/0920:10
PREP. BATCH: IPK054S IPK054S IPK054S
CALIB. REF: ID8K014029 ID8K014029 ID8K014029

ACCESSION:

PARAMETER	BLNK RSLT mg/kg	SPIKE AMT mg/kg	BS RSLT mg/kg	BS % REC	SPIKE AMT mg/kg	BSD RSLT mg/kg	BSD % REC	RPD %	QC LIMIT %	MAX RPD %
Antimony	ND	209	217	104	209	217	104	0	80-120	20
Arsenic	ND	41.7	42.1	101	41.7	42.5	102	1	80-120	20
Barium	ND	41.7	38.4	92	41.7	38.7	93	1	80-120	20
Beryllium	ND	41.7	40.8	98	41.7	41.1	99	1	80-120	20
Cadmium	ND	41.7	40.9	98	41.7	41.3	99	1	80-120	20
Chromium	ND	41.7	37.9	91	41.7	38.2	92	1	80-120	20
Cobalt	ND	41.7	40	96	41.7	40.3	97	1	80-120	20
Copper	ND	41.7	39.8	95	41.7	40.3	97	1	80-120	20
Lead	.591J	41.7	39.6	95	41.7	39.9	96	1	80-120	20
Lithium	ND	41.7	41.3	99	41.7	41.4	99	0	80-120	20
Nickel	.31J	41.7	40.2	96	41.7	40.4	97	1	80-120	20
Selenium	ND	41.7	41.5	100	41.7	42	101	1	80-120	20
Silver	ND	41.7	40.7	98	41.7	41.1	99	1	80-120	20
Thallium	ND	41.7	38.8	93	41.7	39.2	94	1	80-120	20
Vanadium	ND	41.7	39.8	95	41.7	40.1	96	1	80-120	20
Zinc	.945	41.7	42.6	102	41.7	42.7	102	0	80-120	20

EMAX QUALITY CONTROL DATA
ANALYTICAL SPIKE ANALYSIS

CLIENT: BROWN & CALDWELL
PROJECT: FORMER BENICIA ARSENAL-IDW
SDG NO.: 09K227
METHOD: METHOD 3050B/6010B

MATRIX: SOIL
DILTN FACTR: 0.974
SAMPLE ID: B161-BIN-COMP
CONTROL NO.: K227-01A
LAB FILE ID: ID8K014038
DATE TIME EXTRACTD: 11/19/0911:50
DATE TIME ANALYZD: 11/19/0920:34
PREP. BATCH: IPK054S
CALIB. REF: ID8K014029

% MOISTURE: 14.8

DATE COLLECTED: 11/18/09 14:55
DATE RECEIVED: 11/19/09

ACCESSION:

PARAMETER	SMPL RSLT (mg/kg)	SPIKE AMT (mg/kg)	AS RSLT (mg/kg)	AS REC (%)	QC LIMIT (%)
Antimony	2.6U	238	220	91	75-125
Arsenic	11.9	47.6	60	101	75-125
Barium [^]	94.0	476	554	97	75-125
Beryllium	.696U	47.6	48.6	100	75-125
Cadmium	.506U	47.6	49.8	103	75-125
Chromium	52.7	47.6	88.8	76	75-125
Cobalt	14	47.6	60.4	97	75-125
Copper	19.2	47.6	66.1	98	75-125
Lead	26.2	47.6	68.2	88	75-125
Molybdenum	.629U	47.6	40.9	85	75-125
Nickel	37.5	47.6	79.4	88	75-125
Selenium	1.06	47.6	49.6	102	75-125
Silver	ND	47.6	47.3	99	75-125
Thallium	ND	47.6	44.4	93	75-125
Vanadium [^]	69.8	476	564	104	75-125
Zinc [^]	75.2	476	575	105	75-125

[^] K227-01A: Analyzed at DF 5 on 11/20/09 16:05 | File ID ID8K015018

EMAX QUALITY CONTROL DATA
SERIAL DILUTION ANALYSIS

CLIENT: BROWN & CALDWELL
PROJECT: FORMER HERICIA ARSENAL-IDW
BATCH NO.: 09K227
METHOD: METHOD 3050B/6010B

MATRIX: SOIL
DILUTION FACTOR: 0.974
SAMPLE ID: B161-BIN-COMP
EMAX SAMP ID: K227-01
LAB FILE ID: ID8K014039
DATE EXTRACTED: 11/19/0911:50
DATE ANALYZED: 11/19/0920:39
PREP. BATCH: IPK054S
CALIB. REF: ID8K014029

% MOISTURE: 14.8

DATE COLLECTED: 11/18/09 14:55
DATE RECEIVED: 11/19/09

ACCESSION:

PARAMETER	SMPL RSLT (mg/kg)	SERIAL DIL RSLT (mg/kg)	DIF RSLT %	QC LIMIT (%)
Antimony	2.60J	ND	NA	10
Arsenic	11.9	11.0	7	10
Barium [^]	94.0	95.3	1	10
Beryllium	0.696J	ND	NA	10
Cadmium	0.506J	ND	NA	10
Chromium	52.7	47.3	10	10
Cobalt	14.0	12.1	14*	10
Copper	19.2	16.4	15*	10
Lead	26.2	24.9	5	10
Molybdenum	0.629J	ND	NA	10
Nickel	37.5	32.8	13*	10
Selenium	1.06	ND	NA	10
Silver	ND	ND	0	10
Thallium	ND	ND	0	10
Vanadium [^]	69.8	70.6	1	10
Zinc [^]	75.2	77.8	3	10

^: Analyzed at DF 5|25 on 11/20/09 16:10|16:14 | File ID ID8K015019|20

METHOD SW5035/8015B
GASOLINE RANGE ORGANICS BY PURGE & TRAP

```
=====  
Client      : BROWN & CALDWELL           Date Collected: 11/18/09  
Project     : FORMER BENICIA ARSENAL-IDW Date Received: 11/19/09  
Batch No.   : 09K227                     Date Extracted: 11/20/09 14:12  
Sample ID:  B161-BIN-COMP                 Date Analyzed: 11/20/09 14:12  
Lab Samp ID: K227-01                      Dilution Factor: 1  
Lab File ID: EK19047A                     Matrix          : SOIL  
Ext Btch ID: VMK017S                       % Moisture     : 14.8  
Calib. Ref.: EK1903GA                     Instrument ID  : GCT039  
=====
```

PARAMETERS	RESULTS (mg/kg)	PQL (mg/kg)	MDL (mg/kg)
GRO (2MP-124TMB)	25	1.2	0.59
SURROGATE PARAMETERS	% RECOVERY	QC LIMIT	
BROMOFLUOROBENZENE	114	65-135	

PQL : Practical Quantitation Limit
QC LIMIT : Bromofluorobenzene 65-135
* : Exceeded the QC limit due to matrix interference
E : Exceeded the calibration range

METHOD SM5035/8015B
 GASOLINE RANGE ORGANICS BY PURGE & TRAP

```

=====
Client      : BROWN & CALDWELL                Date Collected: NA
Project    : FORMER BENICIA ARSENAL-IDW       Date Received: 11/20/09
Sample No. : 09K227                           Date Extracted: 11/20/09 06:21
Sample ID  : MBLK1S                            Date Analyzed: 11/20/09 06:21
Lab Samp ID: VMK017SB                         Dilution Factor: 1
Lab File ID: EK19033A                         Matrix          : SOIL
Ext Btch ID: VMK017S                          % Moisture     : NA
Calib. Ref.: EK19023A                         Instrument ID   : GCT039
=====
  
```

PARAMETERS	RESULTS (mg/kg)	PQL (mg/kg)	MDL (mg/kg)
GRO(2MP-124TMB)	ND	1.0	0.50
SURROGATE PARAMETERS	% RECOVERY	QC LIMIT	
BROMOFLUOROBENZENE	99	65-135	

PQL : Practical Quantitation Limit
 QC LIMIT : Bromofluorobenzene 65-135
 * : Exceeded the QC limit due to matrix interference
 E : Exceeded the calibration range

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: BROWN & CALDWELL
PROJECT: FORMER BENICIA ARSENAL-IDW
BATCH NO.: 09K227
METHOD: METHOD SW5035/8015B

MATRIX: SOIL
DILUTION FACTOR: 1 1
SAMPLE ID: HBLK1S VMK017SL VMK017SC
LAB SAMP ID: VMK017SB VMK017SB VMK017SC
LAB FILE ID: EKI9033A EKI9031A EKI9032A
DATE EXTRACTED: 11/20/0906:21 11/20/0905:05 11/20/0905:43
DATE ANALYZED: 11/20/0906:21 11/20/0905:05 11/20/0905:43
PREP. BATCH: VMK017S VMK017S VMK017S
CALIB. REF: EKI9023A EKI9023A EKI9023A

ACCESSION:

PARAMETER	BLNK RSLT (mg/kg)	SPIKE AMT (mg/kg)	BS RSLT (mg/kg)	BS % REC	SPIKE AMT (mg/kg)	BSD RSLT (mg/kg)	BSD % REC	RPD (%)	QC LIMIT (%)	MAX RPD (%)
GRO (2MP-124TMB)	ND	25.0	24.3	97	25.0	24.3	97	0	60-140	30

SURROGATE PARAMETER	SPIKE AMT (mg/kg)	BS RSLT (mg/kg)	BS % REC	SPIKE AMT (mg/kg)	BSD RSLT (mg/kg)	BSD % REC	QC LIMIT (%)
Bromofluorobenzene	2.00	2.31	115	2.00	113	113	65-135

MERCURY B. D VAPOR

Client : BROWN & CALDWELL
 Project : FORMER BENICIA ARSENAL-IDW
 Batch No. : 09K227

Matrix : SOIL
 Instrument ID : TI047

SAMPLE ID	EMX SAMPLE ID	RESULTS (mg/kg)	DLF	MOIST	PQL (mg/kg)	MDL (mg/kg)	Analysis DATE/TIME	Extraction DATE/TIME	LFID	CAL REF	PREP BATCH	Collection DATE/TIME	Received DATE/TIME
MBLK1S	HGK027SB	ND	1	NA	0.0750	0.0270	11/19/0919:49	11/19/0913:00	M47K015074	M47K015068	HGK027S	NA	11/19/09
LCS1S	HGK027SL	0.684	1	NA	0.0750	0.0270	11/19/0919:51	11/19/0913:00	M47K015075	M47K015068	HGK027S	NA	11/19/09
LCD1S	HGK027SC	0.690	1	NA	0.0750	0.0270	11/19/0919:53	11/19/0913:00	M47K015076	M47K015068	HGK027S	NA	11/19/09
B161-BIN-COMP	K227-01	0.0469J	1	14.8	0.0680	0.0317	11/19/0920:15	11/19/0913:00	M47K015086	M47K015080	HGK027S	11/18/09	11/19/09



SDG Login Review Sheet

Date: 11/30/2009

Client Code: BC_0905_

Client: Brown & Caldwell
Project: Former Benicia Arsenal-IDW

Send Report To: Attn: Greg Cole
Company: Brown & Caldwell
Address: 10540 White Rock Road, Ste 180
Rancho Cordova CA 95670
NA

EMAX PM: Richard Beauvil

SDG: 09K227A

DATE/ TIME RECEIVED: 11/19/2009 9:45

DUE DATE: 12/21/2009

Lwks ID	Control #	Sample ID	Matrix	Coll Date	Time	Lwks Method	Analysis
EP13396	K227-01	B161-BIN-COMP	SOIL	11/18/2009	14:55	CRWS	Chromium WET

Richard Beauvil

From: Menna, Greg [GMenna@BrwnCald.com]
Sent: Wednesday, November 25, 2009 4:27 PM
To: Richard Beauvil
Cc: Linck, Wendy
Subject: RE: STLC
Importance: High

Richard,
We need to do STLC for chromium on the other IDW sample - sample B161-BIN-COMP, attached. Please have Calscience pick it up under COC Friday or Monday morning.

Thank you,
Greg

From: Richard Beauvil [mailto:RBeauvil@emaxlabs.com]
Sent: Wednesday, November 25, 2009 2:19 PM
To: Menna, Greg
Cc: Linck, Wendy
Subject: RE: STLC

Hi Greg,

We are probably looking at next Friday for the results. Possibly on Thursday. Will that work for you?

Richard Beauvil
Project Manager/Safety Officer
EMAX Laboratories, Inc.
1835 205th Street
Torrance, CA 90501
Tel: 310-618-8889

-----Original Message-----

From: Menna, Greg [mailto:GMenna@BrwnCald.com]
Sent: Wednesday, November 25, 2009 2:01 PM
To: Richard Beauvil
Cc: Linck, Wendy
Subject: RE: STLC

Sure Richard. The sample data with lead result is attached. Sample is B051-BIN-21293. It was received at EMAX on 11/17.

From: Richard Beauvil [mailto:RBeauvil@emaxlabs.com]
Sent: Wednesday, November 25, 2009 1:56 PM
To: Menna, Greg
Cc: Linck, Wendy
Subject: STLC

Hi Greg,

Can you give me the SDG number and which samples you need. Or the date we received the samples.

11/25/2009

Thank you.

Richard Beauvil
Project Manager/Safety Officer
EMAX Laboratories, Inc.
1835 205th Street
Torrance, CA 90501
Tel: 310-618-8889

bc-0905

CHAIN OF CUSTODY 09K22Z 2052

EMAX
LABORATORIES, INC.
1855 W. 205th Street, Torrance, CA 90501
Tel #: 310-618-8839 Fax #: 310-618-0818
Email: info@emaxlab.com

PO NUMBER: 170759
EMAX CONTROL NO. * 09K22Z
SAMPLE STORE #

PROJECT CODE: PROJECT CODE:

CLIENT: **Bayern & Caldwell**

PROJECT: **Benson RA (SPACE) Bldg. 161**

COORDINATOR: **Wendy Knack**

TEL: **(916) 833-5825 FAX**

SEND REPORT TO: **Wendy Knack cc: Gary Manna**

COMPANY: **Brown & Caldwell**

ADDRESS: **10670 White Rock Rd. 10670 Ste. 180**

Rancho Cordova, CA 95670

EMAX PM: **Richard Becausi**

LAB	CLIENT	LOCATION	DATE	TIME	TYPE	CONTAINER		MATRIX CODE	QC	ANALYSIS REQUIRED				TAT
						NO.	SIZE			RESERVATIVE CODE	RESERVATIVE CODE	RESERVATIVE CODE	RESERVATIVE CODE	
1	B-161-BIN-COMP	Bldg 161	11/18/09	1455	4	802	6.666	G		X	X	X	X	72 hr. TAT
2														
3														
4														
5														
6														
7														
8														
9														
0														

Matrix Code: IC=Ice, HC=HCI, HW=H2O, SF=NaOH, ST=Na2SO3, ZA=Zn Acetate, HS=H2SO4, Air=Air, D=

ANALYSIS REQUIRED: CAM 17 metals, VOCs by 8260, TPH, D, G, M, S by 8015, SVOCs by 8270

RESERVATIVE CODE: TAT

Instructions:
 ① Please hold TOLP.
 ② Silica gel cleanup bag. Please homogenize samples. Please run full TPH screen.

Cooler # 1041 Temp. (°C) 3.4°C

SAMPLER: **RELIQUISHED BY** [Signature] **RECEIVED BY** [Signature]

Date: 11/18/09 17:06, 11/19/09 9:45

COURIER/AIRBILL: Fed Ex

NOTICE: This document (TAT) is an analytical report. It is not to be used for legal purposes. EMAX will not be responsible for any loss of samples or data. The client is responsible for all costs associated with sample collection, storage, and disposal. Samples shall be disposed of as soon as possible (but not prior to 30 days after issuance of analytical report) unless a different disposal method is pre-arranged with EMAX. Disposal fee for samples defined by CA Title 22 as non-hazardous shall be \$5.00 per sample. EMAX will not be responsible for samples that are returned to the client at the client's expense unless otherwise noted.



SAMPLE RECEIPT FORM 2

SAMPLES RECEIVED FOR ECN:

09K227

ECN (*)	SAMPLE CONTAINER ID	Sample Amount Sufficiency	CONTAINER TYPE								CHEMICAL PRESERVATIVE										Filtered			
			Jar	Amber	HDPE	Encore	Vial	Tube	Bag	Other	NONE	HCl (pH<2)	HNO3 (pH<2)	H2SO4 (pH<2)	ZnAc+NaOH (pH>12)	NaOH (pH>12)	Na2S2O3	Picric Acid+ZnAc (pH<2)	Other	Other	Other	Yes	No	
01	* 1		/							/														
	* 2		/							/														
	* 3		/							/														
	* 4		/							/														
	* 5																							
	* 6																							
	* 7																							
	* 8																							
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	* 7																							
	* 8																							
	* 9																							
	* 0																							

8 11-19-09

METHOD WET/3005A/6010B
STLC METALS BY TRACE ICP

=====
Client : BROWN & CALDWELL Date Collected: 11/18/09 14:55
Project : FORMER BENICIA ARSENAL-IDW Date Received: 11/19/09
NO. : 09K227A Date Extracted: 12/03/09 09:30
Sample ID: B161-BIN-COMP Date Analyzed: 12/03/09 23:22
Lab Samp ID: K227-01 Dilution Factor: 5
Lab File ID: ID8L003118 Matrix : LEACHATE
Ext Btch ID: IPL005W % Moisture : NA
Calib. Ref.: ID8L003110 Instrument ID : EMAXTID8
=====

PARAMETERS	RESULTS (mg/L)	PQL (mg/L)	MDL (mg/L)
Chromium	0.219	0.0500	0.0125

STLC EXTRACTION: 11/30/09 14:45

METHOD WET/3005A/6010B
STLC METALS BY TRACE ICP

```
=====
Client      : BROWN & CALDWELL           Date Collected: 11/18/09 14:55
Project     : FORMER BENICIA ARSENAL-IDW  Date Received: 11/19/09
SDG NO.    : 09K227A                    Date Extracted: 12/03/09 09:30
Sample ID:  B161-BIN-COMPDL             Date Analyzed: 12/03/09 23:27
Lab Samp ID: K227-01J                   Dilution Factor: 25
Lab File ID: ID8L003119                 Matrix          : WATER
Ext Btch ID: IPL005W                    % Moisture     : NA
Calib. Ref.: ID8L003110                 Instrument ID  : EMAXTID8
=====
```

<u>PARAMETERS</u>	<u>RESULTS</u>	<u>PQL</u>	<u>MDL</u>
	<u>(mg/L)</u>	<u>(mg/L)</u>	<u>(mg/L)</u>
Chromium	0.224J	0.250	0.0625

METHOD WET/3005A/6010B
STLC METALS BY TRACE ICP

=====
Client : BROWN & CALDWELL Date Collected: NA
Project : FORMER BENICIA ARSENAL-IDW Date Received: 12/03/09
NO. : 09K227A Date Extracted: 12/03/09 09:30
Sample ID: 4BLK1W Date Analyzed: 12/03/09 22:57
Lab Samp ID: IPL005WB Dilution Factor: 1
Lab File ID: ID8L003113 Matrix : WATER
Ext Btch ID: IPL005W % Moisture : NA
Calib. Ref.: ID8L003110 Instrument ID : EMAXTD8
=====

PARAMETERS	RESULTS (mg/L)	PQL (mg/L)	MDL (mg/L)
Chromium	ND	0.0100	0.00250

METHOD WET/3005A/6010B
STLC METALS BY TRACE ICP

```
=====
Client      : BROWN & CALDWELL           Date Collected: NA
Project     : FORMER BENICIA ARSENAL-IDW Date Received: 12/03/09
SDG NO.    : 09K227A                   Date Extracted: 12/03/09 09:30
Sample ID   : MBLK1S                    Date Analyzed: 12/03/09 23:11
Lab Samp ID: WTK006SB                   Dilution Factor: 5
Lab File ID: ID8L003116                 Matrix          : LEACHATE
Ext Btch ID: IPL005W                    % Moisture      : NA
Calib. Ref.: ID8L003110                 Instrument ID   : EMAXTID8
=====
```

PARAMETERS	RESULTS (mg/L)	PQL (mg/L)	HDL (mg/L)
Chromium	0.0240J	0.0500	0.0125

STLC EXTRACTION: 11/30/09 14:45

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: BROWN & CALDWELL
PROJECT: FORMER BENICIA ARSENAL-IDW
SDG NO.: 09K227A
METHOD: WET/3005A/6010B

MATRIX: WATER
DILTN FACTR: 1 1 NA
SAMPLE ID: MBLK1W
CONTROL NO.: IFL005W IFL005WL IFL005WC
LAB FILE ID: ID8L003113 ID8L003114 ID8L003115
DATE TIME EXTRACTD: 12/03/0909:30 12/03/0909:30 12/03/0909:30
DATE COLLECTED: NA
DATE TIME ANALYZD: 12/03/0922:57 12/03/0923:02 12/03/0923:06
PREP. BATCH: IFL005W IFL005W IFL005W
CALIB. REF: ID8L003110 ID8L003110 ID8L003110

ACCESSION:

PARAMETER	BLNK RSLT mg/L	SPIKE AMT mg/L	BS RSLT mg/L	BS % REC	SPIKE AMT mg/L	BSD RSLT mg/L	BSD % REC	RPD %	QC LIMIT %	MAX RPD %
Chromium	ND	.5	.517	103	.5	.513	103	1	80-120	20

EMAX QUALITY CONTROL DATA
MS/MSD ANALYSIS

CLIENT: BROWN & CALDWELL
PROJECT: FORMER BENICIA ARSENAL-IDW
SDG NO.: 09K227A
METHOD: METHOD WFT/3005A/6010B

MATRIX: LEACHATE
DILTN FACTR: 5
SAMPLE ID: B161-BIN-COMP 5
CONTROL NO.: K227-01 5
LAB FILE ID: ID8L003118 ID8L003120 ID8L003121 K227-01S
DATE TIME EXTRACTD: 12/03/0909:30 12/03/0909:30 12/03/0909:30 12/03/0909:30 DATE COLLECTED: 11/18/09 14:55
DATE TIME ANALYZD: 12/03/0923:22 12/03/0923:32 12/03/0923:37 12/03/0923:37 DATE RECEIVED: 11/19/09
PREP. BATCH: IFL005W IFL005W IFL005W IFL005W
CALIB. REF: ID8L003110 ID8L003110 ID8L003110 ID8L003110

ACCESSION:

PARAMETER	SMPLE RSLT mg/L	SPIKE AMT mg/L	MS RSLT mg/L	MS % REC	SPIKE AMT mg/L	MSD RSLT mg/L	MSD % REC	RPD %	QC LIMIT %	MAX RPD %
Chromium	.219	2.5	2.58	94	2.5	2.59	95	0	80-120	20

EMAX QUALITY CONTROL DATA
ANALYTICAL SPIKE ANALYSIS

CLIENT: BROWN & CALDWELL
PROJECT: FORMER BENICIA ARSENAL-IDW
SDG NO.: 09K227A
METHOD: METHOD WET/3005A/601CB

MATRIX: LEACHATE
DILTN FACTR: 5
SAMPLE ID: B161-BIN-COMP
CONTROL NO.: K227-01
LAB FILE ID: ID8L003118
DATE TIME EXTRACTD: 12/03/0909:30
DATE TIME ANALYZD: 12/03/0923:22
PREP. BATCH: IFL005W
CALIB. REF: ID8L003110

% MOISTURE: NA

DATE COLLECTED: 11/18/09 14:55
DATE RECEIVED: 11/19/09

ACCESSION:

PARAMETER	SAMPL RSLT (mg/L)	SPIKE AMT (mg/L)	AS RSLT (mg/L)	% REC	AS QC LIMIT (%)
Chromium	.219	2.5	2.61	96	75-125

EMAX QUALITY CONTROL DATA
SERIAL DILUTION ANALYSIS

CLIENT: BROWN & CALDWELL
PROJECT: FORMER BENICIA ARSENAL-IDW
BATCH NO.: 09K227A
METHOD: METHOD WET/3005A/6010B

MATRIX: LEACHATE
DILUTION FACTOR: 5
SAMPLE ID: B161-BIN-COMP
EMAX SAMP ID: K227-01
LAB FILE ID: ID8L003118
DATE EXTRACTED: 12/03/0909:30
PREP. BATCH: IFL005W
CALIB. REF: ID8L003110

25 B161-BIN-COMPL
K227-01J
ID8L003119
12/03/0909:30
12/03/0923:27
IFL005W
ID8L003110

% MOISTURE: NA

DATE COLLECTED: 11/18/09 14:55
DATE RECEIVED: 11/19/09

ACCESSION:

PARAMETER (mg/L) SERIAL DIL. RSLT (mg/L) DIF. RSLT (%) QC LIMIT (%)

Chromium	0.219	0.224J	NA	10
----------	-------	--------	----	----

Appendix F:
IDW Waste Manifests for Soil



Generator's Hazardous Waste Profile Sheet

Service Agreement on file? Yes No Profile Number

Check here if there are multiple generating locations for this waste. Attach additional locations.

Check here if a Certificate of Destruction or Disposal is required

Requested Disposal Facility Kettleman Hills

Renewal for Profile Number

Waste Approval Expiration Date

A. Waste Generator Facility Information (must reflect location of waste generation/origin)

- 1. Generator Name: DDO (OERP/FUDS) C/O USAACE 7. Email Address: bruce.L.VanEtten@usace.army.mil
2. Site Address: 932 Grant Street 8. Phone: (916) 557-5377
3. City/ZIP: Benicia 94510 9. FAX: (916) 557-7685
4. State: CA 10. NAICS Code:
5. County: Solano 11. Generator USEPA ID #:
6. Contact Name/Title: Bruce Van Etten / ET 12. State ID# (if applicable): CAC002648864

B. Customer Information same as above

P. O. Number: 09-064

- 1. Customer Name: Northstate Earth and Water Inc. 6. Phone: 5303513604 FAX: 5305477087
2. Billing Address: PO Box 494130 7. Transporter Name: Ponder Environmental Services Inc.
3. City, State and ZIP: Redding CA 96049 8. Transporter ID # (if appl.): CAR00180737
4. Contact Name: Mike Fitzgemid 9. Transporter Address: PO Box 1427
5. Contact Email: northstate@frontiernet.net 10. City, State and ZIP: Benicia CA 94510-4427

C. Waste Stream Information

USEPA Hazardous State Hazardous TSCA Non-Hazardous

- 1. Description
a. Name of Waste: Building 51 contaminated soil
b. Process Generating Waste:
Soil generated from "hot spot" removal of former drum storage area.
c. Color: Brown/black
d. Strong Odor (describe): NO
e. Physical State at 70°F: Solid Liquid Gas Sludge Other:
f. Layers? Single layer Multi-layer
g. Free Liquid Range (%) N/A to Specific Gravity: Viscosity: RTU/lb:
h. pH Range: N/A to
i. Liquid Flash Point: < 73°F 73°-99°F 100°-139°F 140°-199°F > 200°F N/A
2. Is this a USEPA hazardous waste (40 CFR Part 261)? If the answer is no, skip to question f
 Yes No
a. If yes, identify ALL USEPA listed and characteristic waste code numbers (D,F,K,P,U)
b. If a characteristic hazardous waste, do underlying hazardous constituents (UICs) apply (40 CFR 268.48)? Yes No (if yes, list in Section C.2.)
c. Is the waste subject to RCRA Subpart CC Controls-(40 CFR 264.1083 & 265.1084)? Yes No ? (Click for Add'l Info)
If no, does the waste meet the organic LDR Exemption? Yes No
If no, does the waste contain <500 ppm volatile organic (VOC's)? Yes No
Volatile organic concentration ppm
d. Is the waste predominately debris subject to the Alternate Debris Standards (40 CFR 268.45)? Yes No
e. Is the waste predominately soil subject to the Alternate Soil Treatment Standards-(40 CFR 268.49)? Yes No
If yes, will Underlying Hazardous Constituents apply? (list in C.2.) Yes No
f. Does the waste represented by this profile contain asbestos? Yes No
If yes, Friable Non-Friable
g. Does the waste represented by this profile contain benzene? Yes No
Is this subject to Benzene Operations Waste NESHAP (40 CFR Part 61 Subpart FF)? N/A Yes No
If yes, complete Benzene Waste Operations NESHAP (BWON) questionnaire

N/A



Generator's Hazardous Waste Profile Sheet

Profile Number

C. Waste Stream Information (continued)

- h. Is this profile for remediation waste from a facility that is a major source of Hazardous Air Pollutants (Site Remediation NESHAP, 40 CFR 63 subpart GGGGG)?
i. Does the waste represented by this waste profile sheet contain concentrations of Polychlorinated Biphenyls (PCBs) regulated by 40 CFR 761?
j. Chemical Composition (List all constituents including halogenated organics, debris, and UHC's) present in any concentration and submit representative analysis:

Table with 5 columns: Constituents (Total Composition Must be > 100%), Lower Range, Unit of Measure, Upper Range, Unit of Measure. Row 1 contains handwritten text: 'See attached analytical reports'.

- k. Check any that apply: Pyrophoric, Water Reactive, OSHA Carcinogen, Shock Sensitive, Oxidizer, Infectious.
l. Is the waste subject to controls as a Group 1 waste/water or residual under the Hazardous Organic NESHAP?
m. Does the waste represented by this waste profile sheet contain radioactive material?
n. Is the waste from a CERCLA (40 CFR 300 Appendix B) or state mandated clean-up?
o. Is this a State Hazardous Waste? Yes/No. If yes, please list applicable codes: P008/101(CA)

D. DOT Information and Shipping Volume

- 1. Quantity of Waste: a. Event/ Base/Ongoing, b. Estimated Annual Quantity: 5 Tons, c. Shipping Frequency: 1 Per: One Time.
2. Shipping Information: a. Packaging: Ro off/End Dump, b. Is this a U.S. Department of Transportation (USDOT) Hazardous Material? Yes, c. Reportable Quantity (lbs.; kgs.): 10 Lbs., d. Primary/Subsidiary Hazard Class(es)/ID#: P008, e. USDOT Shipping Name: NA3077, Hazardous Waste, Solid, N.O.S. (Lead Class 9)

E. Generator Certification (Please read and certify by signature below)

I hereby certify that all information submitted in this and all attached documents contain true and accurate descriptions of this wastestream. Any sample submitted is representative as defined in 40 CFR 261.10 or by using an equivalent method. I authorize [] to obtain a sample from any waste shipment for purposes of recertification. If this certification is made by a broker, the undersigned signs as authorized agent of the generator and has confirmed the information contained in this Profile Sheet from information provided by the generator and additional information as it has determined to be reasonably necessary. It approved for management. Contractor has all the necessary permits and licenses for the waste that has been characterized and identified by this approved profile. All relevant information within the possession of the Generator regarding known or suspected hazards, pertaining to the waste will be disclosed to the contractor. All changes which occur in the character of the waste will be identified by the Generator and disclosed to the Contractor prior to providing the waste to the Contractor.

Certification Signature: [Signature] Title: [Title]
Name (Type or Print): [Name] Company Name: [Company] Date: [Date]

Check if additional information is attached. Indicate the number of attached pages

Generator's Non-hazardous Waste Profile Sheet



Requested Disposal Facility _____ Profile Number _____
 Renewal for Profile Number _____ Waste Approval Expiration Date _____

A. Waste Generator Facility Information (must reflect location of waste generation/origin)

1. Generator Name: DOD (DERP/F403) c/o USACE
2. Site Address: 848 Jackson Street
3. City/ZIP: Benicia 94510
4. State: CA
5. County: Solano
6. Contact Name/Title: Bruce Van Etten / ET
7. Email Address: bruce.L.VanEtten@usace.army.mil
8. Phone: 916-557-5377 9. FAX: 916-557-7685
10. NAICS Code: _____
11. Generator USEPA ID #: _____
12. State ID# (if applicable): _____

B. Customer Information same as above

P. O. Number: 09-064

1. Customer Name: Northstate Earth and Water
2. Billing Address: PO Box 444130
3. City, State and ZIP: Redding CA 96049
4. Contact Name: M Fitzgerald
5. Contact Email: northstate.frontiernet.net
6. Phone: 530-351-3604 FAX: 530-547-7097
7. Transporter Name: Ponder Environmental
8. Transporter ID # (if appl.): _____
9. Transporter Address: PO Box 1427
10. City, State and ZIP: Benicia CA 94510-4427

C. Waste Stream Information

1. DESCRIPTION

a. Common Waste Name: Building 161 contaminated soil
 State Waste Code(s): _____

b. Describe Process Generating Waste or Source of Contamination:

Soil generated from former UST Area, building 161.

c. Typical Color(s): Brown / Gray

d. Strong Odor? Yes No Describe: Degraded Petro

e. Physical State at 70°F: Solid Liquid Powder Semi-Solid or Sludge Other: _____

f. Layers? Single layer Multi-layer NA

g. Water Reactive? Yes No If Yes, Describe: _____

h. Free Liquid Range (%): _____ to _____ NA(solid)

i. pH Range: ≤ 2 2.1-12.4 ≥ 12.5 NA(solid) Actual: _____

j. Liquid Flash Point: < 140°F ≥ 140°F NA(solid) Actual: _____

k. Flammable Solid: Yes No

l. Physical Constituents: List all constituents of waste stream - (e.g. Soil 0-80%, Wood 0-20%): (See Attached)

Constituents (Total Composition Must be > 100%)	Lower Range	Unit of Measure	Upper Range	Unit of Measure
1. <u>Soil</u>	<u>90</u>	<u>%</u>	<u>100%</u>	<u>%</u>
2. <u>APP</u>	<u>0</u>	<u>%</u>	<u>10%</u>	<u>%</u>
3. _____				
4. _____				
5. _____				
6. _____				

2. ESTIMATED QUANTITY OF WASTE AND SHIPPING INFORMATION

- a. One Time Event Base Repeat Event
- b. Estimated Annual Quantity: 140 Tons Cubic Yards Drums Gallons Other (specify): _____
- c. Shipping Frequency: 1 Units per Month Quarter Year One Time Other
- d. Is this a U.S. Department of Transportation (USDOT) Hazardous Material? (If yes, answer e.) Yes No
- e. USDOT Shipping Description (if applicable): _____

3. SAFETY REQUIREMENTS (Handling, PPE, etc.): N/A



Generator's Non-hazardous Waste Profile Sheet

D. Regulatory Status (Please check appropriate responses)

- Is this a USEPA (40 CFR Part 261)/State hazardous waste? If yes, contact your sales representative. Yes No
- Is this waste included in one or more of categories below (Check all that apply)? If yes, attach supporting documentation. Yes No
 - Delisted Hazardous Waste Excluded Wastes Under 40 CFR 261.4
 - Treated Hazardous Waste Debris Treated Characteristic Hazardous Waste
- Is the waste from a Federal (40 CFR 300, Appendix B) or state mandated clean-up? If yes, see instructions. Yes No
- Does the waste represented by this waste profile sheet contain radioactive material? Yes No
 - If yes, is disposal regulated by the Nuclear Regulatory Commission? Yes No
 - If yes, is disposal regulated by a State Agency for radioactive waste/NORM? Yes No
- Does the waste represented by this waste profile sheet contain concentrations of regulated Polychlorinated Biphenyls (PCBs)? Yes No
 - If yes, is disposal regulated under TSCA? Yes No
- Does the waste contain untreated, regulated, medical or infectious waste? Yes No
- Does the waste contain asbestos? Yes No
If Yes, Friable Non Friable
- Is this profile for remediation waste from a facility that is a major source of Hazardous Air Pollutants (Site Remediation NESHAP, 40 CFR 63 subpart GGGGG)? Yes No
If yes, does the waste contain <500 ppmw VOHAPs at the point of determination? Yes No

E. Generator Certification (Please read and certify by signature below)

By signing this Generator's Waste Profile Sheet, I hereby certify that all:

- Information submitted in this profile and all attached documents contain true and accurate descriptions of the waste material;
- Relevant information within the possession of the Generator regarding known or suspected hazards pertaining to this waste has been disclosed to WM/the Contractor;
- Analytical data attached pertaining to the profiled waste was derived from testing a representative sample in accordance with 40 CFR 261.20(c) or equivalent rules; and
- Changes that occur in the character of the waste (i.e. changes in the process or new analytical) will be identified by the Generator and disclosed to WM (and the Contractor if applicable) prior to providing the waste to WM (and the Contractor if applicable).
- Check all that apply:

- Attached analytical pertains to the waste. Identify laboratory & sample ID #'s and parameters tested: _____ # Pages: _____
- Only the analyses identified on the attachment pertain to the waste (identify by laboratory & sample ID #'s and parameters tested). Attachment #: _____
- Additional information necessary to characterize the profiled waste has been attached (other than analytical). Indicate the number of attached pages: _____
- I am an agent signing on behalf of the Generator, and the delegation of authority to me from the Generator for this signature is available upon request.
- By Generator process knowledge, the following waste is not a listed waste and is below all TCLP regulatory limits.

Certification Signature: Bruce Van Etten Title: Engineer Tech
 Company Name: US Army Corps of Engineers Name (Print): Bruce Van Etten
 Date: 11/19/09

FOR WM USE ONLY

Management Method: Landfill Bioremediation Non-hazardous solidification Other: _____

Approval Decision: Approved Not Approved
 Waste Approval Expiration Date: _____

Management Facility Precautions, Special Handling Procedures or Limitation on approval: _____

- Shall not contain free liquid
- Shipment must be scheduled into disposal facility
- Approval Number must accompany each shipment
- Waste Manifest must accompany load

WM Authorization Name / Title: _____ Date: _____
 State Authorization (if Required): _____ Date: _____

HAZARDOUS WASTE MANIFEST	1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Manifest Tracking Number 003210320 JJK				
5. Generator's Name and Mailing Address		Generator's Site Address (if different than mailing address)						
Generator's Phone:								
6. Transporter 1 Company Name			U.S. EPA ID Number					
7. Transporter 2 Company Name			U.S. EPA ID Number					
8. Designated Facility Name and Site Address			U.S. EPA ID Number					
Facility's Phone:								
GENERATOR	9a. HM	9b. U.S. DOT Description (Including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers		11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes	
			No.	Type				
	1.							
	2.							
	3.							
4.								
14. Special Handling Instructions and Additional Information								
15. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent. I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.								
Generator's/Officer's Printed/Typed Name			Signature			Month Day Year		
16. International Shipments <input type="checkbox"/> Import to U.S. <input type="checkbox"/> Export from U.S.			Port of entry/exit:			Date leaving U.S.:		
17. Transporter Acknowledgment of Receipt of Materials								
Transporter 1 Printed/Typed Name			Signature			Month Day Year		
Transporter 2 Printed/Typed Name			Signature			Month Day Year		
18. Discrepancy								
18a. Discrepancy Indication Space <input type="checkbox"/> Quantity <input type="checkbox"/> Type <input type="checkbox"/> Residue <input type="checkbox"/> Partial Rejection <input type="checkbox"/> Full Rejection								
18b. Alternate Facility (or Generator) Manifest Reference Number: U.S. EPA ID Number								
Facility's Phone:								
18c. Signature of Alternate Facility (or Generator)						Month Day Year		
19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)								
1.		2.		3.		4.		
20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in item 18a								
Printed/Typed Name			Signature			Month Day Year		

WEIGHT (LB)

TIME

DATE

COMMODITY, HAZARDOUS WASTE

DEPUTY WEIGHMASTER

CHEMICAL WASTE MANAGEMENT, INC.
WEIGHMASTER weighed at
35251 Old Skyline Road
Kalamoon City, CA

NO: **150335**

WEIGHMASTER CERTIFICATE

This is to certify that the following described commodity was weighed, measured, or counted by a WEIGHMASTER, whose signature is on this certificate, who is a recognized authority of accuracy, as prescribed by CHAPTER 7 (commencing with §12700) of Division 5 of the California Business & Professions Code, administered by the Division of Measurement Standards of California Department of Food and Agriculture.

GROSS:

TARE:

NET:

YARDAGE:

GENERATOR	MANIFEST	PROFILE
RACTOR LICENSE #	TRAILER LICENSE NO.	BIN #
		RECEIPT #

Handwritten notes:
No. 150335
10/1/04

66 9142

9E10539

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number

2. Page 1 of 001

3. Emergency Response Phone 377 265-8265

4. Waste Tracking Number 9062-006

5. Generator's Name and Mailing Address

U S Army Corps of Engineers, DOD (DERP/FUDS) 13525 J Street Sacramento, CA 95814 U.S.A.

Generator's Site Address (if different than mailing address)

648 Jackson Street Benicla, CA 94510 U.S.A.

Generator's Phone: 916 657 5377

6. Transporter 1 Company Name

Ponder Environmental Services, Inc.

U.S. EPA ID Number

CAR00010011

7. Transporter 2 Company Name

U.S. EPA ID Number

8. Designated Facility Name and Site Address

Waste Management - Kamont 10840 Alhambra Pass Road Livermore, CA 94551 USA

U.S. EPA ID Number

Facility's Phone: 800 449-6349

9. Waste Shipping Name and Description

1. SOIL (D.F.)

10. Containers

No. Type

001 CM

11. Total Quantity

15

12. Unit Wt./Vol.

1

13. Special Handling Instructions and Additional Information

W/M Profile # 11176004

FUND# 11176004

Site# R1862 ML

14. GENERATOR'S CERTIFICATION: I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.

Generator's/Officer's Printed/Typed Name

Karen Van Etten

Signature

[Signature]

Month Day Year

12 7 09

15. International Shipments

Import to U.S.

Export from U.S.

Port of entry/exit:

Date leaving U.S.:

Transporter Signature (for exports only):

16. Transporter Acknowledgment or Receipt of Materials

Transporter 1 Printed/Typed Name

Dwayne R Harmon

Signature

[Signature]

Month Day Year

12 16 09

Transporter 2 Printed/Typed Name

Signature

Month Day Year

17. Discrepancy

17a. Discrepancy Indication Space

Quantity

Type

Residue

Partial Rejection

Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator)

U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator)

Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name

Signature

Month Day Year

GENERATOR

INTL

TRANSPORTER

DESIGNATED FACILITY



WEIGHMASTER Pitagant Landfill & PCP
 1000 Pitagant Pass Road
 Livermore, CA, 94551
 Ph: (925) 451-7300

Weight:
 Tickets 37124

Customer Name Northstate Earth and Water North Carrier 874 Pitagant Granite
 Ticket Rate 12/17/2009 Vehicle 3410040
 Payment Type Credit Account Container
 Name: Ticket#
 Billing # 000010 License#

Manifest 800-000
 PO 89-854
 Profile 1117000 (Class II Cover Low VOCs Northstate Earth & Water US Army Corps of
 Generator 154-US Army Corp of Eng 2 US Army Corp of Engineers - Benicia

Time	Scale	Deputy Weighmaster	Inbound	Gross	Net	Tare	Total
In 10/17/2009 08:01:00	Scale 3	P. Ruffo		13600 lb	13000 lb		
Out 10/17/2009 07:57:00	Scale 1	Tabb Ruffo			13600 lb		13.73

Comments:

Product	LDN	Qty	LDW	Rate	Tax	Amount	Origin
1 CR Cover POC Tons 100		13.73	Tons				Benicia
2 FUEL-Fuel Purchasing 100			\$				Benicia
3 EXT-Ext Fee 15 Lg 100		1	Load				Benicia

DRIVER: D. Harmon

Weighmaster Certificate

THIS IS TO CERTIFY that the following described commodity was weighed, measured or counted by a weighmaster, whose signature is on this certificate, who is a recognized authority of accuracy, as prescribed by Chapter 7 (commencing with section 12700) of Division 5 of the California Business and Professions Code, administered by the Division of Measurement Standards of the California Department of Food and Agriculture.

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number

2. Page 1 of 001

3. Emergency Response Phone
577-265-2655

4. Waste Tracking Number
000000

5. Generator's Name and Mailing Address
U.S. Army Corps of Engineers, DOD (DERFPLU)H
13525 J Street
Sacramento, CA 95814 U.S.A.

Generator's Site Address (if different than mailing address)

648 13950 Street
Sacramento, CA 95910 U.S.A.

Generator's Phone: 916-271-5217

6. Transporter 1 Company Name
Foster Environmental Services, Inc.

U.S. EPA ID Number

7. Transporter 2 Company Name

U.S. EPA ID Number

8. Designated Facility Name and Site Address
Waste Management, Inc. 10340
10340 Alamo Pass Road
Livermore, CA 94551 USA

U.S. EPA ID Number

Facility's Phone: 800-449-8343

9. Waste Shipping Name and Description

10. Containers

11. Total Quantity

12. Unit Wt/Vol.

1. SOLIDIFY

No. Type

15

2.

3.

4.

13. Special Handling Instructions and Additional Information

...M... # 11176001
Provider Job # 9002
... R18197 ML

14. GENERATOR'S CERTIFICATION: I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.

Generator's/Officer's Printed/Typed Name

Signature

Month Day Year

K... ..

[Signature]

12 7 99

15. International Shipments Import to U.S. Export from U.S.

Port of entry/exit:
Date leaving U.S.:

Transporter Signature (for exports only):

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name

Signature

Month Day Year

Dwayne R Harmon

[Signature]

12 4 09

Transporter 2 Printed/Typed Name

Signature

Month Day Year

17. Discrepancy

17a. Discrepancy Indication Space

Quantity

Type

Residue

Partial Rejection

Full Rejection

Manifest Reference Number:

U.S. EPA ID Number

17b. Alternate Facility (or Generator)

Facility's Phone:

17c. Signature of Alternate Facility (or Generator)

Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in item 17a

Printed/Typed Name

Signature

Month Day Year



WEIGHMASTER-Altamont Landfill A RSF
 10910 Altamont Pass Road
 Livermore, CA, 94551
 Ph: (925) 455-7400

Original
 Ticket# 074209

Customer: West NorthstateEarth&Water North County GEN Altamont General
 Ticket Date: 12/15/2009 Vehicle# 0010009
 Payment Type: Credit Account Container#
 Manual Ticket# License#
 Billing # 0088193

Manifest: 9062-009
 ID: 09-064
 Profile: 11176009 (Class: 11, Cover: Low VOCs, Northstate Earth & Water, US Army Corps of
 Generator: 104-UNArmyCampfire, US Army Corps of Engineers - Benicia

Time	Scale#	Deputy Weighmaster	Inbound	Price	02550 10
12/15/2009 12:00:47	Scale 3	Is. Estin		Rate	00406 10
01/15/2009 13:00:20	Scale 1	Iron Pena		Net	00800 10
				Rate	11.43

Product	LBS	Qty	UOM	Rate	Tax	Amount	Origin
LR Cover RCD-Tons	100	11.43	Tons				Benicia
FUEL-Fuel Switching	100		%				Benicia
Evil-Sw Fee 10 Lg	100	1	Load				Benicia

DRIVER: D Harmon

Weighmaster Certificate

THIS IS TO CERTIFY that the following described commodity was weighed, measured or counted by a weighmaster, whose signature is on this certificate, who is a recognized authority of accuracy, as prescribed by Chapter 7 (commencing with section 12700) of Division 5 of the California Business and Professions Code, administered by the Division of Measurement Standards of the California Department of Food and Agriculture.

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number
 2. Page 1 of
 3. Emergency Response Phone
 4. Waste Tracking Number

Generator's Name and Mailing Address

Generator's Site Address (if different than mailing address)

U.S. Army Corps of Engineers, OOD (DERP/FUDE),
 13525 J Street
 Sacramento, CA 95814 U.S.A.

848 Jackson Street
 Benicia, CA 94510 U.S.A.

Generator's Phone:

6. Transporter 1 Company Name

U.S. EPA ID Number

Ponder Environmental Services, Inc.

CA00008277

7. Transporter 2 Company Name

U.S. EPA ID Number

8. Designated Facility Name and Site Address

U.S. EPA ID Number

Waste Management Altamont
 10840 Altamont Pass Road
 Livermore, CA 94551 U.S.A.

Facility's Phone: 925-449-6349

9. Waste Shipping Name and Description

10. Containers

11 Total Quantity

12 Unit WL/Vol

No.

Type

1. SOIL (DIFT)

100

DR

15

Special Handling Instructions and Additional Information

Wm Profile# 111760CA

Ponder Job #2092

Est# R18336ML

14. GENERATOR'S CERTIFICATION: I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.

Generator's/Officer's Printed/Typed Name

Signature

Month Day Year

Ernie Van Ertter

[Signature]

12 9 09

15. International Shipments

Import to U.S.

Export from U.S.

Port of entry/exit:

Date leaving U.S.:

Transporter Signature (for exports only):

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name

Signature

Month Day Year

Dwayne R Harmon

[Signature]

12 15 09

Transporter 2 Printed/Typed Name

Signature

Month Day Year

17. Discrepancy

17a. Discrepancy Indication Space

Quantity

Type

Residue

Partial Rejection

Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator)

U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator)

Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in item 17a

Printed/Typed Name

Signature

Month Day Year

Wanda Penna

[Signature]

12 15 09

2145
82

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number	2. Page 1 of 001	3. Emergency Response Phone 877-265-8265	4. Waste Tracking Number 5082-007																											
5. Generator's Name and Mailing Address U.S. Army Corp of Engineers, DOD (DERP/FUDS) 13025 J Street Sacramento CA 95814 U.S.A.		Generator's Site Address (if different than mailing address) 848 Jackson Street Berkeley, CA 94510 U.S.A.																													
Generator's Phone: 916-557-5377																															
6. Transporter 1 Company Name Ponder Environmental Services, Inc.			U.S. EPA ID Number CAR000180787																												
7. Transporter 2 Company Name			U.S. EPA ID Number																												
8. Designated Facility Name and Site Address Waste Management - Altamont 10640 Altamont Pass Road Livermore, CA 94551 U.S.A.			U.S. EPA ID Number																												
Facility's Phone: 509-449-5349																															
9. Waste Shipping Name and Description																															
<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th rowspan="2"></th> <th colspan="2">10. Containers</th> <th rowspan="2">11. Total Quantity</th> <th rowspan="2">12. Unit Wt./Vol.</th> </tr> <tr> <th>No.</th> <th>Type</th> </tr> </thead> <tbody> <tr> <td>1. SOLIDIFT</td> <td>001</td> <td>GM</td> <td>1.5</td> <td>Y</td> </tr> <tr> <td>2.</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>3.</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>4.</td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>						10. Containers		11. Total Quantity	12. Unit Wt./Vol.	No.	Type	1. SOLIDIFT	001	GM	1.5	Y	2.					3.					4.				
	10. Containers		11. Total Quantity	12. Unit Wt./Vol.																											
	No.	Type																													
1. SOLIDIFT	001	GM	1.5	Y																											
2.																															
3.																															
4.																															
3. Special Handling Instructions and Additional Information Vial # 111760CA. Ponder Job # 90E2 Bun# R18344ml																															
14. GENERATOR'S CERTIFICATION: I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.																															
Generator's/Officer's Printed/Typed Name <i>James Van Fleten</i>		Signature <i>James Van Fleten</i>		Month Day Year 12/19/09																											
15. International Shipments <input type="checkbox"/> Import to U.S. <input type="checkbox"/> Export from U.S. Port of entry/exit: _____ Date leaving U.S.: _____																															
16. Transporter Acknowledgment of Receipt of Materials Transporter Signature (for exports only): _____ Date leaving U.S.: _____																															
Transporter 1 Printed/Typed Name <i>Dwayne R. Harmon</i>		Signature <i>Dwayne R. Harmon</i>		Month Day Year 12/15/09																											
Transporter 2 Printed/Typed Name		Signature		Month Day Year																											
17. Discrepancy																															
17a. Discrepancy Indication Space <input type="checkbox"/> Quantity <input type="checkbox"/> Type <input type="checkbox"/> Residue <input type="checkbox"/> Partial Rejection <input type="checkbox"/> Full Rejection																															
17b. Alternate Facility (or Generator) Manifest Reference Number: _____ U.S. EPA ID Number _____																															
Facility's Phone: _____																															
17c. Signature of Alternate Facility (or Generator) _____ Month Day Year _____																															
18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in item 17a																															
Printed/Typed Name		Signature		Month Day Year																											

GENERATOR

INT'L

TRANSPORTER

SIGNATED FACILITY



WEIGHMASTER-AltaMont Landfill & RR
 18640 Pittsont Pass Road
 Livermore, CA, 94551
 Ph: (925) 455-7300

Original
 Ticket# 876112

Customer Name Northstate Earth & Water North Carrier WRM AltaMont Central
 Ticket Date 12/15/2009 Vehicle# 9010009
 Payment Type Credit Account Container
 Manual Ticket#
 Billing # 0300193 License#

Manifest 9002-007
 PO 09-004

Profile 11178000 (Class II Cover Low 900s+Northstate Earth & Water UK Army Corps of
 Generator 15A-030 by Corp of Eng US Army Corps of Engineers - Benicia

Time	Scale	Deputy Weighmaster	Inbound	Genes	Weight
In 12/15/2009 14:41:03	Scale 1 N Penn			Tare	4380 lb
Out 12/15/2009 15:40:53	Scale 1 Intra Penn			Net	26700 lb
				Tare	14,38

Comments

Product	LOS	Qty	UOM	State	Tax	Amount	Origin
1 02 Cover RCY-Tona	100	14.38	Tona				Benicia
2 FUEL-Fuel Surchar	100		%				Benicia
3 Ev18-Env Fee 48 Lq	100		Load				Benicia

DRIVER: J. Harmon

Weighmaster Certificate

THIS IS TO CERTIFY that the following described commodity was weighed, measured or counted by a weighmaster, whose signature is on this certificate, who is a recognized authority of accuracy, as prescribed by Chapter 7 (commencing with section 12700) of Division 5 of the California Business and Professions Code, administered by the Division of Measurement Standards of the California Department of Food and Agriculture.

71040

91E10589

NON-HAZARDOUS WASTE MANIFEST		1. Generator ID Number	2. Page 1 of 001	3. Emergency Response Phone 577-265-5255	4. Waste Tracking Number 9062-004	
5. Generator's Name and Mailing Address U S Army Corps of Engineers, DOD (CERCLA/PLCS) 13525 J Street Sacramento CA 95814 U.S.A.			Generator's Site Address (if different than mailing address) 846 Jackson Street Genieva, CA 94510 U.S.A.			
Generator's Phone: 916-551-5377						
6. Transporter 1 Company Name Ponder Environmental Services, Inc				U.S. EPA ID Number CA-PO0019007		
7. Transporter 2 Company Name				U.S. EPA ID Number		
8. Designated Facility Name and Site Address Waste Management-Altamont 10340 Altamont Pass Road Livermore CA 94551 USA				U.S. EPA ID Number		
Facility's Phone: 800-449-6349						
GENERATOR	9. Waste Shipping Name and Description		10. Containers		11. Total Quantity	12. Unit WL/Vol.
			No.	Type		
	1. SOLID DIRT		001	GM	15	
	2.					
	3.					
4.						
13. Special Handling Instructions and Additional Information WMA Profile# 111769CA. Ponder Job #9062 EPA# R1815ML						
14. GENERATOR'S CERTIFICATION: I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.						
Generator's/Officer's Printed/Typed Name FRANCIS VANCE FOSTER				Signature <i>Francis Vance Foster</i>		
				Month Day Year 12 14 09		
15. International Shipment: <input type="checkbox"/> Import to U.S. <input type="checkbox"/> Export from U.S. Port of entry/exit: _____ Date leaving U.S.: _____						
16. TRANSPORTER'S CERTIFICATION: I certify that I am the transporter of the materials described above on this manifest and that I am duly licensed to transport such materials.						
Transporter 1 Printed/Typed Name DWAYNE R. HARMON				Signature <i>Dwayne R. Harmon</i>		
				Month Day Year 12 14 09		
Transporter 2 Printed/Typed Name DWAYNE R. HARMON				Signature <i>Dwayne R. Harmon</i>		
				Month Day Year 12 14 09		
17. Discrepancy						
17a. Discrepancy Indication Space <input type="checkbox"/> Quantity <input type="checkbox"/> Type <input type="checkbox"/> Residue <input type="checkbox"/> Partial Rejection <input type="checkbox"/> Full Rejection						
Manifest Reference Number: _____						
17b. Alternate Facility (or Generator)				U.S. EPA ID Number		
Facility's Phone: _____						
17c. Signature of Alternate Facility (or Generator)				Month Day Year		
18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in item 17a.						
Printed/Typed Name				Signature		
				Month Day Year 12 14 09		



WEIGHMASTER Altamont Landfill # 009
 10040 Altamont Pass Road
 Livermore, CA 94551
 Ph: (925) 455-7300

Weight
 Ticket # 007924

Customer Name Northstate/Conhand/ator North Valley GEN Altamont Generic
 Ticket Date 12/14/2009 Vendor # (Station)
 Payment Type Credit Account Container
 Manual Ticket#
 Billing # 0360193 License#

Manifest 1000 004
 PO 09-000
 Profile 1117400R (Class: 11 Cover Low YDC's Northstate Earth & Water PUS inw/ yards of
 Generator 164 Albany Corp of Eng 2 US Army Corps of Engineers -- Nevada

Time	Scale	Weight	Weightmaster	Inbound	Taxes	Total
In 12/14/2009 08:55:11	Scale 3	13267	Tons		Tons	13267 15
Out 12/14/2009 10:15:10	Scale 10bP	1	Lbs		Tons	13268 15

Comments

Product	LOS	Qty	UOM	Rate	Tax	Amount	Origin
1 CR Cover ROC-Tons	100	13267	Tons				Genics
2 FUEL Fuel Surcharge	100						Genics
3 Extra-Srv Fee 10 Lg	100	1	Lbs				Genics

DRIVER: *D Harmon*

Weighmaster Certificate

THIS IS TO CERTIFY that the following described commodity was weighed, measured or counted by a weighmaster, whose signature is on this certificate, who is a recognized authority of accuracy, as prescribed by Chapter 7 (commencing with section 12700) of Division 5 of the California Business and Professions Code, administered by the Division of Measurement Standards of the California Department of Food and Agriculture.

1E10519- 22180

NON-HAZARDOUS WASTE MANIFEST		1. Generator ID Number	2. Page 1 of 001	3. Emergency Response Phone 877-265-3266	4. Waste Tracking Number 9082-005	
5. Generator's Name and Mailing Address U.S. Army Corps of Engineers, DOD (SERV) (US) 13525 J Street Sacramento, CA 95814 USA			Generator's Site Address (if different than mailing address) 848 Jackson Street Rehoba, CA 94518 USA			
Generator's Phone: 916-557-6377						
6. Transporter 1 Company Name Ponder Environmental Services, Inc			U.S. EPA ID Number CAF0006030			
7. Transporter 2 Company Name			U.S. EPA ID Number			
8. Designated Facility Name and Site Address Waste Management Authority 10840 Araming Pass Road Livermore, CA 94551 USA			U.S. EPA ID Number			
Facility's Phone: 900-449-6340						
GENERATOR	9. Waste Shipping Name and Description		10. Containers		11. Total Quantity	12. Unit Wt./Vol.
	1. SOIL DIR		No. 001	Type CM	15	
	2.					
	3.					
	4.					
3. Special Handling Instructions and Additional Information W/M Profile# 11176004 Prorder # 9082 EIR# R18298ML						
14. GENERATOR'S CERTIFICATION: I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.						
Generator's/Officer's Printed/Typed Name Bruce Valente			Signature <i>Bruce Valente</i>		Month Day Year 12 14 09	
15. International Shipments <input type="checkbox"/> Import to U.S. <input type="checkbox"/> Export from U.S. Port of entry/exit: Date leaving U.S.:						
TRANSPORTER	16. Transporter Acknowledgment of Receipt of Materials					
	Transporter 1 Printed/Typed Name Dwayne A Harmon			Signature <i>Dwayne A Harmon</i>		Month Day Year 12 14 09
17. Discrepancy						
17a. Discrepancy Indication Space <input type="checkbox"/> Quantity <input type="checkbox"/> Type <input type="checkbox"/> Residue <input type="checkbox"/> Partial Rejection <input type="checkbox"/> Full Rejection						
Manifest Reference Number:						
SIGNATED FACILITY	17b. Alternate Facility (or Generator)			U.S. EPA ID Number		
	Facility's Phone:					
17c. Signature of Alternate Facility (or Generator)					Month Day Year	
18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a						
Printed/Typed Name MARCIA POME			Signature <i>Marcia Pome</i>		Month Day Year 12 14 09	



WEIGHMASTER-Hittmont Landfill & RDF
 10000 Hittmont Moss Road
 Livermore, CA, 94551
 Ph: (925) 455-7300

Original
 Ticket# 86420

Customer Name Northstate Earth and Water North
 Ticket Date 12/14/2009
 Payment Type Credit Account
 Manual Tickets
 Billing # 0000193
 Carrier GEN Hittmont Service
 Vehicle# 9C10589
 Container
 License#

Manifest 5082-000
 PO 000004
 Profile 11176004 (Class 11 Cover, Low VOCs Northstate Earth & Water) US Army Corps of
 Generator 164-USA Army Corps of Engineers - Peninsula

Time	Scale	Operator	Heightmaster	Inbound	Class	Weight
In 12/14/2009 14:07:00	Scale 02	Operator	Heightmaster	Inbound	Class	88000 lb
Out 12/14/2009 15:00:20	Scale 01	Operator	Heightmaster	Inbound	Class	27000 lb
						14.14

Comments

Product	LD#	Qty	UDR	Rate	Tax	Amount	Origin
CR Love ROG-Tons	100	14.14	Tons				Geniera
PLUC-Fuel Overhaul	100						Geniera
ExFB-Env Fee 85 Lg	100	1	Lead				Geniera

DRIVER: D. Hanmon

Weighmaster Certificate

THIS IS TO CERTIFY that the following described commodity was weighed, measured or counted by a weighmaster, whose signature is on this certificate, who is a recognized authority of accuracy, as prescribed by Chapter 7 (commencing with section 12700) of Division 5 of the California Business and Professions Code, administered by the Division of Measurement Standards of the California Department of Food and Agriculture.

7V01417 56,520

NON-HAZARDOUS WASTE MANIFEST		1. Generator ID Number	2. Page 1 of 001	3. Emergency Response Phone 877-265-8285	4. Waste Tracking Number 9092-003
5. Generator's Name and Mailing Address U S Army Corps of Engineers, DOD (DEPARTMENT) 13525 J Street Sacramento, CA 95814 U.S.A			Generator's Site Address (if different than mailing address) 548 Jackson Street Fresno, CA 94310 U.S.A		
Generator's Phone: 916-527-5377					
6. Transporter 1 Company Name Ponder Environmental Services Inc			U.S. EPA ID Number CA 9900000000		
7. Transporter 2 Company Name			U.S. EPA ID Number		
8. Designated Facility Name and Site Address Waste Management - Williams 10540 Williams Pass Road Livermore, CA 94551 U.S.A			U.S. EPA ID Number		
Facility's Phone: 900-449-6349					
9. Waste Shipping Name and Description		10. Containers		11. Total Quantity	12. Unit WL/Vol.
		No.	Type		
1. SCIL (DIRT)		001	GM	15	Y
2.					
3.					
4.					
13. Special Handling Instructions and Additional Information VVM Profiles 111780CA Ponder Job # 9082 Bin# R19229ML					
14. GENERATOR'S CERTIFICATION: I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.					
Generator's/Officer's Printed/Typed Name James Vas Ethier		Signature <i>James Vas Ethier</i>		Month Day Year 12 7 09	
15. International Shipments <input type="checkbox"/> Import to U.S. <input type="checkbox"/> Export from U.S. Port of entry/exit: Date leaving U.S.:					
16. Transporter Acknowledgment of Receipt of Materials Transporter Signature (for exports only): Date leaving U.S.:					
Transporter 1 Printed/Typed Name Dwayne R Harmon		Signature <i>Dwayne R Harmon</i>		Month Day Year 12 11 09	
Transporter 2 Printed/Typed Name		Signature		Month Day Year	
17. Discrepancy					
17a. Discrepancy Indication Space <input type="checkbox"/> Quantity <input type="checkbox"/> Type <input type="checkbox"/> Residue <input type="checkbox"/> Partial Rejection <input type="checkbox"/> Full Rejection					
17b. Alternate Facility (or Generator) Manifest Reference Number: U.S. EPA ID Number: Facility's Phone: 17c. Signature of Alternate Facility (or Generator) Month Day Year					
18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in item 17a Printed/Typed Name: John Schaeffler Signature: <i>John Schaeffler</i> Month Day Year: 12 11 09					



WEIGHMASTER-Altamont Landfill & WRF
 10840 Altamont Pass Road
 Livermore, CA, 94551
 Ph: (925) 452-7340

Original
 Ticket# 0130478

Customer Name NorthstateBarthandMeter North Carriage GEN Altamont General
 Ticket Date 12/11/2009 Vehicle# 7201417
 Payment Type Credit Account Container#
 Manual Ticket#
 Billing # 0188193 License#

Manifest 9062 003
 PO 89-004
 Profile 11175009 (Class II Cover Class MCCs Northstate Earth & Water US Army Corps of
 Generator 164-100ArmCo Corp Eng US Army Corps of Engineers - Denista

Title Scale Deputy Weighmaster Inbound Gross 20320 lb
 In 12/11/2009 14:16:00 Scale 03451670 Net 20400 lb
 Out 12/11/2009 15:04:05 Scale 10BJ Schaeffler Net 20400 lb
 Total 21000

Comments

Product	LDX	Qty	UOM	Rate	Tax	Amount	U/Ign
1 02 Cover K50-Tons- 100		14.03	Tons				0501010
2 FUEL-Fuel Storage 100			#				0501010
3 0702-Env Fee \$0 Lg 100		1	Load				0501010

DRIVER: D. Hammer

Weighmaster Certificate

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54640

7V01417

NON-HAZARDOUS WASTE MANIFEST		1. Generator ID Number	2. Page 1 of 001	3. Emergency Response Phone 377-265-8265	4. Waste Tracking Number 908-002
5. Generator's Name and Mailing Address U.S. Army Corps of Engineers, DOD (DERP/FUDS) 13525 J Street Sacramento, CA 95814 U.S.A.		Generator's Site Address (if different than mailing address) 948 Jackson Street Berkeley, CA 94510 U.S.A.			
Generator's Phone: 916-537-5377					
6. Transporter 1 Company Name Ponder Emerson-natal Services, Inc		U.S. EPA ID Number CAR00018073			
7. Transporter 2 Company Name		U.S. EPA ID Number			
8. Designated Facility Name and Site Address Waste Management-Alameda 10840 Alameda Pass Road Livermore, CA 94551 USA		U.S. EPA ID Number			
Facility's Phone: 900-449-8349					
GENERATOR	9. Waste Shipping Name and Description	10. Containers		11. Total Quantity	12. Unit Wt./Vol.
	1. SOIL (DIRT)	No. 001	Type CM	16	
	2.				
	3.				
	4.				
13. Special Handling Instructions and Additional Information W/M Profile# 111760CA Ponder Job # 9052 EIR# R1926ML					
14. GENERATOR'S CERTIFICATION: I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste. Generator's/Officer's Printed/Typed Name: <i>Victor V. Estro</i> Signature: <i>Victor V. Estro</i> Month: 12 Day: 7 Year: 99					
15. International Shipments <input type="checkbox"/> Import to U.S. <input type="checkbox"/> Export from U.S. Port of entry/exit: Date leaving U.S.:					
TRANSPORTER	16. Transporter Acknowledgment of Receipt of Materials				
	Transporter 1 Printed/Typed Name Dwayne R. Harmon	Signature <i>Dwayne R. Harmon</i>			Month: 12 Day: 11 Year: 99
DESIGNATED FACILITY	17. Discrepancy				
	17a. Discrepancy Indication Space <input type="checkbox"/> Quantity <input type="checkbox"/> Type <input type="checkbox"/> Residue <input type="checkbox"/> Partial Rejection <input type="checkbox"/> Full Rejection				
	17b. Alternate Facility (or Generator) Manifest Reference Number: U.S. EPA ID Number:				
Facility's Phone:					
17c. Signature of Alternate Facility (or Generator) Month: Day: Year:					
18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in item 17a Printed/Typed Name: Signature: Month: Day: Year:					



WEIGHMASTER-Altamont Landfill a RW
 12810 Altamont Base Road
 Livermore, CA, 94551
 Ph: (925)428-7300

Original
 Ticket # 000000

Customer Name Northstate Earth and Water North Loading Cell Altamont Generic
 Ticket Date 12/11/2009 Vehicle 101117
 Payment Type Credit Account Container
 Manual Ticket
 Billing # 0000110 License

Manifest 2002-007
 PO 09-064
 Profile 11170000 (Class II) Cover Low VOC Northstate Earth & Water
 Generator 104-US Army Corp of Engrs US Army Corp of Engineers Service

Time	Scale	Operator	Highmaster	Inbound	Gross	Weight
In 12/11/2009 08:43:02	Scale 3	Schauffler	101117		13.25	13.25
Out 12/11/2009 09:37:42	Scale Inha	Schauffler			Net	13.25
					Tons	13.25

Comments

Product	UOM	Qty	UOM	Rate	Tax	Amount	Origin
1. CR Cover RSC-Tons- 100		13.25	Tons				Vehicle
2. FUEL-Fuel Searching 100							Vehicle
3. Env-Env Fee 72 Lg 100		1	Load				Vehicle

DRIVER: D. Hargis

Weighmaster Certificate

THIS IS TO CERTIFY that the following described commodity was weighed, measured or counted by a weighmaster, whose signature is on this certificate, who is a recognized authority of accuracy, as prescribed by Chapter 7 (commencing with section 12700) of Division 5 of the California Business and Professions Code, administered by the Division of Measurement Standards of the California Department of Food and Agriculture.

Total
 Total Ticket

TV 01417 ES200

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number
2. Page 1 of
3. Emergency Response Phone 877 365 8265
4. Waste Tracking Number

5. Generator's Name and Mailing Address
U.S. Army Corps of Engineers DOD (DERP/FUDS)
13525 J Street
Sacramento, CA 95814 U.S.A.
Generator's Phone:
Generator's Site Address (if different than mailing address)
348 Jackson Street
Berkeley, CA 94510 U.S.A.

6. Transporter 1 Company Name
Porter Environmental Services, Inc.
U.S. EPA ID Number

7. Transporter 2 Company Name
U.S. EPA ID Number

8. Designated Facility Name and Site Address
Waste Management - Summit
10840 Summit Pass Road
Livermore, CA 94551 U.S.A.
Facility's Phone: 800 449-6223
U.S. EPA ID Number

9. Waste Shipping Name and Description	10. Containers		11. Total Quantity	12. Unit WL/Vol.
	No.	Type		
1. SOIL DIPS	001	GM	15	
2.				
3.				
4.				

13. Special Handling Instructions and Additional Information
W.M. Profile # 111760CA
Franchise # 9082
Bin # R12012ML

14. GENERATOR'S CERTIFICATION: I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.

Generator's/Officer's Printed/Typed Name: James Van Effen
Signature: [Signature]
Month: 12 Day: 9 Year: 07

15. International Shipments Import to U.S. Export from U.S.
Port of entry/exit:
Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials
Transporter Signature (for exports only):
Date leaving U.S.:

Transporter 1 Printed/Typed Name: Dwayne D Harmon
Signature: [Signature]
Month: 12 Day: 10 Year: 09
Transporter 2 Printed/Typed Name:
Signature:
Month: Day: Year:

17. Discrepancy
17a. Discrepancy Indication Space Quantity Type Residue Partial Rejection Full Rejection
Manifest Reference Number:

17b. Alternate Facility (or Generator)
U.S. EPA ID Number
Facility's Phone:

17c. Signature of Alternate Facility (or Generator)
Month: Day: Year:

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in item 17a
Printed/Typed Name: [Name]
Signature: [Signature]
Month: 12 Day: 10 Year: 09

GENERATOR
INT'L
TRANSPORTER
DESIGNATED FACILITY



DELIVERED TO: Robert Landfill & IOP
 10240 Kirkwood Park Road
 Livermore, CA 94551
 P.O. Box 102400 Livermore

Delivered to:
 Fisher@wma.com

Customer Name: Northstar Earth Remediation Services
 Ticket Date: 11-18-2002
 Payment Type: Credit Account
 Material: Inert
 Billing # 030602
 Service: 020
 Material: Inert

Material: 020-001
 PC: 02-001
 Profile: 11130004 (Class 001) Low VOCs Nonhazardous Earth & Rock
 Generator: 11130004 (Class 001) Low VOCs Nonhazardous Earth & Rock Corp of Engineers

State: CA
 Title: Deputy Weighmaster
 Name: Scott J. Schaeffler
 License No: 147652
 Issue Date: 11/18/2002
 Expiration Date: 11/18/2003

Comments:

Product	QTY	UNIT	Tax	Amount	Origin
1. 020 Inert 020-001- 100	13.54	Tons			Dynacore
2. 020 Inert 020-001- 100					Bentley
3. 020 Inert 020-001- 100	1	Load			Bentley

DRIVER: D Harmon

2

Weighmaster Certificate

THIS IS TO CERTIFY that the following described commodity was weighed, measured or counted by a weighmaster, whose signature is on this certificate, who is a recognized authority of accuracy, as prescribed by Chapter 7 (commencing with section 12700) of Division 5 of the California Business and Professions Code, administered by the Division of Measurement Standards of the California Department of Food and Agriculture.

50760

701417

NON-HAZARDOUS WASTE MANIFEST		1. Generator ID Number	2. Page 1 of 3	3. Emergency Response Phone 877-255-8276	4. Waste Tracking Number 9022100
Generator's Name and Mailing Address U.S. Army Corps of Engineers, DOD (DEPP/FUDS) 13525 J Street Sacramento, CA 95814 U.S.A.		Generator's Site Address (if different than mailing address) 649 Jackson Street Benicia, CA 94510 U.S.A.			
Generator's Phone: 916-667-3377		6. Transporter 1 Company Name Pender Environmental Services		U.S. EPA ID Number CA900013077	
7. Transporter 2 Company Name		U.S. EPA ID Number			
8. Designated Facility Name and Site Address Waste Management-Autumn 10840 Autumn Park Road Livermore, CA 94551 USA		U.S. EPA ID Number			
Facility's Phone: 925-449-5349					
9. Waste Shipping Name and Description		10. Containers		11. Total Quantity	12. Unit Wt./Vol.
		No.	Type		
1. SOIL (DIRT)		001	CM	15	Y
2.					
3.					
4.					
13. Special Handling Instructions and Additional Information WMA Prod# 11176001. Ponder Job # 9062 Site# R1613ML					
14. GENERATOR'S CERTIFICATION: I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.					
Generator/Operator's Primary/Typed Name: Pender Waste Filters		Signature <i>[Signature]</i>		Month	Day
15. International Shipments <input type="checkbox"/> Import to U.S. <input type="checkbox"/> Export from U.S.		Port of entry/exit: Date leaving U.S.:		12	9
16. Transporter Acknowledgment of Receipt of Materials		Signature <i>[Signature]</i>		Month	Day
Transporter 1 Printed/Typed Name SOIL 5/11/14		Signature <i>[Signature]</i>		12	17
Transporter 2 Printed/Typed Name		Signature		Month	Day
17. Discrepancy					
17a. Discrepancy Indication Space <input type="checkbox"/> Quantity <input type="checkbox"/> Type <input type="checkbox"/> Residue <input type="checkbox"/> Partial Rejection <input type="checkbox"/> Full Rejection					
17b. Alternate Facility (or Generator) Manifest Reference Number: U.S. EPA ID Number					
17c. Signature of Alternate Facility (or Generator) Month Day Year					
18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a					
Printed/Typed Name		Signature		Month	Day
				12	17

GENERATOR
INTL
TRANSPORTER
DESIGNATED FACILITY



WEIGHMASTER - Altamont Landfill 1-813
 10410 Altamont Pass Road
 Livermore, CA, 94551
 Ph: (925) 453-7300

Original
 Ticket# 070240

Customer Name No. Vehicle/Brand/Model North Center Cell Altamont General
 Ticket Date 10/1/2009 Vehicle ID 1401117
 Payment Type Credit Account Container
 Manual Tickets
 Billing \$ 0366192 License#

Manifest 0080-010
 PG 09-000
 Profile 11176001 Glass/Plastic/Dry Low VOC Northstate Earth & Hazardous Waste Co. of CA
 Generator 104-US Hwy Corpn Env. US Hwy Corps of Engineers - Benicia

Time	Scale	Deputy Weighmaster	Inbound	Gross	Net
In 10/1/2009 08:18:05	Scale 3	P. Ratto		10760 lb	10760 lb
Out 10/1/2009 07:55:35	Scale 100-1850			10000 lb	1150

Comments

Product	LOS	Qty	UOM	Rate	Tax	Amount	Weight
1 DR Cover RCU-Tons	100	11.50	Tons				Benicia
2 FUEL-Fuel Surcharg	100		%				Benicia
3 Ev18 Env Fee 18 Lg	100	1	Load				Benicia

DRIVER: 

Weighmaster Certificate

THIS IS TO CERTIFY that the following described commodity was weighed, measured or counted by a weighmaster, whose signature is on this certificate, who is a recognized authority of accuracy, as prescribed by Chapter 7 (commencing with section 12700) of Division 5 of the California Business and Professions Code, administered by the Division of Measurement Standards of the California Department of Food and Agriculture.