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Final Site Inspection Report

Industrial Waste Treatment Plant
Former Laredo AFB, Texas

Prepared for

U.S. Army Corps of Engineers,
Tulsa District

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Executive Summary

This Site Inspection (SI) Report presents the findings of field activities associated with a SI of the Industrial Waste Treatment Plant (IWTP) site at the former Laredo Air Force Base (LAFB). The purpose of the SI was to assess the presence or absence of impacted soils or groundwater at the site due to activities conducted during the time that the Department of Defense (DoD) controlled LAFB, and to recommend further actions (if any) for the site. The field activities were performed during May 1999 and included drilling several soil borings, installing three groundwater monitor wells, and collecting and analyzing soil and groundwater samples. The investigation was conducted by CH2M HILL, under contract to the US Army Corps of Engineers (USACE).

The former LAFB was used as a military base from 1942 to 1974. In 1974, the former base lands were either deeded or sold to other federal, state, and county agencies, private firms, and the City of Laredo. The former LAFB airfield is now operated as the Laredo International Airport (LIA).

The IWTP site is located near the southwestern corner of the LIA. The IWTP was reportedly constructed by the Air Force in 1969 and consisted of a control building, a clarifier, a sludge lagoon, and associated subsurface piping. The IWTP treated flow from the underground storm sewer that served the southern portion of the flight line area. Discharge from the IWTP was directed into the Base sanitary sewer system, which in turn discharged into the City of Laredo sanitary sewer system. No information regarding the amounts of waste processed by the system or regarding the disposal of sludges from the system is available. The IWTP was reportedly taken out of service in 1974 when LAFB was closed.

At the IWTP site, 21 soil samples and 3 groundwater samples were collected and analyzed for potential contamination. The samples were analyzed for volatile organic compounds (VOC), semivolatile organic compounds (SVOC), pesticides, herbicides, polychlorinated biphenyls (PCB), total petroleum hydrocarbons (TPH), and total Resource Conservation and Recovery Act of 1976 (RCRA) metals. The contaminants reported for the soil and groundwater samples were then compared to Texas Natural Resource Conservation

Commission (TNRCC) Risk Reduction Standard No. 2 (RRS2) media specific concentrations (MSC). The groundwater parameters pH and total dissolved (TDS) solids were compared to state and federal Drinking Water Standards since RRS2 MSCs do not exist for these parameters. For the purposes of this investigation, those contaminants exceeding one or more of the RRS2 MSCs were considered to be contaminants of potential concern (COPC).

Based upon the results of the SI, the following conclusions are made:

- The COPCs identified for the IWTP site are:

VOCs:	Benzene	Groundwater
	1,1-DCE	Groundwater
	1,2-DCE	Groundwater
	TCE	Groundwater
SVOCs:	1,2-dichlorobenzene	Groundwater
	Carbazole	Soil
	Benzo(a)anthracene	Soil
	Benzo(b)fluoranthene	Soil
	Benzo(a)pyrene	Soil
	Indeno(1,2,3-cd)pyrene	Soil
Pesticides:	Dieldrin	Soil
	4',4'-DDT	Soil
PCBs:	Aroclor-1260	Soil
TPH:	TPH	Soil and groundwater
Metals:	Arsenic	Soil
	Barium	Soil
	Cadmium	Soil
	Chromium	Soil
	Lead	Soil

This list of COPCs may be revised by the results of future site investigations. Inorganic (metals) constituents with detected concentrations that are below naturally occurring background concentrations (Risk Reduction Standard No. 1) would be removed from this list of COPCs.

- Except for one low-level detection of tetrachloroethene, the low levels of VOCs in the site soils are likely due to laboratory contamination (although this can not be verified by the data validation).

- Except for one surficial soil sample that contained benzo(a)pyrene at a concentration above the applicable MSC, all of the SVOC concentrations in site soils exceeding MSCs are from subsurface samples collected from the depth of the groundwater interface in monitor well boring IWTPMW001 and soil boring IWTPSB004. These two locations, as well as location IWTPMW002, exhibited hydrocarbon staining and odors at the depth of the groundwater interface. However, no SVOC compounds were detected for the soil sample from IWTPMW002. The presence of the SVOCs (and hydrocarbon staining and odors) primarily in samples collected from the groundwater capillary fringe zone is consistent with migration of the contaminants from another source.

- The three locations where hydrocarbon staining and odors were observed are the most upgradient locations sampled at the site. Locations IWTPMW001 and IWTPSB004 are adjacent to or downgradient from system subsurface piping (presumed to still exist), indicating that the piping may be the source of the SVOC contamination in the subsurface soils. However, IWTPMW002 is not downgradient of any of the IWTP facilities, suggesting that the SVOC contamination detected in these subsurface soils may be due to off-site activities upgradient of the IWTP.

- The highest concentrations of TPH in IWTP site soils generally correspond to the presence of observable indications of contamination (staining and odors) that were noted during drilling. The presence of the TPH (and hydrocarbon staining and odors) primarily in samples collected from the groundwater capillary fringe zone is consistent with migration of the contaminants from another source. The detected TPH in subsurface soil and groundwater samples from boring IWTPMW003 does not correspond to observed indications of contamination, but it does correspond with VOC contamination in the groundwater. No staining or other indications of contamination were observed to correspond with the detected TPH reported for the shallow subsurface sample from boring IWTPSB002 or the surface soil sample from IWTPMW003.

- The pesticide compounds detected in IWTP site soils were found in surficial and shallow (4- to 5-feet depth) subsurface soils. Those samples exceeding TNRCC RRS2 MSCs are surficial samples. This indicates that the pesticide contamination is more likely due to normal use of these compounds, rather than to the treatment of waste materials through the IWTP.

- One PCB compound, Arochlor 1260, was identified in two surficial soil samples, with only the surficial sample from location IWTPMW001 exceeding the applicable TNRCC RRS2 MSC. Because the compound occurs in surface soil samples but not subsurface samples, the presence of the compound is more likely due to inadvertent spills or leaks of the compound rather than to the treatment of waste materials through the IWTP.

- No herbicide compounds were detected in site soils.

- Detectable concentrations of various RCRA metals in soils were reported for samples collected throughout the site. Generally, the detected concentrations for each metal were fairly consistent across the site, within one or two orders of magnitude. Arsenic, barium, cadmium, chromium, and lead were reported at concentrations exceeding applicable TNRCC RRS2 GWP-Ind MSCs for at least one sample. While barium, cadmium, chromium, and lead were each detected in at least one groundwater sample, none of the groundwater samples exhibited concentrations exceeding the applicable regulatory standards, indicating that significant leaching of the metals into the groundwater is not occurring. It is noted that all of the "non-detect" analytical results for selenium in soil samples (20 of the 21 samples) and for arsenic and selenium in all three groundwater samples were rejected during data validation due to low analytical spike recoveries. The low spike recoveries may indicate that the "non-detect" results are not accurate. However, selenium would not appear to be a concern in site soils at the IWTP site based upon the following points: a) the most common uses of selenium were as a glass additive, as a pigment, and as a component in electronics, during the period that the IWTP was operational and that the waste stream treated by the IWTP was primarily stormwater runoff from the southern flight line area; b) selenium has not been identified as a contaminant of concern at four other sites investigated at the former LAFB; and c) the QA duplicate soil and groundwater samples analyzed for selenium by a different

analytical laboratory were "non-detect". Arsenic is not considered a concern for IWTP site groundwater because only one of the 21 soil samples contained arsenic at a concentration slightly exceeding the TNRCC RRS2 GWP-Ind MSC. Further, a deeper soil sample collected at the same location contained arsenic at a concentration below the GWP-Ind MSC. This indicates that aresenic would not be likely to leach into groundwater at significant concentrations. It is noted that the QA duplicate groundwater sample (analyzed by a different laboratory) was reported as "non-detect" for arsenic.

- The soil samples from boring IWTPSB001 were reported to contain few contaminants. As this location was intended to be located within the former IWTP sludge lagoon, a significant amount of contamination was expected. Because no indication of the presence of the sludge lagoon is visible at the site, the former location of the lagoon was estimated from maps and aerial photographs. Also, overhead electric utilities along the southern edge of the IWTP site caused the boring to be drilled further north than planned. It is therefore possible that the boring missed the lagoon area.

- The VOCs that were detected in groundwater were reported only for the groundwater sample collected from monitor well IWTPMW003. This well is located in the southwestern area of the site, adjacent to the west of the former location of the sludge lagoon associated with the IWTP. Given the south-southeasterly groundwater flow gradient determined during this investigation, the well is located upgradient from all of the IWTP facilities. Therefore, the VOC contamination reported for the IWTPMW003 groundwater sample may be due to some unknown source located north-northwest from the IWTP site, rather than from former IWTP site operations. Possible sources located to the north-northwest include the warehouses along Jarvis Street or the former motor pool area.

- None of the VOC compounds detected in IWTP site groundwater were reported for IWTP site soil samples.

- The SVOC compounds detected in site groundwater were reported for samples from IWTPMW003 and IWTPMW001. The compounds detected at IWTPMW001 are acenaphthene, dibenzofuran, and fluoranthene, which appear to reflect the hydrocarbon

subsurface soil sample from boring IWTPMW001. The compounds detected at IWTPMW003 are 1,2-dichlorobenzene, 1,3-dichlorobenzene, 1,4-dichlorobenzene, and 1,2,4-trichlorobenzene. These are lighter SVOCs and appear to complement the VOCs detected in the groundwater sample from IWTPMW003. None of the SVOC compounds detected in the groundwater sample from IWTPMW003 were detected in the soil samples from that boring.

- TPH was detected in groundwater only at well IWTPMW003.
- At the airport fuel farm area, located adjacent to the northeast of the IWTP site (on the opposite side of Arkansas Street Extension), a west-southwesterly groundwater flow gradient was reported, which generally reflects surface topography. At the IWTP site, the groundwater flow gradient does not reflect surface topography. Surface topography generally slopes toward the west, while the groundwater flow gradient is directed toward the south-southeast.
- A dry cleaning shop was reportedly operating for a number of years in the strip shopping center located on the commercial property located adjacent to the south of the IWTP site. It is noted that most of the VOC constituents detected in the groundwater sample from monitor well IWTPMW003 are utilized as dry cleaning agents or are degradation products of PCE, which is commonly utilized as a dry cleaning solvent. Other petroleum-based solvents are also utilized in dry cleaning. While this dry cleaning shop was located downgradient from the IWTP site, the location and orientation of the sanitary sewer and storm sewer systems associated with the shopping center are unknown. If the sewers are located along the north side of the commercial property, a leak from one of these systems could be a source of the VOC contamination detected in well IWTPMW003.
- The underground storage tank (UST) release investigation at the fuel farm indicates a groundwater flow gradient to the west-southwest. The IWTP site would therefore be downgradient of the fuel farm. The south-southeasterly groundwater flow gradient at the IWTP site may be seasonal or caused by artificial groundwater recharge (from leaking underground piping, for example). Therefore, the fuel farm may be a potential source of the TPH and SVOC contamination at the IWTP site.

- Given the south-southeasterly groundwater flow gradient, the former motor pool area that was located about 100 yards northwest of the IWTP may be a source of the contamination at the IWTP.

- The potential receptors for the contaminants at the IWTP site are those likely to come into direct contact with site soils or those working in excavations or enclosed spaces, particularly excavations that would reach the depth of groundwater. Those potential receptors would include persons such as construction or utility personnel.

Based upon the above conclusions, additional investigation is recommended. The recommended additional work includes:

- Additional investigation into the past use of the IWTP site should be performed. In particular, information should be obtained regarding whether any of the subsurface piping associated with the IWTP was removed from the ground. If the piping is found to remain in the ground, then its integrity should be evaluated. The materials stored in the storage areas that were formerly on the site should also be researched.

- An investigation into the past and current use of properties adjacent to the IWTP site should be performed in order to determine whether other potential sources exist for the contamination at the IWTP site. In particular, potential sources for the groundwater contamination at well IWTPMW003 and the soil contamination at wells IWTPMW001 and IWTPMW002 and soil boring IWTPSB004 should be researched. The location and orientation of the sanitary and storm sewers on the commercial property adjacent to the south of the IWTP site should be identified.

- A study to identify other potential off-site sources of the site contamination should be undertaken. Possible off-site sources include the fuel farm area, the former motor pool area, materials stored in the warehouses along Jarvis Street, and the former dry cleaner on the commercial property south of the IWTP site.

- Periodic groundwater level measurements should be performed over at least one year's time in order to observe seasonal fluctuations in the groundwater level and flow direction.

- Slug tests should be performed on all three site monitor wells to better estimate the hydraulic conductivity of the subsurface soils.

- Confirmation sampling of the surficial and shallow subsurface soils in the vicinity of IWTPMW001, IWTPSB002, and IWTPSB004 should be performed. These samples will be utilized to verify the reported concentrations of SVOCs, pesticides, and PCBs that exceed applicable regulatory standards at these locations. The new samples would be collected from the same intervals as the SI soil samples and in the same locations as borings IWTPMW001, IWTPSB002, and IWTPSB004. The confirmation samples should be analyzed for Synthetic Precipitation Leachate Procedure (SPLP) and total SVOCs, pesticides, and/or PCBs as appropriate, based upon the results of the SI investigation. The SPLP results will indicate whether the detected concentrations of contaminants are likely to migrate through the soils into groundwater and to determine compliance with groundwater protection. It is suggested that since the SVOC compounds of most concern at the site are polynuclear aromatic hydrocarbons (PAH) and since the detection limits achieved for some of the PAH compounds by method 8270C were above the TNRCC RRS2 GWP-Ind MSCs, the SVOCs should be analyzed by EPA Method 8310 to achieve lower detection limits.

- Additional subsurface investigation is recommended to further delineate the soil and groundwater contamination and to define the source area(s) of the contamination. It is recommended that direct push methods be used to collect additional soil and groundwater samples at more or less regular intervals across the site, as well as on the commercial property south of the IWTP site. Based upon the results of the direct push samples, additional monitor wells should be installed. It is suggested that one shallow monitor well be placed in the area shown to have the highest contamination, and other additional shallow wells should be placed at the eastern, western, and southern extent of the contamination. A deep monitor well should be installed near the apparent source area, as determined by the direct push sampling, in order to assess the vertical extent of the contamination.

- Additional sampling of present and future groundwater monitor wells should include analysis for natural attenuation parameters.

- A background metals study should be performed to determine local background metals concentrations in soils in the former LAFB vicinity. These background values can then be compared to concentrations reported for soil samples collected at the IWTP site, as well as other investigation sites near the LIA.

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Acronyms

amsl	above mean sea level
bgs	below ground surface
CoC	chain-of-custody
COPC	Contaminants of Potential Concern
DoD	Department of Defense
DRO	Diesel Range Organics
EPA	Environmental Protection Agency
GRO	Gasoline Range Organics
GW-Ind	TNRCC risk reduction standards for contaminants in groundwater at industrial sites
GWP-Ind	TNRCC risk reduction standards for contaminants in soils at industrial sites, protective of groundwater
IDW	Investigation Derived Waste
IWTP	Industrial Waste Treatment Plant
LAFB	Laredo Air Force Base
LIA	Laredo International Airport
MCL	Maximum Contaminant Level
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
MSC	Media Specific Concentration
PCB	Polychlorinated Biphenyl
PID	Photoionization Detector
PPE	Personal Protective Equipment
PRP	Potentially Responsible Party
PVC	Polyvinyl Chloride
QA	Quality Assurance
QC	Quality Control
RCRA	Resource Conservation and Recovery Act of 1976

RRS	Risk Reduction Standard
SAI-Ind	TNRCC risk reduction standards for contaminants in soils at industrial sites, protective of soil/air ingestion
SI	Site Inspection
SPLP	Synthetic Precipitation Leachate Procedure
SU	standard units
SVOC	Semivolatile Organic Compound
TAC	Texas Administrative Code
TDS	Total Dissolved Solids
TNRCC	Texas Natural Resource Conservation Commission
TPH	Total Petroleum Hydrocarbons
USACE	U.S. Army Corps of Engineers
USCS	Unified Soil Classification System
UST	underground storage tank
VOC	volatile organic compound

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Section 1
Introduction

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Introduction

1. Introduction

This Site Inspection (SI) Report presents the findings of field activities associated with a SI of the Industrial Waste Treatment Plant (IWTP) site at the former Laredo Air Force Base (LAFB). The purpose of the SI was to assess the presence or absence of impacted soils at the site due to activities conducted during the time that the Department of Defense (DoD) controlled LAFB, and to recommend further actions (if any) for the site. The field activities were performed during May 1999 and included drilling seven soil borings, installing three groundwater monitor wells, and collecting and analyzing soil and groundwater samples. The investigation was conducted by CH2M HILL under contract to the US Army Corps of Engineers (USACE).

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Section 2
Site Background

Section 2
Site Background

2. Site Background

2.1 Site Location and Description

The site being investigated is located in Laredo, Texas, along the Texas/Mexico border and approximately 150 miles south-southwest of the City of San Antonio. The IWTP site is located on property belonging to the Laredo International Airport (LIA), near the southwestern corner of the airport (Figure 2-1).

The parcel upon which the IWTP is situated is bordered on the south by commercial property (a grocery store, a former dry cleaner, and a vacant retail/automobile service building) on the east by a vacant property (formerly utilized as part of the LAFB and LIA fuel farm), on the north by the newly constructed Arkansas Street Extension, and along the west by a drainage ditch (flowing toward the southwest), with Jarvis Street beyond and parallel to the drainage ditch. The site slopes slightly toward the west, toward the drainage ditch. Development in the vicinity of the IWTP site is generally commercial and industrial. Warehouses are located along the west side of Jarvis Street.

Present at the IWTP site are: one small concrete block building, a concrete clarifier tank, a sanitary sewer manhole structure, and a former underground storage tank (UST) (Figure 2–2). A length of steel pipe about 1-1/2 or 2 inches in diameter is exposed where it crosses the drainage ditch northwest of the concrete block building. The site is grass-covered with a few small trees along the site boundaries and a moderate-sized tree just east of the clarifier.

The concrete block building is approximately 18-foot-square, with a narrow platform and a concrete drive on the northeast side. According to the Storm Drainage Plan Map (USACE, 1969) the building was originally the control house for the IWTP. The building is currently empty. No indications of piping or electrical controls are present inside the building.

The concrete clarifier is round, approximately 20 feet in diameter, and approximately 8 feet in depth. The clarifier is empty, with some soil and trash in the bottom. The clarifier is situated within a raised mound of soil, approximately 5 feet high. The sanitary sewer manhole is located adjacent to the northwest of the clarifier tank.

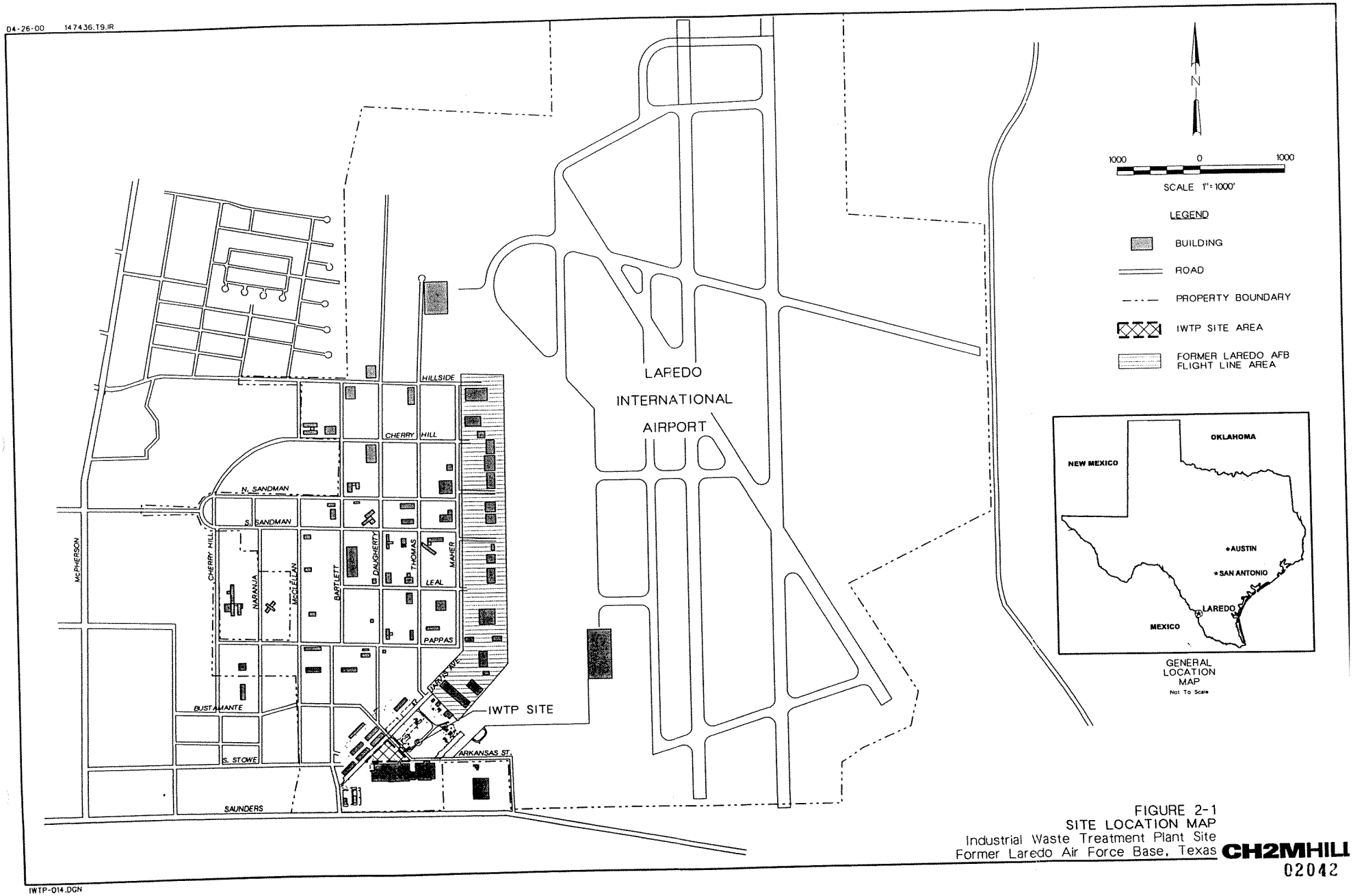

FIGURE 2-1
SITE LOCATION MAP
Industrial Waste Treatment Plant Site
Former Laredo Air Force Base, Texas

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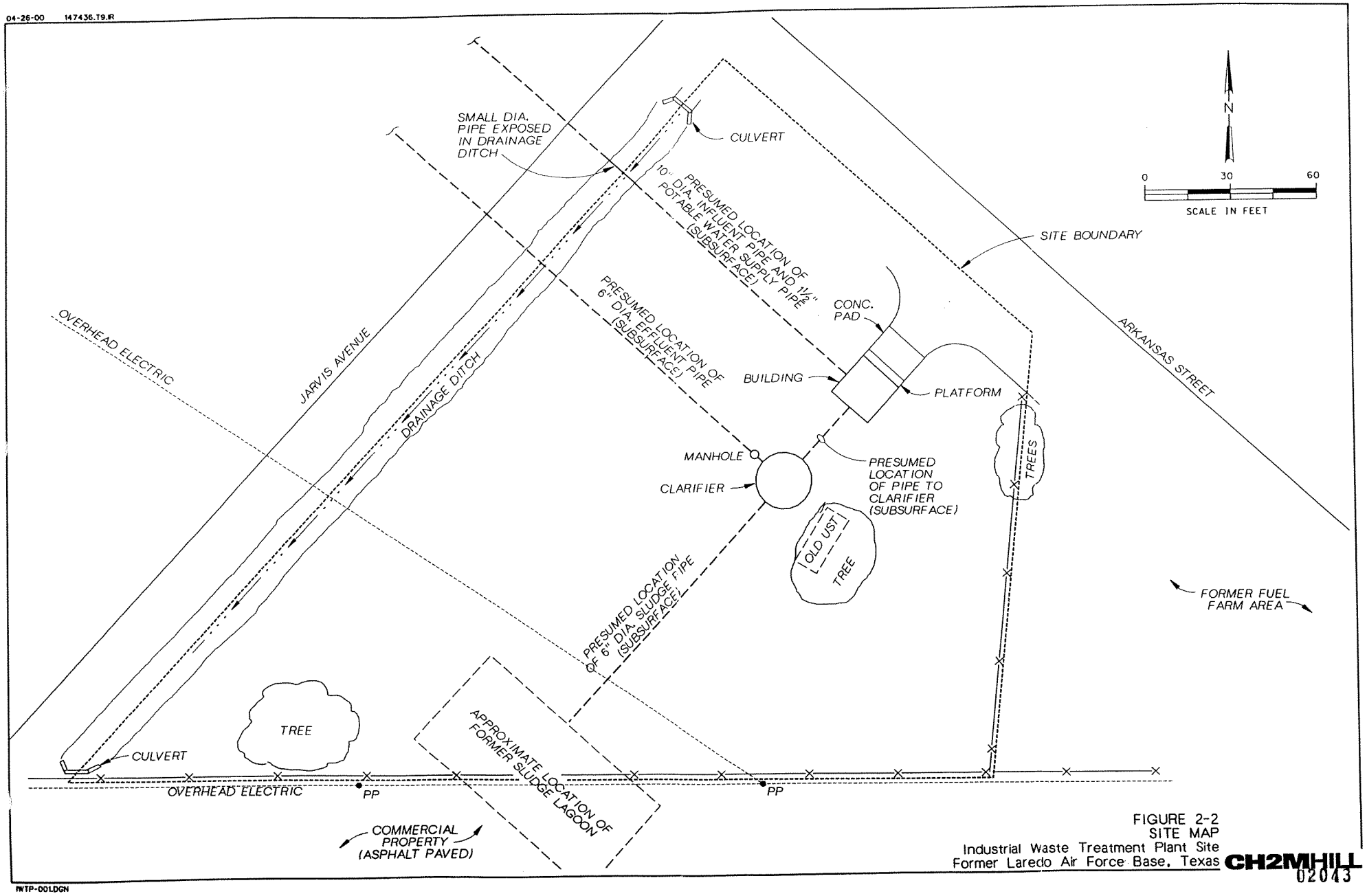

FIGURE 2-2
SITE MAP
Industrial Waste Treatment Plant Site
Former Laredo Air Force Base, Texas

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The UST is resting on the ground surface to the east of the clarifier. The steel tank is approximately 6 or 7 feet in diameter and about 15 feet long. At the time of CH2M HILL's initial site reconnaissance in August 1998, no indications of holes in the tank were observed. According to Mr. Jose Luis Flores, the Airport Manager, the tank had no connection to the operation of the IWTP, and had apparently been dumped there by unknown persons a number of years ago.

According to various historical maps of the Laredo AFB provided by the USACE, Tulsa District (USACE, 1969; USACE, 1973-1; USACE, 1973-2), a sludge lagoon measuring as much as approximately 40 feet by 80 feet was previously onsite, about 120 feet southwest of the clarifier. No evidence of the lagoon's former location is visible at the site. Based upon the maps and historical aerial photography (TDOT, 1970), the lagoon appears to have been at least partially located on what is now the commercial property adjacent to the south of the IWTP site.

The historical maps also indicate subsurface piping associated with the IWTP. Piping indicated by the maps includes a 10-inch-diameter influent line connecting the underground storm sewer northwest of the drainage ditch to the control building, pipe from the control building to the clarifier, a 6-inch-diameter pipe connecting the clarifier to the manhole then to the sanitary sewer northwest of the drainage ditch, a 6-inch-diameter pipe connecting the clarifier to the sludge lagoon, and a 1-1/2-inch-diameter potable water line connecting the control building to the 12-inch water main northwest of the drainage ditch. No information regarding the removal of these pipes is available, and the IWTP structures remain onsite. Therefore, it is presumed that at least some of the piping formerly associated with the treatment plant remains onsite. The small diameter steel pipe visible crossing the drainage ditch at the site is presumed to be the former potable water line.

2.2 Site History

2.2.1 LAFB

On May 7, 1942, the U.S. Government acquired 2,085.43 acres for the construction of Laredo Army Air Corps Base (now known as the Laredo International Airport). The Government constructed runways and numerous facilities from 1942 to 1974. The Base was initially

2.3 Summary of Previous Investigations

No previous investigations related to potential environmental impacts due to DoD operations of the IWTP have been performed.

2.4 Site Characteristics

2.4.1 Physiography

The area of investigation is located within Webb County, Texas. Webb County is situated within the Arid Plains physiographic province. The countryside around Laredo is characterized by small hills, covered with low-growing brushy vegetation and numerous arroyos and dry creek beds gently sloping toward the Rio Grande River, which lies approximately 2.5 miles west of the former LAFB (Raba-Kistner, 1996). The surface elevation of Webb County ranges from 372 feet above mean sea level (amsl) at the Rio Grande River up to 945 feet amsl. The elevation in the vicinity of the former LAFB is approximately 460 to 490 feet amsl.

2.4.2 Soils

The soils within the vicinity of the base are characterized by the US Department of Agriculture Natural Resource Conservation Service as belonging to the Catarina-Montell-Jimenez soil association, which are typically cracking, crumbly clay soils overlying stiff caliche. The soils at the IWTP site have been further classified as Copita fine sandy loam, zero to 3 percent slopes (USDA).

The Copita fine sandy loam is a moderately deep, nearly level to gently sloping soil, found on summits and side slopes of low hills and on broad, convex plains. The soil typically consists of a surface layer of brown fine sandy loam about 9 inches thick, below which is a subsoil of yellowish brown sandy clay loam and light yellowish brown sandy clay loam that extends to a depth of about 37 inches. Underlying the soil is weakly to strongly cemented, pale yellow sandstone. The soil is calcareous and moderately alkaline throughout. The soil is well drained, with a medium surface runoff. Permeability of the Copita series fine sandy loam is considered moderate with a range of 0.6 inches per hour (in./hr) to 2.0 in./hr (USDA).

groundwater flow gradient generally reflecting surface topography (CH2M HILL, 1999; Raba-Kistner, 1996). The depth to groundwater and the groundwater flow gradient at the IWTP site are discussed further in Section 4.4.

Section 3
Field Investigation Activities

Section 3
Field Investigation Activities

3. Field Investigation Activities

The field activities associated with this SI were conducted on May 17 through May 24, 1999. The field activities included:

- The drilling of soil borings and the collection of surface and subsurface soil samples;
- The installation and development of groundwater monitor wells, and;
- The sampling of the newly installed monitor wells.

The procedures utilized for the performance of each of these activities are discussed below.

3.1 Soil Boring Drilling and Sampling

A total of seven soil borings (soil borings IWTPSB001 through IWTPSB004, and monitor well borings IWTPMW001 through IWTPMW003) were drilled at the IWTP site (Figure 3-1). The boring locations were chosen to assess the presence of soil contamination at locations most likely to be impacted due to past site activities and to allow the placement of groundwater monitor wells for assessment of the groundwater at the site. Boring locations were chosen based upon an assumed southwesterly groundwater flow gradient (Raba-Kistner, 1996, indicated a southwesterly flow gradient on a nearby property). Drilling services were provided by Jones Environmental Drilling, Incorporated (JEDI) of Raymondville, Texas.

The soil borings at the IWTP site were drilled using a CME Model 75 auger-drilling rig. For the soil borings that were to be completed as monitor wells (IWTPMW001, IWTPMW002, and IWTPMW003), 10-inch-outer-diameter hollow-stem augers were utilized. For the other soil borings (IWTPSB001 through IWTPSB004), 6-inch-outer-diameter hollow-stem augers were used. Soil cores were recovered continuously during drilling, utilizing a 2-foot-long, 3-inch-diameter split spoon. The drilling procedure consisted of pushing the split spoon ahead of the augers through the desired sample interval, followed by removal of the split spoon from the boring, and advancement of the augers to the bottom of the sampled interval. The procedure was repeated until the total depth of the boring was reached. A

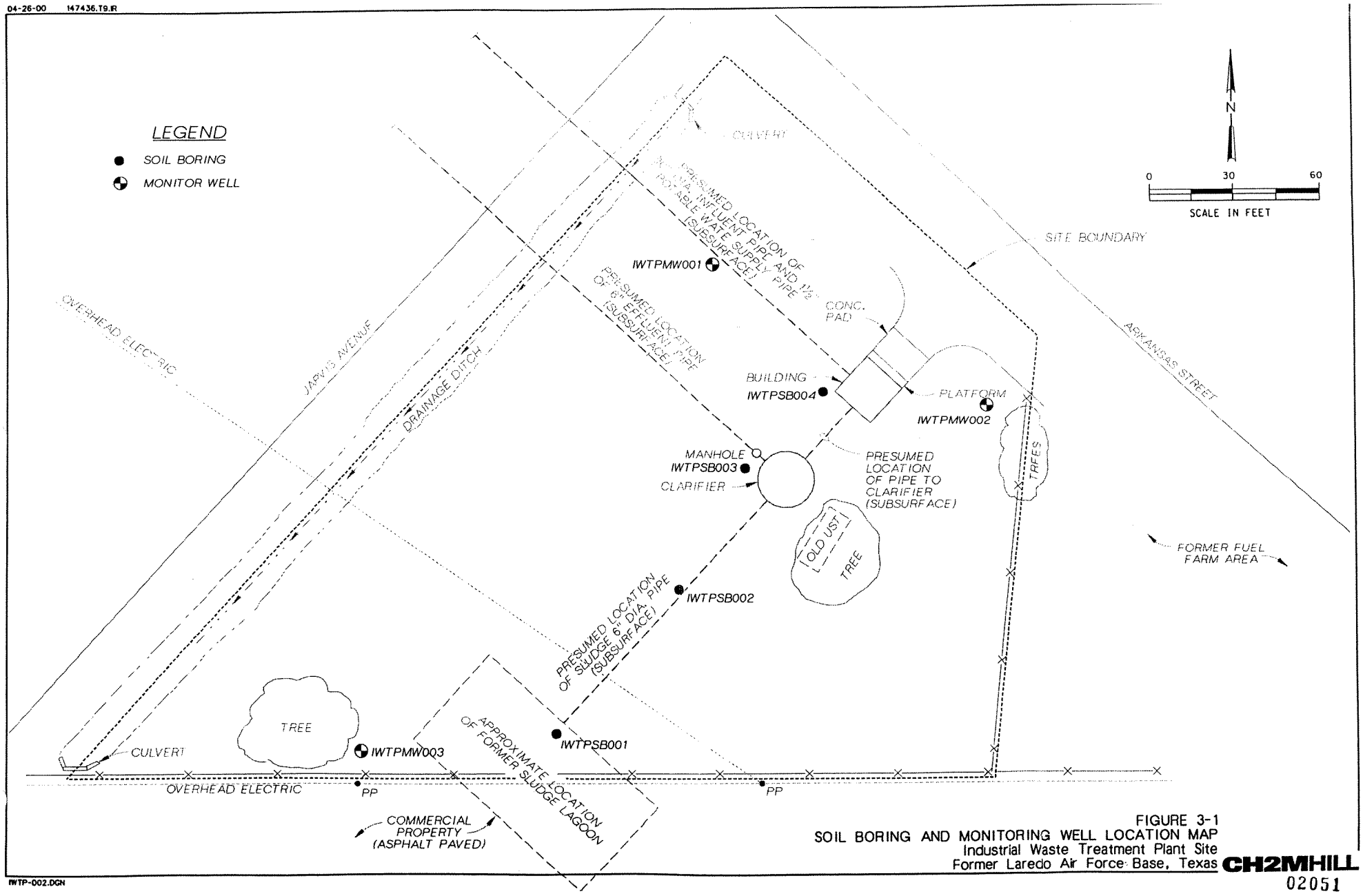

FIGURE 3-1
SOIL BORING AND MONITORING WELL LOCATION MAP
Industrial Waste Treatment Plant Site
Former Laredo Air Force Base, Texas

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IWTP-002.DGN

center bit was utilized to prevent soil cuttings from entering the center of the hollow-stem augers during drilling. The center bit was removed for sampling.

The soil cores recovered during drilling were logged by CH2M HILL personnel according to the Unified Soil Classification System (USCS). The soil type, color, moisture content, staining (if any), odors (if any) and other factors were described. In addition, representative samples of the soil cores were collected at regular intervals and placed into sealed plastic bags for headspace screening with a photoionization detector (PID). The headspace samples were placed into direct sunlight for a minimum of 15 minutes prior to screening with the PID. The results of the headspace screening were recorded on the soil boring log. Copies of the soil boring logs are presented in Appendix A.

Three soil samples were collected for laboratory analysis from each boring. One sample was collected from the zero- to 2-foot bgs interval in order to assess potential surficial soil impacts. The second sample was collected generally from the 4- to 6-foot bgs interval. The third sample was collected from an interval just above or at the groundwater surface (based upon field observations of the conditions of the soil cores). The soil samples were collected over 2-foot intervals due to the volume of soil required for sample analysis and the limited volume recoverable by the split spoon.

Upon recovery of the desired sample interval, small portions of the recovered sample core were collected from throughout the sample interval and placed into small, laboratory-supplied sample jars for analysis of volatile organic compounds (VOC) by Environmental Protection Agency (EPA) Method 8260B. The remainder of the recovered soil core was placed into a stainless-steel bowl and composited using a stainless-steel spoon prior to placement in the remainder of the sample containers. The analyses performed on the IWTP soil samples were conducted according to EPA SW846, TNRCC, and ASTM methods as follows:

- VOCs by EPA Method 8260B
- Semivolatile organic compounds (SVOC) by EPA Method 8270C
- Pesticides by EPA Method 8081A
- Herbicides by EPA Method 8151
- Polychlorinated biphenyls (PCB) by EPA Method 8082

- Total Resource Conservation and Recovery Act of 1976 (RCRA) metals (arsenic by EPA Method 7060, lead by EPA Method 7421, mercury by EPA Method 7471A, selenium by EPA Method 7740, and barium, cadmium, chromium and silver by EPA Method 6010B)
- Total petroleum hydrocarbons (TPH) (both gasoline range organics [GRO] and diesel range organics [DRO]) by EPA Method 8015 Modified
- TPH by TNRCC Method 1005
- pH by EPA Method 9045 (three samples only), and
- Percent moisture by ASTM 2216 (three samples only)

Upon completion of each sample collection, the sample containers were properly labeled and immediately placed into an ice-cooled chest, pending shipment to the analytical laboratory. The soil samples were shipped under chain-of-custody (CoC) documentation via an overnight courier to Southwest Laboratories of Oklahoma, in Broken Arrow, Oklahoma, for analysis.

Upon completion of the soil boring and sampling activities, those borings *not* completed as groundwater monitor wells (borings IWTPSB001 through IWTPSB004) were abandoned by backfilling the borings with bentonite chips. Approximately 5 gallons of potable water were added to each of the boreholes during abandonment in order to hydrate the bentonite chips. The procedures for the completion of soil borings as groundwater monitor wells are discussed in Section 3.2.

3.2 Monitor Well Installation

Three of the soil borings drilled at the IWTP site were completed as groundwater monitor wells IWTPMW001, IWTPMW002, and IWTPMW003. These soil borings were drilled utilizing 10-inch-outer-diameter hollow-stem augers to a total depth of approximately 15 feet bgs (approximately 7 to 8 feet below the apparent groundwater surface, as observed during drilling). Monitor well boring IWTPMW003 was sampled to a total depth of approximately 16 feet bgs, but drilled only to a total depth of approximately 15 feet. The small diameter borehole created by sampling from 15 to 16 feet bgs was filled with slough material as the boring was drilled-out to 15 feet depth.

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All three groundwater monitor wells were constructed with 4-inch diameter, Schedule 40, polyvinyl chloride (PVC), factory-threaded and factory-slotted casing and screen. Ten feet of screen (0.010-inch slot size) were utilized in each well, placed so that the screened interval extended from approximately 5 feet bgs to approximately 15 feet bgs and so that the groundwater surface was within the screened interval. A threaded PVC cap approximately 3 inches in length was placed at the bottom of each screen. Sufficient blank casing was utilized in each well to raise the top of each well approximately 2.5 feet above the ground surface.

Graded silica sand (#20-#40 sieve size) was placed in the well bore annulus of each well as a filter pack. The sand filter pack extended from the total depth of the well up to approximately 2 feet above the screened interval (approximately 3 feet bgs). Above the sand filter pack, bentonite chips were placed within the annulus to create an approximately 2-foot-thick seal (to approximately one-foot bgs). Approximately 3 gallons of potable water, obtained from a City of Laredo public hydrant, were utilized to hydrate the bentonite in each well. After approximately 24 hours, the remainder of each well bore annulus was filled with concrete and the surface pad was completed.

All three wells were constructed with aboveground completions. A concrete pad approximately 3-feet-square was constructed around each well as a surface seal. A locking steel outer surface casing approximately 5-inches-square was mounted over the well casing, into the concrete pad, in order to protect the well casing. The steel outer casings extend about 2 feet into the subsurface and about 3 feet above ground. Four bollards, each consisting of 2-inch-diameter steel pipe filled with concrete, were also installed around each well for additional protection. As the 3-feet square concrete pad does not meet the requirements of the Water Well Driller rules of the Texas Department of Licensing and Regulation (Title 16, Texas Administrative Code, Part 4, Chapter 76.1000), the installation of new concrete pads measuring a minimum of 2 feet from the well surface casings in all directions has been scheduled for September, 2000.

Monitor well construction details are summarized in Table 3-1. Monitor well construction diagrams are presented in Appendix B.

TABLE 3-1
Monitor Well Construction Details
Site Investigation, IWTP Site, Former Laredo Air Force Base, Laredo, Texas

Well ID:	IWTPMW001	IWTPMW002	IWTPMW003
Elevation, TOC	484.83	486.55	484.17
Elevation, ground surface	481.8	483.5	481.2
Water Level, Below TOC, 5/22/99	9.68	12.14	10.59
Total Depth of Well, Below Ground Surface	15	15	15
Total Depth of Well, Below TOC	17.48	18.31	17.84
Screened Interval, Below Ground Surface	5-15	5-15	5-15
Casing Diameter, inches	4	4	4
Casing Material	Sch. 40 PVC	Sch. 40 PVC	Sch. 40 PVC
Screen Material	Sch. 40 PVC	Sch. 40 PVC	Sch. 40 PVC
Screen Slot Size, inches	0.010	0.010	0.010
Total Depth of Boring	15	15	15
Borehole Diameter	10	10	10
Top of Filter Pack, Below Ground Surface	3	3	3
Filter Pack Material	#20-#40 silica sand	#20-#40 silica sand	#20-#40 silica sand
Top of Bentonite Seal, Below Ground Surface	1	1	1
Top of Grout Seal, Below Ground Surface	NA	NA	NA
Type of Surface Completion	Above ground	Above ground	Above ground

Measurements given in feet unless otherwise noted.
TOC = Top of casing.
PVC = Polyvinyl chloride

3.3 Monitor Well Development

A minimum of 24 hours following monitor well installation (placement of the well materials, exclusive of the concrete surface seal and surface appurtenances), the wells were developed by hand surging and bailing. Development was performed primarily by JEDI personnel, with some assistance by CH2M HILL personnel. Bailing was performed using a decontaminated, reusable, 3-inch-diameter PVC bailer. The bailer was decontaminated and a new nylon cord was utilized for bailing each well. During development, the temperature, pH, specific conductivity, and appearance of the produced water from each well were monitored. Development continued until the temperature, pH and specific conductivity

monitored. Development continued until the temperature, pH and specific conductivity stabilized to within 10 percent between successive readings (taken approximately every one-half well volume) and the required minimum purge amount had been removed. The required minimum purge amount included five times the saturated volume of the well and well bore, plus five times the amount of water added to the well bore during well construction. The temperature, pH, and conductivity readings obtained during development were recorded on well development forms. Copies of the well development forms are presented in Appendix C. The produced water from the wells was placed into 55-gallon steel drums and stored on LIA property, pending disposal.

For monitor well IWTPMW001, the minimum purge amount for development was calculated as approximately 58 gallons. For efficiency in storage of the purged development water, only 55 gallons of groundwater were produced during development. This decision was supported by the stability of the temperature, pH, and conductivity readings obtained during development and the degree to which the produced water had cleared of suspended sediments.

For monitor well IWTPMW002, the minimum purge amount was calculated as approximately 48 gallons. Approximately 48 gallons of groundwater were produced during development. The temperature, pH, and conductivity reading of the produced water were stable and the water was only slightly turbid at the conclusion of development.

For monitor well IWTPMW003, the minimum purge amount was calculated as approximately 55 gallons. Only approximately 48 gallons of groundwater were produced from well IWTPMW003 during development due to the slow recovery of the well. It is noted that the temperature, pH, and conductivity readings for the water produced from IWTPMW003 were stable and the produced water was clear. Also, the 48 gallons of water purged from the well were sufficient to include five times the saturated volume of the well and well bore plus approximately two times the amount of water added during well completion.

3.4 Groundwater Sampling

A minimum of 48 hours following the development of each of the groundwater monitor wells, the wells were purged and sampled. Purging and sampling was performed by hand, utilizing new disposable Teflon bailers and new cotton bailer cord for each well. New disposable nitrile gloves were utilized for purging each well. Monitor well sampling was performed by CH2M HILL personnel.

For each well, the water level within the well and the total depth of the well was measured using a water-level probe capable of measuring to within 0.01 foot. The volume of water within the well casing was then calculated and well purging was begun. During well purging, the temperature, pH, conductivity, and turbidity of the produced groundwater were monitored. Purging continued until a minimum of three well-casing volumes of water (not including the saturated filter-pack volume) had been produced, or until the temperature, pH, and conductivity readings stabilized to within 10 percent between three successive readings. The pH, temperature, and conductivity readings, as well as observations of the turbidity and other characteristics of the produced water, were recorded on monitor well purging and sampling log forms. Copies of the monitor well purging and sampling log forms are presented in Appendix D.

After each well was purged of the required amount of water, the groundwater samples were collected from that well. Sampling was performed utilizing the same bailer that was used for purging the well. New disposable nitrile gloves were put on by the sampling personnel prior to sampling the well. The groundwater samples were collected directly into new laboratory-supplied, laboratory-preserved containers, properly labeled, then placed into an ice-cooled chest pending shipment to the analytical laboratory. Sample containers intended for analysis of VOCs were filled first.

Upon completion of the well sampling activities, the samples were shipped under CoC documentation to Southwest Labs for analysis. The groundwater samples were submitted for analysis of the following parameters:

- VOCs by EPA Method 8260B
- SVOCs by EPA Method 8270C

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- Pesticides by EPA Method 8081A
- Herbicides by EPA Method 8151
- PCBs by EPA Method 8082
- Total RCRA metals (arsenic by EPA Method 7060, lead by EPA Method 7421, mercury by EPA Method 7470A, selenium by EPA Method 7740, and barium, cadmium, chromium and silver by EPA Method 6010B)
- TPH-GRO and TPH-DRO by EPA Method 8015 Modified
- TPH by TNRCC Method 1005
- pH by EPA Method 9045 (two samples only),
- Total dissolved solids (TDS) by EPA Method 160.1 (two samples only), and
- Specific conductivity by EPA Method 9050 (two samples only).

3.5 Field QA/QC Procedures

3.5.1 Collection of Analytical Samples

Quality Assurance/Quality Control (QA/QC) procedures utilized in the collection of the soil and groundwater samples included proper decontamination of reusable sampling equipment, the use of disposable sampling equipment when practical, and the proper handling of collected samples. Decontamination procedures are discussed in Section 3.5.4.

Disposable equipment was utilized when possible during the investigation in order to reduce the potential for cross contamination of samples. Disposable materials utilized during the investigation included disposable Teflon bailers, disposable nitrile gloves, and plastic sheeting. New bailers with new cotton cord were utilized for sampling each monitor well. New disposable gloves were utilized for each soil or groundwater sample collection. The recovered soil cores were placed upon new pieces of plastic sheeting for each boring to protect the soil cores from cross contamination.

Proper sample handling included the use of new laboratory-supplied and laboratory-preserved sample containers, proper labeling of sample containers, placement of the samples into ice-cooled chests immediately upon sample collection, maintenance of detailed notes regarding sample collection, maintenance of sample CoC documentation, and proper

packing of the samples for shipment to avoid breakage and to maintain the temperature of the samples at or below 4°C.

3.5.2 Collection of QA/QC Samples

In order to aid in the validation and assessment of the quality of the data collected during the SI, various QA/QC samples were collected during the field investigation activities. These samples included QA and QC field duplicates, equipment blanks, and trip blanks. Table 3-2 presents the relationships between the regular soil and groundwater samples collected during the investigation and the corresponding QA/QC samples.

TABLE 3-2
QA/QC Sample Correlation
Site Investigation, IWTP Site, Former Laredo Air Force Base, Laredo, Texas

QA/QC Sample ID	Sample Type	Associated Regular Sample ID
IWTPSBSO001000FD1	QC duplicate	IWTPSBSO001000N1
IWTPSBSO001000FD2	QA duplicate	IWTPSBSO001000N1
IWTPSBSO004008FD1	QC duplicate	IWTPSBSO004008N1
IWTPSBSO004008FD2	QA duplicate	IWTPSBSO004008N1
IWTPSBWQ004000EB1	Equipment Blank	IWTPSBSO004000N1
IWTPNQWQ001000TB1	Trip Blank	All IWTP soil samples
IWTPMWWG001000FD1	QC duplicate	IWTPMWWG001000N1
IWTPMWWG001000FD2	QA duplicate	IWTPMWWG001000N1
IWTPMWWQ002000EB1	Equipment Blank	IWTPMWWG002000N1
IWTPNQWQ002000TB1	Trip Blank	All IWTP groundwater samples

* Sample was intended for matrix/matrix spike analysis but was inadvertently analyzed by the laboratory as a QC field duplicate.

During SI field activities, QA and QC field duplicate soil samples were collected from site soils at a frequency of one QA and one QC field duplicate for every 10 soil samples. Thus, for 21 field soil samples, two sets of QA and QC duplicate samples were collected. These samples were collected by preparing every tenth soil sample in triplicate. One of the triplicate samples was submitted to the contract analytical laboratory (Southwest Labs) for analysis as a regular field sample. The second triplicate sample was submitted to the contract analytical laboratory as a QC field duplicate sample. The third triplicate sample

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was submitted to a second laboratory (Environmental Testing & Consulting, of Memphis, Tennessee) to be analyzed as a QA field duplicate sample. Sample containers intended for VOC analysis were filled first, placing the soil directly from the split-spoon sampler into the sample containers, without compositing the sample. The remainder of the sample material was then placed into a stainless-steel bowl and mixed with a stainless-steel spoon to composite the sample material prior to placement into the remaining sample containers. The QA and QC field duplicate samples were analyzed for the same parameters as the regular field soil samples.

Because only three groundwater samples were collected from the IWTP monitor wells during the SI, only one set of QA and QC field duplicate groundwater samples was collected. The QA and QC samples were collected from one well, IWTPMW001. The groundwater sample from IWTPMW001 was prepared in triplicate and distributed as described above for the triplicate soil samples. Samples intended for VOC analysis were filled first. The groundwater samples were not composited prior to filling the sample containers. The QA and QC field duplicate groundwater samples were analyzed for the same parameters as the regular field groundwater samples, excluding TDS and specific conductivity.

During soil sampling activities, equipment blank samples were prepared at a frequency of one blank per 20 soil samples. Thus, one equipment blank associated with the soil samples was prepared. The equipment blank was prepared by pouring commercially available distilled water over and through the decontaminated split spoon and into the decontaminated stainless-steel bowl utilized for compositing the soil samples. The rinsate was then transferred into appropriate laboratory-supplied sample containers. The sample containers intended for VOC analysis were filled first. The equipment blank sample was analyzed for the same parameters as the regular field soil samples.

For groundwater sampling at the IWTP site, one equipment blank was prepared. The equipment blank was prepared by pouring commercially available distilled water through a new disposable bailer. The equipment blank was analyzed for the same parameters as the regular field groundwater samples, excluding TDS and specific conductivity.

Trip blank samples were included inside the sample coolers containing all of the soil or groundwater samples to be analyzed for VOCs. The trip blank samples were prepared by the contract analytical laboratory and remained with the VOC sample containers during shipment of the containers from the laboratory to the field, throughout the field sampling program, and during shipment of the samples back to the laboratory for analysis. Two trip blank samples were utilized; one accompanied the IWTP soil samples and one accompanied the IWTP groundwater samples. The trip blank samples were analyzed only for VOCs.

3.5.3 Sample Identification

Soil and groundwater samples collected during the SI were each assigned unique sample identification numbers based upon the following scheme:

IWTPzzmm###dddqqq

IWTP = Industrial Waste Treatment Plant site

zz = Type of sampling location
- BH for boreholes
- MW for monitor wells
- NQ for trip blank samples (no specific location)

mm = type of matrix
- SO for soil
- WG for groundwater
- WQ for water quality QA/QC samples (trip blanks and equipment blanks)

= sequential number for location

ddd = beginning depth of sampled interval (005 for 5 feet, 010 for ten feet, etc.; 000 used for groundwater and water quality samples)

qqq = type of sample for QA/QC purposes
- N1 for normal samples
- EB1 for equipment blank samples
- FD1 for QC samples
- FD2 for QA samples
- MS1 for matrix spike samples
- SD1 for matrix spike duplicate samples
- TB1 for trip blank samples

A table that cross-references the field sample ID numbers with the laboratory sample ID numbers is presented as Table 3-3.

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TABLE 3-3
Laboratory/Field Sample ID Cross Reference
Site Investigation, IWTP Site, Former Laredo Air Force Base, Laredo, Texas

Lab ID	Sample ID	Lab ID	Sample ID
38676.01	IWTPMWSO001000N1	38676.19	IWTPSBSO003006N1
38676.02	IWTPMWSO001005N1	38676.20	IWTPSBSO004000N1
38676.03	IWTPMWSO001007N1	38676.21	MS from IWTPSBSO004000N1
38676.04	IWTPMWSO002000N1	38676.22	MSD from IWTPSBSO004000N1
38676.05	IWTPMWSO002004N1	38676.23	IWTPSBSO004004N1
38676.06	IWTPMWSO002007N1	38676.24	IWTPSBSO004008N1
38676.07	IWTPMWSO003000N1	38676.25	IWTPSBSO004008FD1
38676.08	IWTPMWSO003006N1	38676.26	IWTPSBWQ004000EB1
38676.09	IWTPMWSO003012N1	38676.27	IWTPNQWQ001000TB1
38676.10	IWTPSBSO001000N1	38706.01	IWTPMWWG001000N1
38676.11	IWTPSBSO001000FD1	38706.02	IWTPMWWG001000FD1
38676.12	IWTPSBSO001004N1	38706.03	IWTPMWWG002000N1
38676.13	IWTPSBSO001006N1	38706.04	MS from IWTPMWWG002000N1
38676.14	IWTPSBSO002000N1	38706.05	MSD from IWTPMWWG002000N1
38676.15	IWTPSBSO002004N1	38706.06	IWTPMWWG003000N1
38676.16	IWTPSBSO002006N1	38706.07	IWTPMWWQ002000EB1
38676.17	IWTPSBSO003000N1	38706.08	IWTPNQWQ002000TB1
38676.18	IWTPSBSO003004N1		

3.5.4 Decontamination Procedures

Prior to mobilization to the former LAFB, the drilling rig and other associated equipment was steam cleaned. Between drilling each boring, augers and drill bits were cleaned using a high-pressure hot water spray cleaning unit. The soil sampling split spoon was decontaminated between each sample collection interval using a potable water and detergent wash followed by a potable water rinse. Small pieces of reusable sampling equipment such as hand augers, knives, and stainless-steel bowls and spoons were decontaminated between each sample collection using a distilled water and Liquinox wash

followed by a distilled water rinse. The clean sampling tools were allowed to air dry before reuse. Potable water utilized for the decontamination of the augers, bits, and split spoon was obtained from a City of Laredo public hydrant, located near the site. Equipment such as water-quality parameter measuring devices and water-level indicators were washed with a distilled water and Liquinox solution, followed by a distilled water rinse. The equipment was allowed to air dry after cleaning.

3.5.5 Calibration of Equipment

The calibration of all field equipment utilized during this investigation was performed in accordance with the equipment manufacturer's instructions. The calibration of the PID was checked every morning prior to initiation of activities, and calibration was reset as necessary. New calibration fluids were utilized to calibrate pH and conductivity measuring equipment. An equipment calibration log documenting the calibration of the equipment utilized during the field investigation was maintained. The calibration log is presented in Appendix E.

3.6 Surveying

During the performance of field investigation activities, the location of each soil boring and monitor well was marked with a stake or flag for identification. Following the completion of the field investigation activities, each soil boring and monitor well was surveyed for horizontal location and vertical elevation. The horizontal coordinates for each location were determined relative to the existing Texas State Plane coordinates, with minimum accuracy of ±0.1 foot. Vertical elevations were determined relative to the 1929 National Vertical Geodetic Datum, with an accuracy of ±0.01 foot. The elevations of both the ground surface and the top of casing were measured for each of the monitor wells. Howland Surveying of Laredo, Texas provided Land surveying services for this project. Survey data is summarized in Table 3-4.

TABLE 3-4
Survey Data for IWTP Sampling Locations
Site Investigation, IWTP Site, Former Laredo Air Force Base, Laredo, Texas

Location	Northing	Easting	Elevation
IWTPSB001	679272	1685018	481.22
IWTPSB002	679315	1685058	481.86
IWTPSB003	679365	1685079	483.38
IWTPBS004	679383	1685109	483.66
IWTPMW001	679418	1685085	484.83 TOC
IWTPMW001	679418	1685085	481.8 N/G
IWTPMW002	679369	1685178	486.55 TOC
IWTPMW002	679369	1685178	483.6 N/G
IWTPMW003	679269	1684955	484.17 TOC
IWTPMW003	679269	1684955	481.2 N/G

TOC = Top of Well Casing
N/G = Natural Ground Level

Upon evaluation of the elevation data for the IWTP site monitor wells, the reported elevations appeared to be erroneous. Therefore, the top-of-casing elevations for all three wells were re-surveyed on January 17, 2000, by Howland Surveying. The erroneous elevation previously reported for one of the wells was corrected. Table 3-4 includes the corrected elevations.

3.7 Management of Investigation-Derived Waste

Investigation-derived waste (IDW) generated during the SI included soil cuttings from drilling activities, decontamination water, monitor well development/purge water, spent personal protective equipment (PPE), general trash, and miscellaneous contaminated materials (paper towels, rags, etc.). General trash was placed into plastic trash bags and disposed in a solid waste dumpster near the IWTP site. The remaining wastes were placed into 55-gallon steel drums, properly labeled, and staged on LIA property, pending disposal. Different types of waste (such as soils and waters) were not mixed. However, spent PPE and other solids were mixed with the soils. This mixing was done upon the advice of personnel

from EET, Inc. of Austin, Texas, which provided waste disposal services for the project. Ten drums of waste were generated, including four drums of soil cuttings (including waste PPE and plastic sheeting), two drums of decontamination water, and four drums of monitor well development/purge water.

Composite samples of the wastes were collected and analyzed by EET in order to characterize the wastes for disposal. The wastes were determined to be non-hazardous. The waste PPE and waste soils were disposed by EET at the City of Laredo Landfill, near Laredo, Texas. The waste decontamination, well development, and well purge waters were disposed at the Browning-Ferris Industries' Sunset Farms Landfill in Austin, Texas. Copies of the waste disposal documentation are presented in Appendix F.

Section 4
Results of Investigation

Section 4
Results of Investigation

4. Results of Investigation

A total of 21 soil samples and three groundwater samples (excluding QA and QC duplicate samples) were collected and analyzed during the investigation of the IWTP site. All of the samples were analyzed for VOCs, SVOCs, pesticides, herbicides, PCBs, TPH, and total RCRA metals. Three of the soil samples were also analyzed for pH and percent moisture. Two of the water samples were also analyzed for pH, specific conductivity, and TDS. The laboratory analytical data reports are presented together with the data validation report in Appendix G.

The sample analytical results are compared to the TNRCC Risk Reduction Standard (RRS) No. 2 Media-Specific Concentrations (MSC). The industrial MSCs (GWP-Ind, SAI-Ind, and GW-Ind) were chosen due to the current (and presumed future) industrial nature of the development at the site and adjacent properties. The GWP-Ind is the soil MSC for industrial use based on groundwater protection. The SAI-Ind is the soil MSC for industrial use based on inhalation, ingestion, and dermal contact. The GW-Ind is the groundwater MSC for industrial use. As the GW-Ind MSCs are generally equivalent or more restrictive than the Maximum Contaminant Levels (MCL) as established by state and federal primary and secondary drinking water standards, the groundwater sample analytical results were not compared to the MCLs except for the parameters of pH and TDS (there are no GW-Ind MSCs for those parameters). For those compounds for which GWP-Ind, SAI-Ind, or GW-Ind MSCs have not been published, appropriate MSCs were calculated in accordance with the procedures set forth in Texas Administrative Code (TAC) 30 335. For the purposes of this investigation, those contaminants, which exceed the applicable regulatory standards, are contaminants of potential concern (COPC) for the site. It is noted that no site-specific data for background concentrations of metals in soils is available.

4.1 Site Soils

The soils encountered at the IWTP site during the drilling of the soil borings and monitor well borings consist primarily of brownish-yellow to brown to olive-yellow silt, fine sandy silt, and clayey silt. Occasional gravel was encountered, as well. Thin streaks of gypsum

were observed, with occasional thin (about one-inch thick) layers of gypsum crystals. At approximately 10-feet bgs, weathered fine-grained sandstone was encountered in some of the borings. The soils were generally dry to slightly moist from the surface to approximately 6.5 to 9 feet bgs, where groundwater generally was encountered. No major cracks, roots or worm holes, or other macro pore features were observed in the site soils.

4.2 Soil Analytical Results

Twenty-one soil samples, not including QA/QC samples, were collected at the IWTP site and submitted for chemical analysis. The samples were analyzed for VOCs, SVOCs, pesticides, herbicides, PCBs, TPH, and total RCRA metals. Additionally, three of the samples were submitted for analysis of pH and moisture content.

4.2.1 VOCs in Soil

Of the 21 soil samples analyzed for VOCs, 20 were reported to contain detectable concentrations of at least one VOC compound. None of the detected concentrations of VOCs in the soil samples exceed the applicable TNRCC RRS2 GWP-Ind or SAI-Ind MSCs. The analytical results for IWTP site soil samples with detected concentrations of VOCs are summarized in Table 4-1.

The compounds detected were acetone (15 samples), carbon disulfide (17 samples), methylene chloride (six samples), and tetrachloroethene (PCE; one sample). The amounts detected were low, generally ranging from below to slightly above the method quantitation limits of 0.005 milligrams per kilogram (mg/kg) for each compound. The compounds detected and the concentration ranges are:

- Acetone: from an estimated 0.006 mg/kg for sample IWTPMWSO002004N1 to 0.240 mg/kg for sample IWTPMWSO001007N1. It is noted that the second-highest concentration for acetone (excluding QC samples) is an estimated 0.041 mg/kg for sample IWTPSBSO001006N1.
- Carbon disulfide: from 0.008 mg/kg for several of the soil samples, to 0.014 mg/kg for sample IWTPMWSO002007N1.

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TABLE 4-1
Soil Sampling Results, VOCs (mg/kg)
Site Investigation, IWTP Site, Former Laredo Air Force Base, Laredo, Texas

Parameter	TNRCC RRS2		Sample Number											
	GWP-Ind	SAI-Ind	IWTPMWSO 001000N1	IWTPMWSO 001005N1	IWTPMWSO 001007N1	IWTPMWSO 002000N1	IWTPMWSO 002004N1	IWTPMWSO 002007N1	IWTPMWSO 003000N1	IWTPMWSO 003006N1	IWTPMWSO 003012N1	IWTPSBSO 001000N1	IWTPSBSO 001000FD1	IWTPSBSO 001004N1
Soil Boring ID:			IWTPMW001	IWTPMW001	IWTPMW001	IWPTMW002	IWTPMW002	IWTPMW002	IWTPMW003	IWTPMW003	IWTPMW003	IWTPSB001	IWTPSB001	IWTPSB001
Sample Depth (feet):			0	5	7	0	4	7	0	6	12	0	0	4
Sampling Date:			5/18/99	5/18/99	5/18/99	5/18/99	5/18/99	5/18/99	5/18/99	5/18/99	5/18/99	5/19/99	5/19/99	5/19/99
Methylene Chloride	0.5	16	**0.003 J**	**0.002 J**	**0.007 J**	**0.004 J**	**0.003 J**	< 0.006	0.013 U	0.006 U	0.015 U	0.016 U	0.017 U	< 0.006
Acetone	1,000	24,000	**0.019**	< 0.006	**0.240**	< 0.005	**0.006 J**	**0.011**	**0.010 J**	< 0.006	**0.033 J**	**0.015 J**	**0.013 J**	< 0.006
Carbon Disulfide	1,000	1,500	< 0.006	**0.009**	**0.010 J**	**0.008**	**0.009**	**0.014**	< 0.005	**0.009**	**0.009**	**0.008**	**0.008 J**	**0.009**
Tetrachloroethene (PCE)	0.5	17	< 0.006	< 0.006	< 0.006	< 0.005	**0.002 J**	< 0.006	< 0.005	< 0.006	< 0.006	< 0.006	< 0.006 U	< 0.006

Parameter	TNRCC RRS 2		Sample Number											
	GWP-Ind	SAI-Ind	IWTPSBSO 001006N1	IWTPSBSO 002000N1	IWTPSBSO 002004N1	IWTPSBSO 002006N1	IWTPSBSO 003000N1	IWTPSBSO 003004N1	IWTPSBSO 003006N1	IWTPSBSO 004000N1	IWTPSBSO 004004N1	IWTPSBSO 004008N1	IWTPSBSO 004008FD1	IWTPSBWQ 004000EB1	IWTPNQWQ 001000TB1
Soil Boring ID:			IWTPSB001	IWTPSB002	IWTPSB002	IWTPSB002	IWTPSB003	IWTPSB003	IWTPSB003	IWTPSB004	IWTPSB004	IWTPSB004	IWTPSB004	IWTPSB004	N/A
Sample Depth:			6	0	4	6	0	4	6	0	4	8	8	N/A	N/A
Sampling Date:			5/19/99	5/19/99	5/19/99	5/19/99	5/19/99	5/19/99	5/19/99	5/19/99	5/19/99	5/19/99	5/19/99	5/19/99	5/19/99
Methylene Chloride	0.5	16	0.016 U	**0.002 J**	0.013 U	0.014 U	< 0.005	0.014 U	0.015 U	< 0.005	< 0.006	< 0.006	0.013 U	< 0.001	< 0.001
Acetone	1,000	24,000	**0.041 J**	**0.016**	**0.014 J**	**0.010 J**	< 0.005	**0.010 J**	**0.016 J**	**0.007**	< 0.006	**0.012 J**	**0.082 J**	< 0.005	< 0.005
Carbon Disulfide	1,000	1,500	**0.010**	**0.008**	**0.009**	**0.008**	**0.008**	**0.010**	**0.009 J**	**0.008**	< 0.006	< 0.006	**0.010 J**	< 0.001	< 0.001
Tetrachloroethene (PCE)	0.5	17	< 0.006	< 0.005	< 0.006	< 0.006	< 0.005	< 0.006	< 0.006	< 0.005	< 0.006	< 0.006	< 0.006	< 0.001	< 0.001

Values for EB1 sample expressed in mg/L
N1 = Normal Sample
FD1 = Duplicate Sample
EB1 = Equipment Blank Sample
TB1 = Trip Blank Sample
J = Estimated
U = Undetected (validation flag)
BOLD indicates values above detection limits
Shading indicates that value exceeds GWP-Ind or SAI-Ind

- Methylene chloride: from an estimated 0.002 mg/kg for samples IWTPMWSO001005N1 and IWTPSBSO002000N1, to an estimated 0.007 mg/kg for sample IWTPMWSO001007N1.
- PCE: detected only in sample IWTPMWSO002004N1, at an estimated concentration of 0.002 mg/kg.

4.2.2 SVOCs in Soil

Of the 21 soil samples analyzed for SVOCs, only four were reported to contain detectable concentrations of at least one SVOC compound. The compounds detected include acenaphthene, dibenzofuran, fluorene, carbazole, phenanthrene, anthracene, di-n-butylphthalate, fluoranthene, pyrene, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, and indeno(1,2,3-cd)pyrene. The analytical results for IWTP site soil samples with detected concentrations of SVOCs are summarized in Table 4-2.

The SVOCs detected and their concentration ranges are:

- Acenaphthene: reported for samples IWTPMWSO001007N1 and IWTPSBSO004008N1 at concentrations of 3.90 mg/kg and an estimated 0.076 mg/kg, respectively.
- Dibenzofuran: reported for samples IWTPMWSO001007N1 and IWTPSBSO004008N1 at concentrations of 3.20 mg/kg and an estimated 0.150 mg/kg, respectively.
- Phenanthrene: reported for three samples, IWTPMWSO001007N1, IWTPSBSO002000N1, and IWTPSBSO004008N1 at concentrations of an estimated 11.0 mg/kg, an estimated 0.038 mg/kg, and an estimated 0.073 mg/kg, respectively.
- Fluoranthene: reported for samples IWTPMWSO001007N1 and IWTPSBSO002000N1 at concentrations of 5.60 mg/kg and an estimated 0.052 mg/kg, respectively.
- Pyrene: reported for samples IWTPMWSO001007N1 and IWTPSBSO002000N1 at estimated concentrations of 3.10 mg/kg and 0.054 mg/kg, respectively.
- Benzo(a)anthracene: reported for samples IWTPMWSO001007N1 and IWTPSBSO002000N1 at concentrations of 0.960 mg/kg and an estimated 0.025 mg/kg, respectively.

TABLE 4-2
Soil Sampling Results, SVOCs (mg/kg)
Site Investigation, IWTP Site, Former Laredo Air Force Base, Laredo, Texas

Parameter	TNRCC RRS 2		Sample Number											
	GWP-Ind	SAI-Ind	IWTPMWSO 001000N1	IWTPMWSO 001005N1	IWTPMWSO 001007N1	IWTPMWSO 002000N1	IWTPMWSO 002004N1	IWTPMWSO 002007N1	IWTPMWSO 003000N1	IWTPMWSO 003006N1	IWTPMWSO 003012N1	IWTPSBS O001000N1	IWTPSBSO 001000FD1	IWTPSBSO 001004N1
Soil Boring ID:			IWTPMW001	IWTPMW001	IWTPMW001	IWPTMW002	IWTPMW002	IWTPMW002	IWTPMW003	IWTPMW003	IWTPMW003	IWTPSB001	IWTPSB001	IWTPSB001
Sampling Depth (feet):			0	5	7	0	4	7	0	6	12	0	0	4
Sampling Date:			5/18/99	5/18/99	5/18/99	5/18/99	5/18/99	5/18/99	5/18/99	5/18/99	5/18/99	5/19/99	5/19/99	5/19/99
Acenaphthene	610	53,000	< 0.36	< 0.40	**3.9**	< 0.35	< 0.36	< 0.41 UJ	< 0.33	< 0.38	< 0.38	< 0.37	< 0.35	< 0.40
Dibenzofuran	41	8180	< 0.36	< 0.40	**3.2**	< 0.35	< 0.36	< 0.41 UJ	< 0.33	< 0.38	< 0.38	< 0.37	< 0.35	< 0.40
Fluorene	410	36000	< 0.36	< 0.40	**3.7**	< 0.35	< 0.36	< 0.41 UJ	< 0.33	< 0.38	< 0.38	< 0.37	< 0.35	< 0.40
Carbazole	1.4	140	< 0.36	< 0.40	**1.8 J**	< 0.35	< 0.36	< 0.41 UJ	< 0.33	< 0.38	< 0.38	< 0.37	< 0.35	< 0.40
Phenanthrene	310	27,000	< 0.36	< 0.40	**11 J**	< 0.35	< 0.36	< 0.41 UJ	< 0.33	< 0.38	< 0.38	< 0.37	< 0.35	< 0.40
Anthracene	3,100	270,000	< 0.36	< 0.40	**1.5**	< 0.35	< 0.36	< 0.41 UJ	< 0.33	< 0.38	< 0.38	< 0.37	< 0.35	< 0.40
Di-n-Butylphthalate	1,000	100,000	< 0.36	< 0.40	< 0.42	< 0.35	< 0.36	< 0.41 UJ	< 0.33	< 0.38	< 0.38	**0.076 J**	< 0.35	< 0.40
Fluoranthene	410	36,000	< 0.36	< 0.40	**5.6**	< 0.35	< 0.36	< 0.41 UJ	< 0.33	< 0.38	< 0.38	< 0.37	< 0.35	< 0.40
Pyrene	310	27,000	< 0.36	< 0.40	**3.1 J**	< 0.35	< 0.36	< 0.41 UJ	< 0.33	< 0.38	< 0.38	< 0.37	< 0.35	< 0.40
Benzo (a) Anthracene	0.039	3.4	< 0.36 UJ	< 0.40	**0.96**	< 0.35	< 0.36	< 0.41 UJ	< 0.33 UJ	< 0.38	< 0.38	< 0.37	< 0.35	< 0.40
Chrysene	3.9	340	< 0.36 UJ	< 0.40	**0.92**	< 0.35	< 0.36	< 0.41 UJ	< 0.33 UJ	< 0.38	< 0.38	< 0.37	< 0.35	< 0.40
Bis (2-Ethylhexyl) Phthalate	0.6	65	< 0.36 UJ	< 0.40	< 0.42	< 0.35	< 0.36	< 0.41 UJ	< 0.33 UJ	< 0.38	< 0.38	< 0.37	< 0.35	< 0.40
Benzo (b) Fluoranthene	0.039	3.4	< 0.36 UJ	< 0.40	**0.29 J**	< 0.35	< 0.36	< 0.41 UJ	< 0.33 UJ	< 0.38	< 0.38	< 0.37	< 0.35	< 0.40
Benzo (k) Fluoranthene	0.39	34	< 0.36 UJ	< 0.40	**0.35 J**	< 0.35	< 0.36	< 0.41 UJ	< 0.33 UJ	< 0.38	< 0.38	< 0.37	< 0.35	< 0.40
Benzo (a) Pyrene	0.020	0.34	< 0.36 UJ	< 0.40	**0.26 J**	< 0.35	< 0.36	< 0.41 UJ	< 0.33 UJ	< 0.38	< 0.38	< 0.37	< 0.35	< 0.40
Indeno (1,2,3-cd) Pyrene	0.039	3.4	< 0.36 UJ	< 0.40	**0.057 J**	< 0.35	< 0.36	< 0.41 UJ	< 0.33 UJ	< 0.38	< 0.38	< 0.37	< 0.35	< 0.40

Values for EB1 sample in mg/L
N1 = Normal Sample
FD1 = Duplicate Sample
EB1 = Equipment Blank Sample
NL = Not Listed
U = Undetected (validation flag)
B = Compound detected in blank sample
J = Estimated
BOLD indicates values above detection limits
Shading indicates that value exceeds GWP-Ind or SAI-Ind

TABLE 4-2
Soil Sampling Results, SVOCs (mg/kg)
Site Investigation, IWTP Site, Former Laredo Air Force Base, Laredo, Texas

Parameter	TNRCC RRS 2		Sample Number											
	GWP-Ind	SAI-Ind	IWTPSBSO 001006N1	IWTPSBSO 002000N1	IWTPSBSO 002004N1	IWTPSBSO 002006N1	IWTPSBSO 003000N1	IWTPSBSO 003004N1	IWTPSBSO 003006N1	IWTPSBSO 004000N1	IWTPSBSO 004004N1	IWTPSBSO 004008N1	IWTPSBSO 004008FD1	IWTPSBWQ 004000EB1
Soil Boring ID:			IWTPSB001	IWTPSB002	IWTPSB002	IWTPSB002	IWTPSB003	IWTPSB003	IWTPSB003	IWTPSB004	IWTPSB004	IWTPSB004	IWTPSB004	IWTPSB004
Sampling Depth (feet):			6	0	4	6	0	4	6	0	4	8	8	N/A
Sampling Date:			5/19/99	5/19/99	5/19/99	5/19/99	5/19/99	5/19/99	5/19/99	5/19/99	5/19/99	5/19/99	5/19/99	5/19/99
Acenaphthene	610	53,000	< 0.42	< 0.35 UJ	< 0.38	< 0.38	< 350	< 0.38	< 0.38	< 0.35	< 0.39 UJ	**0.076 J**	< 0.38	< 0.010
Dibenzofuran	41	8180	< 0.42	< 0.35 UJ	< 0.38	< 0.38	< 350	< 0.38	< 0.38	< 0.35	< 0.39 UJ	**0.15 J**	**0.12 J**	< 0.010
Fluorene	410	36000	< 0.42	< 0.35 UJ	< 0.38	< 0.38	< 350	< 0.38	< 0.38	< 0.35	< 0.39 UJ	< 0.42	< 0.38	< 0.010
Carbazole	1.4	140	< 0.42	< 0.35 UJ	< 0.38	< 0.38	< 350	< 0.38 UJ	< 0.38	< 0.35	< 0.39 UJ	< 0.42	< 0.38	< 0.010
Phenanthrene	310	27,000	< 0.42	**0.038 J**	< 0.38	< 0.38	< 350	< 0.38 UJ	< 0.38	< 0.35	< 0.39 UJ	**0.073 J**	**0.047 J**	< 0.010
Anthracene	3,100	270,000	< 0.42	< 0.35 UJ	< 0.38	< 0.38	< 350	< 0.38 UJ	< 0.38	< 0.35	< 0.39 UJ	< 0.42	< 0.38	< 0.010
Di-n-Butylphthalate	1,000	100,000	< 0.42	< 0.35 UJ	< 0.38	< 0.38	< 350	< 0.38 UJ	< 0.38	< 0.35	< 0.39 UJ	< 0.42	< 0.38	< 0.010
Fluoranthene	410	36,000	< 0.42	**0.052 J**	< 0.38	< 0.38	< 350	< 0.38 UJ	< 0.38	< 0.35	< 0.39 UJ	< 0.42	**0.14 J**	< 0.010
Pyrene	310	27,000	< 0.42	**0.054 J**	< 0.38	< 0.38	< 350	< 0.38 UJ	< 0.38	< 0.35	< 0.39 UJ	< 0.42	**0.10 J**	< 0.010
Benzo (a) Anthracene	0.039	3.4	< 0.42	**0.025 J**	< 0.38 UJ	< 0.38	< 350 UJ	< 0.38	< 0.38	< 0.35 UJ	< 0.39 UJ	< 0.42	< 0.38	< 0.010
Chrysene	3.9	340	< 0.42	**0.035 J**	< 0.38 UJ	< 0.38	< 350 UJ	< 0.38	< 0.38	< 0.35 UJ	< 0.39 UJ	**0.053 J**	< 0.38	< 0.010
Bis (2-Ethylhexyl) Phthalate	0.6	65	< 0.42	< 0.35 UJ	< 0.38 UJ	< 0.38	< 350 UJ	< 0.38	< 0.38	< 0.35 UJ	< 0.39 UJ	< 0.42	< 0.38	**0.001 JB**
Benzo (b) Fluoranthene	0.039	3.4	< 0.42	< 0.35 UJ	< 0.38 UJ	< 0.38	< 350 UJ	< 0.38	< 0.38	< 0.35 UJ	< 0.39 UJ	< 0.42	< 0.38	< 0.010
Benzo (k) Fluoranthene	0.39	34	< 0.42	**0.021 J**	< 0.38 UJ	< 0.38	< 350 UJ	< 0.38	< 0.38	< 0.35 UJ	< 0.39 UJ	< 0.42	**0.027 J**	< 0.010
Benzo (a) Pyrene	0.020	0.34	< 0.42	**0.024 J**	< 0.38 UJ	< 0.38	< 350 UJ	< 0.38	< 0.38	< 0.35 UJ	< 0.39 UJ	< 0.42	< 0.38	< 0.010
Indeno (1,2,3-cd) Pyrene	0.039	3.4	< 0.42	< 0.35 UJ	< 0.38 UJ	< 0.38	< 350 UJ	< 0.38	< 0.38	< 0.35 UJ	< 0.39 UJ	< 0.42	< 0.38	< 0.010

Values for EB1 sample in mg/L
N1 = Normal Sample
FD1 = Duplicate Sample
EB1 = Equipment Blank Sample
NL – Not Listed
U = Undetected (validation flag)
B = Compound detected in blank sample
J = Estimated
BOLD indicates values above detection limits
Shading indicates that value exceeds GWP-Ind or SAI-Ind

- Benzo(k)fluoranthene: reported for samples IWTPMWSO001007N1 and IWTPSBSO002000N1 at estimated concentrations of 0.350 mg/kg and 0.021 mg/kg, respectively.
- Benzo(a)pyrene: reported for samples IWTPMWSO001007N1 and IWTPSBSO002000N1 at estimated concentrations of 0.260 mg/kg and 0.024 mg/kg, respectively.
- Chrysene: reported for three samples, IWTPMWSO001007N1, IWTPSBSO002000N1, and IWTPSBSO004008N1 at concentrations of 0.920 mg/kg, an estimated 0.035 mg/kg, and an estimated 0.053 mg/kg, respectively.
- Fluorene, carbazole, anthracene, benzo(b)fluoranthene, and indeno(1,2,3-cd)pyrene: reported only for sample IWTPMWSO001007N1, at concentrations of 3.70 mg/kg, an estimated 1.80 mg/kg, 1.50 mg/kg, an estimated 0.290 mg/kg, and an estimated 0.057 mg/kg, respectively.
- Di-n-butylphthalate: reported only for sample IWTPSBSO001000N1, at an estimated concentration of 0.076 mg/kg.

The majority of the detected concentrations of SVOCs in the IWTP site soil samples were reported for the sample collected from boring IWTPMW001 at a depth of 7-feet bgs (sample IWTPMWSO001007N1). During sampling, it was noted that this soil sample exhibited hydrocarbon odors and staining. The concentrations of carbazole, benzo(a)anthracene, benzo(b)fluoranthene, benzo(a)pyrene, and indeno(1,2,3-cd)pyrene for this sample exceed the applicable TNRCC RRS2 GWP-Ind MSCs. The concentration of benzo(a)pyrene for sample IWTPSBSO002000N1 also exceeds the applicable TNRCC RRS2 GWP-Ind MSC. None of the detected SVOC concentrations exceed the SAI-Ind MSCs.

4.2.3 Pesticides in Soil

Of the 21 soil samples analyzed for pesticides, only six samples were reported to contain a detectable concentration of one or more pesticide compounds. The compounds detected include dieldrin (one sample), 4', 4'-DDE (one sample), 4', 4'-DDD (one sample), 4', 4'-DDT (four samples), alpha-chlordane (four samples), and gamma-chlordane (two samples). The analytical results for IWTP site soil samples with detected concentrations of pesticide compounds, as well as the herbicide and PCB analyses, are presented in Table 4-3.

TABLE 4-3
Soil Sampling Results, PCBs, Pesticides, and Herbicides (mg/kg)
Site Investigation, IWTP Site, Former Laredo Air Force Base, Laredo, Texas

Parameter	TNRCC RRS 2		Sample Number											
	GWP-Ind	SAI-Ind	IWTPMWSO 001000N1	IWTPMWSO 001005N1	IWTPMWSO 001007N1	IWTPMWSO 002000N1	IWTPMWSO 002004N1	IWTPMWSO 002007N1	IWTPMWSO 003000N1	IWTPMWSO 003006N1	IWTPMWSO 003012N1	IWTPSBSO 001000N1	IWTPSBSO 001000FD1	IWTPSBSO 001004N1
Soil Boring ID:			IWTPMW001	IWTPMW001	IWTPMW001	IWPTMW002	IWTPMW002	IWTPMW002	IWTPMW003	IWTPMW003	IWTPMW003	IWTPSB001	IWTPSB001	IWTPSB001
Sampling Depth (feet):			0	5	7	0	4	7	0	6	12	0	0	4
Sampling Date:			5/18/99	5/18/99	5/18/99	5/18/99	5/18/99	5/18/99	5/18/99	5/18/99	5/18/99	5/19/99	5/19/99	5/19/99
PCBs														
Aroclor-1260	0.050	10	**0.240**	< 0.038	< 0.039	< 0.035	< 0.038	< 0.040	**0.047**	< 0.039	< 0.037	< 0.036	< 0.036	< 0.039
Pesticides														
Dieldrin	0.0018	0.18	**0.0079 J**	< 0.0030	< 0.0032	< 0.0027	< 0.0030	< 0.0030	< 0.0025	< 0.0030	< 0.0028	< 0.0027	< 0.0028	< 0.0030
4,4'-DDE	0.084	13	< 0.0027	< 0.0030	< 0.0032	< .00027	< 0.0030	< 0.0030	< 0.0025	< 0.0030	< 0.0028	< 0.0027	< 0.0028	< 0.0030
4,4'-DDD	0.12	18	< 0.0027	< 0.0030	< 0.0032	< 0.0027	< 0.0030	< 0.0030	< 0.0025	< 0.0030	< 0.0028	< 0.0027	< 0.0028	< 0.0030
4,4'-DDT	0.084	12	**0.018 J**	< 0.0030 UJ	< 0.0032 UJ	**0.0048 J**	**0.010 J**	< 0.0030 UJ	< 0.0025 UJ	< 0.0030 UJ	< 0.0028 UJ	< 0.0027 UJ	< 0.0028 UJ	< 0.0030 UJ
Alpha-Chlordane	0.20*	11*	**0.024 J**	**0.0031 J**	< 0.0016	**0.0015 J**	< 0.0015	< 0.0015	< 0.0013	< 0.0015	< 0.0015	< 0.0014	< 0.0014	< 0.0016
Gamma-Chlordane	0.20*	11*	**0.015 J**	< 0.0015	< 0.0016	< 0.0014	< 0.0015	< 0.0015	**0.0037 J**	< 0.0015	< 0.0015	< 0.0014	< 0.0014	< 0.0016
Herbicides			None Detected											

Values for EB1 sample in mg/L
N1 = Normal Sample
FD1 = Duplicate Sample
EB1 = Equipment Blank Sample
U = Undetected
J = Estimated
* = Numbers for Chlordane in general; Alpha and Gamma Chlordane not listed individually
BOLD indicates values above detection limits
Shading indicates that value exceeds GWP-Ind or SAI-Ind

PCBs

The pesticide compounds detected and their concentration ranges are:

- Alpha-chlordane: from an estimated 0.0015 mg/kg for sample IWTPMWSO002000N1 to an estimated 0.024 mg/kg for sample ITPMWSO001000N1.
- 4', 4'-DDT: from an estimated 0.0048 mg/kg for sample IWTPMWSO002000N1 to an estimated 0.240 mg/kg for sample IWTPSBSO004000N1.
- Gamma-chlordane: reported for two samples, IWTPMWSO001000N1 and IWTPMWSO003000N1, at estimated concentrations of 0.015 mg/kg and 0.0037 mg/kg, respectively.
- Dieldrin: reported only for sample IWTPMWSO001000N1, at an estimated concentration of 0.0079 mg/kg.
- 4', 4'-DDE: reported only for sample IWTPSBSO004000N1 at an estimated concentration of 0.031 mg/kg.
- 4', 4'-DDD: reported only for sample IWTPSBSO004000N1, at an estimated concentration of 0.016 mg/kg.

The detected concentrations of pesticides were found primarily in surficial soil samples. Most of the detections came from samples IWTPMWSO001000N1 and IWTPSBSO004000N1. Only the reported concentrations for dieldrin in sample IWTPMWSO001000N1 and for 4', 4'-DDT in sample IWTPSBSO004000N1 exceed the applicable TNRCC RRS2 GWP-Ind MSCs. None of the detected pesticide concentrations exceed the applicable TNRCC RRS2 SAI-Ind MSCs.

4.2.4 Herbicides in Soil

None of the 21 soil samples analyzed for herbicides were reported to contain detectable concentrations of herbicide compounds.

4.2.5 PCBs in Soil

Of the 21 soil samples analyzed for PCBs, only two samples were reported to contain detectable concentrations of a PCB compound. Aroclor-1260 was reported for samples IWTPMWSO001000N1 and IWTPMWSO003000N1 at concentrations of an estimated

0.24 mg/kg and 0.047 mg/kg, respectively. Only the concentration reported for sample IWTPMWSO001000N1 exceeds the applicable TNRCC RRS2 GWP-Ind MSC. Neither of the detected concentrations exceeds the applicable TNRCC RRS2 SAI-Ind MSC.

4.2.6 TPH in Soil

Of the 21 soil samples analyzed for TPH by EPA Method 8015 Modified, four samples were reported to contain detectable concentrations of TPH-GRO and six samples were reported to contain detectable concentrations of TPH-DRO.

- TPH-GRO: from an estimated 0.250 mg/kg for sample IWTPMWSO003012N1 to 190 mg/kg for sample IWTPSBSO004008N1 (7,600 mg/kg was reported for the QC duplicate sample IWTPSBSO004008FD1).
- TPH-DRO: from 28 mg/kg for sample IWTPMWSO002007N1 to 350 mg/kg for sample IWTPMWSO003000N1.

Of the 21 soil samples analyzed for TPH by TNRCC Method 1005, only two samples were reported to contain detectable concentrations of TPH.

- C6-C10 range: from an estimated 84 mg/kg for sample IWTPSBSO004008N1 to 410 mg/kg for sample IWTPMWSO001007N1.
- C10-C28 range: from an estimated 250 mg/kg for sample IWTPSBSO004008N1 to 610 mg/kg for sample IWTPMWSO001007N1.
- C6-C28 range: from an estimated 330 mg/kg for sample IWTPSBSO004008N1 to 1,000 mg/kg for sample IWTPMWSO001007N1.

The highest concentrations of TPH are reported for samples IWTPMWSO001007N1 and IWTPSBSO004008N1. Both samples exhibited hydrocarbon odors and staining during sampling. No TNRCC RRS2 MSCs have been promulgated for TPH-GRO or TPH-DRO analyzed by EPA Method 8015 Modified. However, RRS2 MSCs have been calculated based upon the Massachusetts Surrogate Method for TPH reported by the TNRCC Method 1005 analysis (using pyrene as a surrogate for non-discrete TPH) (Frew, 1999). Both IWTPMWSO001007N1 and IWTPSBSO004008N1 exceed the applicable RRS2 GWP-Ind MSC for TPH (C9-C32 range). None of the TPH concentrations reported for the soil samples

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exceed the applicable SAI-Ind MSC. The analytical results for IWTP site soil samples with detected concentrations of TPH are summarized in Table 4-4.

4.2.7 Total RCRA Metals in Soil

All 21 of the soil samples analyzed for total RCRA metals were reported to contain a detectable concentration of one or more of the metals constituents. Detectable concentrations of arsenic, barium, chromium, and lead were reported for all 21 soil samples; mercury was reported for 17 samples; cadmium was reported for four samples; and selenium was reported for one sample. No detectable concentrations of silver were reported for any of the samples. The analytical results for IWTP site soil samples with detected concentrations of metals constituents are summarized in Table 4-5.

It is noted that during data validation, all of the "non-detect" results for selenium (20 samples, excluding QC duplicates) were rejected due to low analytical spike recovery during analysis. It is also noted that selenium was reported as "non-detect" for both of the QA duplicate soil samples collected (duplicates of IWTPSBSO001000N1 and IWTPSBSO004008N1, and analyzed by a different analytical laboratory).

The detected metals and their reported concentration ranges are:

- Arsenic: from an estimated 2.1 mg/kg for sample IWTPSBSO002006N1 to an estimated 5.4 mg/kg for sample IWTPMWSO001005N1.
- Barium: from 8.8 mg/kg for sample IWTPSBSO003000N1 to 863 mg/kg for sample IWTPMWSO003006N1.
- Chromium: from 4.9 mg/kg for sample IWTPSBSO003000N1 to 284 mg/kg for sample IWTPMWSO003012N1.
- Lead: from an estimated 3.2 mg/kg for sample IWTPSBSO001006N1 to an estimated 125 mg/kg for sample IWTPMWSO001000N1.
- Mercury: from an estimated 0.02 mg/kg for sample IWTPSBSO002006N1 to an estimated 0.12 mg/kg for samples IWTPMWSO001000N1 and IWTPSBSO004000N1
- Cadmium: from an estimated 0.42 mg/kg for sample IWTPMWSO001005N1 to an estimated 47.8 mg/kg for sample IWTPMWSO001000N1.

TABLE 4-4
Soil Sampling Results, Total Petroleum Hydrocarbons (TPH) (mg/kg)
Site Investigation, IWTP Site, Former Laredo Air Force Base, Laredo, Texas

Parameter	TNRCC RRS2		Sample Number											
	GWP-Ind	SAI-Ind	IWTPMWSO 001000N1	IWTPMWSO 001005N1	IWTPMWSO 001007N1	IWTPMWSO 002000N1	IWTPMWSO 002004N1	IWTPMWSO 002007N1	IWTPMWSO 003000N1	IWTPMWSO 003006N1	IWTPMWSO 003012N1	IWTPSBSO 001000N1	IWTPSBSO 001000FD1	IWTPSBSO 001004N1
Soil Boring ID:			IWTPMW001	IWTPMW001	IWTPMW001	IWPTMW002	IWTPMW002	IWTPMW002	IWTPMW003	IWTPMW003	IWTPMW003	IWTPSB001	IWTPSB001	IWTPSB001
Sample Depth (feet):			0	5	7	0	4	7	0	6	12	0	0	4
Sampling Date:			5/18/99	5/18/99	5/18/99	5/18/99	5/18/99	5/18/99	5/18/99	5/18/99	5/18/99	5/19/99	5/19/99	5/19/99
Method 8015 Modified														
TPH-GRO	Not listed	Not listed	< 0.11	0.082 U	**130**	< 0.11	0.12 U	**33**	< 0.10	0.093 U	**0.25**	< 0.11	< 0.11	< 0.12
TPH-DRO	Not listed	Not listed	**42**	< 11	**210**	< 10	< 11	**28**	**350**	< 11	< 11	< 11	< 11	< 12
Method 1005														
C6 – C10	310*	25,000*	< 57	< 58	**410**	< 54	< 58	< 63	< 53	< 60	< 55	< 56	< 56	< 61
C10 – C28	310*	25,000*	< 57	< 58	**610**	< 54	< 58	< 63	< 53	< 60	< 55	< 56	< 56	< 61
C6 – C28	310*	25,000*	< 110	< 120	**1,000**	< 110	< 120	< 130	< 100	< 120	<110	< 110	< 110	< 120

Parameter	TNRCC RRS2		Sample Number											
	GWP-Ind	SAI-Ind	IWTPSBSO 001006N1	IWTPSBSO 002000N1	IWTPSBSO 002004N1	IWTPSBSO 002006N1	IWTPSBSO 003000N1	IWTPSBSO 003004N1	IWTPSBSO 003006N1	IWTPSBSO 004000N1	IWTPSBSO 004004N1	IWTPSBSO 004008N1	IWTPSBSO 004008FD1	IWTPSBWQ 004000EB1
Soil Boring ID:			IWTPSB001	IWTPSB002	IWTPSB002	IWTPSB002	IWTPSB003	IWTPSB003	IWTPSB003	IWTPSB004	IWTPSB004	IWTPSB004	IWTPSB004	IWTPSB004
Sample Depth:			6	0	4	6	0	4	6	0	4	8	8	N/A
Sampling Date:			5/19/99	5/19/99	5/19/99	5/19/99	5/19/99	5/19/99	5/19/99	5/19/99	5/19/99	5/19/99	5/19/99	5/19/99
Method 8015 Modified														
TPH-GRO	Not listed	Not listed	< 0.13	< 0.11	< 0.12	< 0.11	< 0.11	< 0.12	< 0.12	< 0.11	< 0.12	**190 J**	**7,600 J**	**0.030**
TPH-DRO	Not listed	Not listed	< 12	< 9.9	**83**	< 11	< 10	< 12	< 12	< 10	< 12	**220 J**	**950 J**	< 0.050
Method 1005														
C6 – C10	310*	25,000*	< 63	< 52	< 55	<53	<53	< 60	< 57	< 53	< 60	**84 J**	**68 J**	< 5.0
C10 – C28	310*	25,000*	< 63	< 52	< 55	< 53	< 53	< 60	< 57	< 53	< 60	**250 J**	**520 J**	< 5.0
C6 – C28	310*	25,000*	< 120	< 100	< 110	< 100	< 100	< 120	< 110	< 110	< 120	**330 J**	**590 J**	< 10

Values for EB1 sample expressed in mg/L
* = values for carbon range C9-C32 (the most restrictive values)
TPH-GRO = Total Petroleum Hydrocarbons, gasoline range organics
TPH-DRO = Total Petroleum Hydrocarbons, diesel range organics
N1 = Normal Sample
FD1 = Duplicate Sample
EB1 = Equipment Blank Sample
J = Estimated
U = Undetected (validation flag)
BOLD indicates values above detection limits
Shading indicates that value exceeds GWP-Ind or SAI-Ind

TABLE 4-5
Soil Sampling Results, Total Metals (mg/kg)
Site Investigation, IWTP Site, Former Laredo Air Force Base, Laredo, Texas

Parameter	NRCC RRS 2		Sample Number											
	GWP-Ind	SAI-Ind	IWTPMWSO001000N1	IWTPMWSO001005N1	IWTPMWSO001007N1	IWTPMWSO002000N1	IWTPMWSO002004N1	IWTPMWSO002007N1	IWTPMWSO003000N1	IWTPMWSO003006N1	IWTPMWSO003012N1	IWTPSBSO001000N1	IWTPSBSO001000FD1	IWTPSBSO001004N1
Soil Boring ID:			IWTPMW001	IWTPMW001	IWTPMW001	IWPTMW002	IWTPMW002	IWTPMW002	IWTPMW003	IWTPMW003	IWTPMW003	IWTPSB001	IWTPSB001	IWTPSB001
Sampling Depth (feet):			0	5	7	0	4	7	0	6	12	0	0	4
Sampling Date:			5/18/99	5/18/99	5/18/99	5/18/99	5/18/99	5/18/99	5/18/99	5/18/99	5/18/99	5/19/99	5/19/99	5/19/99
Arsenic	5.0	200	**4.9 J**	**5.4 J**	**4.3 J**	**3.8 J**	**4.2 J**	**3.5 J**	**3.5 J**	**3.7 J**	**3.3 J**	**3.3 J**	**3.4 J**	**3.1 J**
Barium	200	58,000	**92.5**	**149**	**76.7**	**104**	**82.9**	**24.4**	**192**	**863**	**77.0**	**99.5**	**78.0**	**95.0**
Cadmium	0.5	410	**47.8 J**	**0.42 J**	0.18 UJ	0.19 UJ	0.17 UJ	0.07 U	**2.1 J**	0.17 UJ	**0.68 J**	0.13 UJ	0.17 UJ	0.08 UJ
Chromium	10	1,600 (Cr VI)	**66.1**	**11.8**	**8.7**	**6.5**	**9.7**	**5.1**	**57.5**	**22.3**	**284**	**9.0**	**10.0**	**8.4**
Lead	1.5	1,000	**125 J**	**7.3 J**	**7.7 J**	**9.7 J**	**7.3 J**	**3.9 J**	**26.9 J**	**6.7 J**	**10.6 J**	**7.0 J**	**8.1 J**	**5.9 J**
Mercury	0.2	9.6	**0.12 J**	< 0.02 UJ	**0.03 J**	**0.03 J**	**0.05 J**	**0.08 J**	**0.04 J**	**0.03 J**	< 0.02 UJ	**0.03 J**	**0.04 J**	**0.03 J**
Selenium	5	9,200	< 0.34 R	< 0.36 R	< 0.38 R	< 0.32 R	< 0.35 R	< 0.38 R	< 0.32 R	< 0.02 R	**0.35 J**	< 0.33 R	< 0.33 R	< 0.37 R
Silver	51	2,800	< 0.23	< 0.24	< 0.25	< 0.21	< 0.23	< 0.25	< 0.21	< 0.25	< 0.23	< 0.22	< 0.22	< 0.24

Parameter	TNRCC RRS 2		Sample Number											
	GWP-Ind	SAI-Ind	IWTPSBSO001006N1	IWTPSBSO002000N1	IWTPSBSO002004N1	IWTPSBSO002006N1	IWTPSBSO003000N1	IWTPSBSO003004N1	IWTPSBSO003006N1	IWTPSBSO004000N1	IWTPSBSO004004N1	IWTPSBSO004008N1	IWTPSBSO004008FD1	IWTPSBWQ004000EB1
Soil Boring ID:			IWTPSB001	IWTPSB002	IWTPSB002	IWTPSB002	IWTPSB003	IWTPSB003	IWTPSB003	IWTPSB004	IWTPSB004	IWTPSB004	IWTPSB004	IWTPSB004
Sampling Depth (feet):			6	0	4	6	0	4	6	0	4	8	8	N/A
Sampling Date:			5/19/99	5/19/99	5/19/99	5/19/99	5/19/99	5/19/99	5/19/99	5/19/99	5/19/99	5/19/99	5/19/99	5/19/99
Arsenic	5.0	200	**2.8 J**	**3.1 J**	**3.6 J**	**2.1 J**	**2.6 J**	**4.7 J**	**3.3 J**	**3.0 J**	**3.5 J**	**3.4 J**	**3.0 J**	< 0.0010
Barium	200	58,000	**11.9**	**61.2**	**267**	**90.0**	**8.8**	**90.5**	**33.3**	**64.3**	**82.6**	**9.5**	**12.6**	**0.0026**
Cadmium	0.5	410	0.07 UJ	0.18 U	0.08 UJ	0.11 UJ	0.06 UJ	0.19 UJ	0.05 UJ	0.09 UJ	< 0.04 UJ	< 0.04 UJ	< 0.04 UJ	< 0.00030
Chromium	10	1,600 (Cr VI)	**5.2**	**7.6**	**6.3**	**8.5**	**4.9**	**16.2**	**7.0**	**7.2**	**9.1**	**6.8**	**5.3**	**0.00073**
Lead	1.5	1,000	**3.2 J**	**7.8 J**	**4.9 J**	**5.4 J**	**3.3 J**	**9.1 J**	**4.6 J**	**9.3 J**	**8.1 J**	**5.6 J**	**5.5 J**	< 0.0010
Mercury	0.2	9.6	**0.03 J**	**0.03 J**	< 0.02 UJ	**0.02 J**	**0.04 J**	**0.03 J**	**0.04 J**	**0.12 J**	**0.03 J**	< 0.02 UJ	< 0.02 UJ	< 0.00010
Selenium	5	9,200	< 0.38 R	< 0.32 R	< 0.35 R	< 0.34 R	< 0.02 R	< 0.02 R	< 0.37 R	<0.02 R	< 0.36 R	< 0.37 R	< 0.36 R	< 0.0020
Silver	51	2,800	< 0.25	< 0.22	< 0.23	< 0.23	< 0.21	< 0.24	< 0.25	< 0.21	< 0.24	< 0.25	< 0.24	< 0.0020

Values for EB1 sample in mg/L
N1 = Normal Sample
FD1 = Duplicate Sample
EB1 = Equipment Blank Sample
U = Undetected (validation flag)
J = Estimated
R = Rejected
BOLD indicates values above detection limits
Shading indicates that the value exceeds GWP-Ind or SAI-Ind

- Selenium: detected only in sample IWTPMWSO003006N1 at an estimated concentration of 0.35 mg/kg (as noted above, the "non-detect" analytical results reported for selenium in the remainder of the soil samples were rejected through data validation).

The detected concentrations of lead reported for all of the soil samples exceed the applicable TNRCC RRS2 GWP-Ind MSC. The detected concentrations of chromium in six samples (IWTPMWSO001000N1, IWTPMWSO001005N1, IWTPMWSO003000N1, IWTPMWSO003006N1, IWTPMWSO003012N1, and IWTPSBSO003004N1) exceed the applicable GWP-Ind MSC. Three of the detected concentrations of cadmium (samples IWTPMW001000N1, IWTPMWSO003000N1, and IWTPMWSO003012N1) exceed the applicable GWP-Ind MSC. Only one sample (IWTPMWSO003006N1) exceeds the GWP-Ind MSC for barium. None of the soil samples exceed the applicable SAI-Ind MSCs. It is noted that no background study for metals in former LAFB area soils has been performed and that background concentrations may be higher than the respective GWP-Ind MSCs. If background is higher than the GWP-Ind, then the background value is used for comparison rather than the GWP-Ind.

4.2.8 pH and Percent Moisture in Soil

Three soil samples (IWTPMWSO001007N1, IWTPSBSO001004N1, and IWTPSBSO003000N1) were analyzed for pH and percent moisture. The pH values ranged from 7.6 standard units (SU) for sample IWTPMWSO001007N1 to 7.9 SU for the other samples. The moisture content of the three samples ranged from 7.2 percent for sample IWTPSBSO003000N1 to 21.0 percent for sample IWTPMWSO001007N1. The pH and percent moisture analytical results are summarized in Table 4-6.

TABLE 4-6
Soil Sampling Results, pH and Moisture Content
Site Investigation, IWTP Site, Former Laredo Air Force Base, Laredo, Texas

Parameter	Sample Number		
	IWTPMWSO 001007N1	IWTPSBSO 001004N1	IWTPSBSO 003000N1
Soil Boring ID:	IWTPMW001	IWTPSB001	IWTPSB003
Sample Depth (feet):	7	4	0
Sampling Date:	5/18/99	5/19/99	5/19/99

TABLE 4-6
Soil Sampling Results, pH and Moisture Content
Site Investigation, IWTP Site, Former Laredo Air Force Base, Laredo, Texas

Parameter	Sample Number		
	IWTPMWSO 001007N1	IWTPSBSO 001004N1	IWTPSBSO 003000N1
Soil Boring ID:	IWTPMW001	IWTPSB001	IWTPSB003
Sample Depth (feet):	7	4	0
Sampling Date:	5/18/99	5/19/99	5/19/99
pH (standard units)	**7.6**	**7.9**	**7.9**
Moisture Content (percent)	**21.0**	**18.8**	**7.2**

N1 = Normal Sample
BOLD indicates values above detection limits

4.3 Groundwater Analytical Results

Three groundwater samples (excluding QA/QC samples) were collected from monitor wells at the IWTP site. The samples were analyzed for VOCs, SVOCs, pesticides, herbicides, PCBs, TPH, and total RCRA metals. Additionally, two of the samples were submitted for analysis of pH, TDS, and specific conductivity.

4.3.1 VOCs in Groundwater

Of the three groundwater samples collected at the IWTP site, only the sample collected from monitor well IWTPMW003 was reported to contain detectable concentrations of VOCs. The compounds vinyl chloride, 1,1-dichloroethene (1,1-DCE), 1,1-dichloroethane (1,1-DCA), total 1,2-dichloroethene (1,2-DCE), 1,2-dichloropropane, trichloroethene (TCE), benzene, and chlorobenzene were detected. The compound detected at the greatest concentration is 1,2-DCE, at an estimated 1.9 milligrams per liter (mg/L). The analytical results for IWTP site groundwater samples with detected concentrations of VOCs are summarized in Table 4-7. The reported concentrations for 1,1-DCE, 1,2-DCE, TCE, and benzene exceed the applicable TNRCC RRS2 GW-Ind MSCs.

TABLE 4-7
Groundwater Sampling Results
Volatile Organic Compounds (VOCs) (mg/L)
Site Investigation, IWTP Site, Former Laredo Air Force Base, Laredo, Texas

Parameter	Regulatory Limits	Sample Number					
	TNRCC RRS 2 GW-Ind	IWTPMWWG 001000N1	IWTPMWWG 001000FD1	IWTPMWWG 002000N1	IWTPMWWG 003000N1	IWTPMWWQ 002000EB1	IWTPNQWQ 002000TB1
Well ID:		IWTPMW001	IWTPMW001	IWTPMW002	IWTPMW003	IWTPMW002	N/A
Sampling Date:		5/22/99	5/22/99	5/23/99	5/22/99	5/23/99	5/23/99
Vinyl Chloride	0.002	< 0.001	< 0.001	< 0.001	**0.001 J**	< 0.001	< 0.001
Acetone	10	< 0.005 UJ	< 0.005 UJ	< 0.005 UJ	< 0.005 UJ	< 0.005	< 0.005
2-Butanone	22	< 0.005 UJ	< 0.005 UJ	< 0.005 UJ	< 0.005 UJ	< 0.005	< 0.005
Methylene Chloride	0.005	< 0.001	< 0.001	< 0.001	< 0.001	**0.001**	**0.001**
1,1-Dichloroethene	0.007	< 0.001	< 0.001	< 0.001	**0.032 J**	< 0.001	< 0.001
1,1-Dichloroethane	10	< 0.001	< 0.001	< 0.001	**0.052 J**	< 0.001	< 0.001
1,2-Dichloroethene (total)	0.07 (cis)	< 0.001	< 0.001	< 0.001	**1.9**	< 0.001	< 0.001
1,2-Dichloropropane	0.005	< 0.001	< 0.001	< 0.001	**0.002 J**	< 0.001	< 0.001
Trichloroethene	0.005	< 0.001	< 0.001	< 0.001	**0.70**	< 0.001	< 0.001
Benzene	0.005	< 0.001	< 0.001	< 0.001	**0.012 J**	< 0.001	< 0.001
Chlorobenzene	0.1	< 0.001	< 0.001	< 0.001	**0.010 J**	< 0.001	< 0.001

N1 = Normal Sample
FD1 = Field Duplicate
EB1 = Equipment Blank
TB1 = Trip Blank
J = Estimated
R = Rejected
NL = Not Listed
BOLD indicates values above detection limits
Shading indicates that the concentration exceeds the applicable regulatory limit

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4.3.2 SVOCs in Groundwater

Two of the three groundwater samples collected at the IWTP site (IWTPMWWG001000N1 and IWTPMWWG003000N1) were reported to contain detectable concentrations of SVOCs. The analytical results for IWTP site groundwater samples with detected concentrations of SVOCs are summarized in Table 4-8. The sample collected from monitor well IWTPMW001 was reported to contain acenaphthene, dibenzofuran, and fluoranthene. The compounds were reported at low concentrations, at estimated values below the method quantitation limits. The sample collected from monitor well IWTPMW003 was reported to contain 1,3-dichlorobenzene, 1,4-dichlorobenzene, 1,2-dichlorobenzene, and 1,2,4-trichlorobenzene. Of the detected SVOC concentrations, only the concentration of 1,2-dichlorobenzene for sample IWTPMWWG003000N1 exceeds the applicable TNRCC RRS2 GW-Ind MSC.

4.3.3 Pesticides in Groundwater

For the three groundwater samples analyzed, only the sample collected from monitor well IWTPMW003 was reported to contain a detectable concentration of a pesticide compound. Heptaclor was detected at a concentration of 0.000093 mg/L. This concentration of heptaclor does not exceed the applicable TNRCC RRS2 GW-Ind MSC. The pesticide analytical results, as well as the herbicide and PCB analytical results, for the IWTP site groundwater samples are presented in Table 4-9.

4.3.4 Herbicides in Groundwater

No detectable concentrations of herbicides were reported for any of the IWTP site groundwater samples.

4.3.5 PCBs in Groundwater

No detectable concentrations of PCB compounds were reported for the IWTP site groundwater samples.

4.3.6 TPH in Groundwater

Of the three groundwater samples analyzed for TPH by EPA Method 8015 Modified, only one sample, collected from monitor well IWTPMW003, was reported to contain detectable

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TABLE 4-8
Groundwater Sampling Results
Semivolatile Organic Compounds (SVOCs) (mg/L)
Site Investigation, IWTP Site, Former Laredo Air Force Base, Laredo, Texas

Parameter	Regulatory Limits	Sample Number				
	TNRCC RRS 2 GW-Ind	IWTPMWWG 001000N1	IWTPMWWG 001000FD1	IWTPMWWG 002000N1	IWTPMWWG 003000N1	IWTPMWWQ 002000EB1
Well ID:		IWTPMW001	IWTPMW001	IWTPMW002	IWTPMW003	IWTPMW002
Sampling Date:		5/22/99	5/22/99	5/23/99	5/22/99	5/23/99
1,3-Dichlorobenzene	0.032	< 0.010	< 0.010	< 0.010	**0.007 J**	< 0.010
1,4-Dichlorobenzene	0.075	< 0.010	< 0.010	< 0.010	**0.059**	**0.00070 J**
1,2-Dichlorobenzene	0.6	< 0.010	< 0.010	< 0.010	**2.7**	**0.001 J**
1,2,4-Trichlorobenzene	0.07	< 0.010	< 0.010	< 0.010	**0.006 J**	< 0.010
Acenaphthene	2.2	**0.002 J**	**0.002 J**	< 0.010	< 0.010	< 0.010
Dibenzofuran	0.41	**0.002 J**	**0.002 J**	< 0.010	< 0.010	< 0.010
Diethylphthalate	29	<0.010	< 0.010	< 0.010	< 0.010	**0.00090 J**
Fluoranthene	1.5	**0.0008 J**	**0.00090 J**	< 0.010	< 0.010	< 0.010
Pyrene	1.1	< 0.010	**0.00050 J**	< 0.010	< 0.010	< 0.010
Bis (2-Ethylhexyl) Phthalate	0.006	< 0.010	< 0.010	< 0.010	< 0.010	**0.010**

N1 = Normal Sample
FD1 = Field Duplicate
EB1 = Equipment Blank
TB1 = Trip Blank
J = Estimated
R = Rejected
NL = Not Listed
BOLD indicates values above detection limits
Shading indicates that the concentration exceeds the applicable regulatory limit

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TABLE 4-9
Groundwater Sampling Results
PCBs, Pesticides, and Herbicides (mg/L)
Site Investigation, IWTP Site, Former Laredo Air Force Base, Laredo, Texas

Parameter	Regulatory Limits	Sample Number				
	TNRCC RRS 2 GW-Ind	IWTPMWWG 001000N1	IWTPMWWG 001000FD1	IWTPMWWG 002000N1	IWTPMWWG 003000N1	IWTPMWWQ 002000EB1
Well ID:		IWTPMW001	IWTPMW001	IWTPMW002	IWTPMW003	IWTPMW002
Sampling Date:		5/22/99	5/22/99	5/23/99	5/22/99	5/23/99
Polychlorinated Biphenyls				None Detected		
Herbicides				None Detected		
Pesticides						
Heptaclor	0.0004	< 0.000040	< 0.000040	< 0.000040	**0.000093**	< 0.000040

N1 = Normal Sample
FD1 = Field Duplicate
EB1 = Equipment Blank
J = Estimated
R = Rejected
U = Undetected (validation flag)
NL = Not Listed
BOLD indicates values above detection limits
Shading indicates that the concentration exceeds the applicable regulatory limit

concentrations of TPH-GRO and TPH-DRO, at an estimated 3.7 mg/L and 5.0 mg/L, respectively. No TNRCC RRS2 GW-Ind MSC for TPH in groundwater, as analyzed by EPA Method 8015 Modified, has been established.

For the TPH analysis by TNRCC Method 1005, only sample IWTPMWWG003000N1 was reported to contain a detectable concentration of TPH. The sample was reported to contain an estimated 5.7 mg/L of TPH (total for C6-C28 range), with none detected for the C6-C10 range, and an estimated concentration of 5.7 mg/L for the C10-C28 range. The detected concentration of TPH by the TNRCC Method 1005 analysis exceeds the applicable TNRCC RRS2 GW-Ind MSC (Frew, 1999).

The analytical results for IWTP site groundwater samples with detected concentrations of TPH are summarized in Table 4-10.

4.3.7 Total RCRA Metals in Groundwater

Detectable concentrations of barium, cadmium, chromium, and lead were reported for one or more of the three groundwater samples analyzed. Barium and chromium were detected in all three samples, while lead and cadmium were only reported for one of the samples. Arsenic, mercury, selenium, and silver were not detected in any of the groundwater samples.

It is noted that the "non-detect" results for arsenic and selenium in all three of the groundwater samples were rejected during data validation due to low analytical spike recoveries. The low spike recoveries could suggest that the non-detect results for the field samples were not accurate. It is also noted that both arsenic and selenium were reported as "non-detect" for the QA duplicate of sample IWTPMWWG001000N1 (analyzed by a different analytical laboratory).

The detected metals and their reported concentration ranges are:

- Barium: from 0.0337 mg/L for the sample collected from IWTPMW003 to 0.0362 mg/L for the sample collected from IWTPMW001.
- Chromium: -from an estimated 0.0016 mg/L for the sample collected from IWTPMW003 to an estimated 0.0020 mg/L for the sample collected from IWTPMW002.

02088

TABLE 4-10
Groundwater Sampling Results
Total Petroleum Hydrocarbons (TPH) (mg/L)
Site Investigation, IWTP Site, Former Laredo Air Force Base, Laredo, Texas

Parameter	Regulatory Limits	Sample Number				
	TNRCC RRS 2 GW-Ind	IWTPMWWG 001000N1	IWTPMWWG 001000FD1	IWTPMWWG 002000N1	IWTPMWWG 003000N1	IWTPMWWQ 002000EB1
Well ID		IWTPMW001	IWTPMW001	IWTPMW002	IWTPMW003	IWTPMW002
Sampling Date		5/22/99	5/22/99	5/23/99	5/22/99	5/23/99
Method 8015 Modified						
TPH-GRO (mg/L)	NL	0.084 U	0.100 U	0.044 UJ	**3.7 J**	**0.10**
TPH-DRO (mg/L)	NL	< 0.050	< 0.050	< 0.049	**5.0**	< 0.050
Method 1005						
C6-C10 (mg/L)	3.1*	< 5.0 UJ	< 5.0 UJ	< 5.0 UJ	< 5.0 UJ	< 5.0 UJ
C10-C28 (mg/L)	3.1*	< 5.0 UJ	< 5.0 UJ	< 5.0 UJ	**5.7 J**	< 5.0 UJ
C6-C28 (mg/L)	3.1*	< 10 UJ	< 10 UJ	< 10 UJ	**5.7 J**	< 10 UJ

* = values for carbon range C9-C32 (the most restrictive values)
N1 = Normal Sample
FD1 = Field Duplicate
EB1 = Equipment Blank
TPH-GRO = Total Petroleum Hydrocarbons, gasoline range organics
TPH-DRO = Total Petroleum Hydrocarbons, diesel range organics
J = Estimated
R = Rejected
U = Undetected (validation flag)
NL = Not Listed
BOLD indicates values above detection limits
Shading indicates that the concentration exceeds the applicable regulatory limit

- Lead: detected in the sample collected from IWTPMW001 at an estimated concentration of 0.0016 mg/L.
- Cadmium: detected in the sample collected from IWTPMW001 at an estimated concentration of 0.00031 mg/L.

None of the detected concentrations of RCRA metals exceed the respective TNRCC RRS2 GW-Ind MSCs. The analytical results for IWTP site groundwater samples with detected concentrations of metals constituents are summarized in Table 4-11.

4.3.8 pH, TDS, and Conductivity of Groundwater

Two of the three IWTP groundwater samples were analyzed by the laboratory for pH, TDS, and specific conductivity. The results of the pH, TDS, and specific conductivity analyses for the IWTP site groundwater samples are presented in Table 4-12.

The reported pH values range from 6.9 SU for the groundwater sample collected from IWTPMW003 to 7.0 SU for the sample collected from IWTPMW001. These values are comparable to the values measured in the field during well sampling. The field values were 6.8 SU and 6.9 SU, respectively. Additionally, the pH value measured in the field for groundwater purged from IWTPMW002 is 6.6 SU. The reported pH values are within the range allowed by the US EPA primary drinking water standards (6.5 to 8.5 SU) and about equivalent to the TNRCC primary drinking water standard (7.0 SU). No RRS2 MSCs have been established for pH.

TDS concentrations range from an estimated 5,480 mg/L for the sample collected from IWTPMW001 to an estimated 7,060 mg/L for the sample collected from IWTPMW003. The reported TDS concentrations exceed the US EPA and TNRCC secondary drinking water standards for TDS in drinking water (500 mg/L and 1,000 mg/L for US EPA and TNRCC, respectively). No RRS2 MSCs have been established for TDS.

Specific conductance ranges from 6,210 mS/cm for the sample collected from IWTPMW001 to 8,500 mS/cm for the sample collected from IWTPMW003. These compare well with specific conductivities measured in the field during well sampling. The respective field values were 6,000 mS/cm and 9,000 mS/cm. Additionally, the specific conductivity measured in the field for water purged from well IWTPMW002 is 9,000 mS/cm. No RRS2 MSCs, or US EPA or TNRCC MCLs for specific conductivity of drinking water have been established.

02090

TABLE 4-11
Groundwater Sampling Results
Total RCRA Metals (mg/L)
Site Investigation, IWTP Site, Former Laredo Air Force Base, Laredo, Texas

Parameter	Regulatory Limits	Sample Number				
	TNRCC RRS 2 GW-Ind	IWTPMWWG 001000N1	IWTPMWWG 001000FD1	IWTPMWWG 002000N1	IWTPMWWG 003000N1	IWTPMWWQ 002000EB1
Well ID:		IWTPMW001	IWTPMW001	IWTPMW002	IWTPMW003	IWTPMW002
Sampling Date:		5/22/99	5/22/99	5/23/99	5/22/99	5/23/99
Arsenic	0.05	< 0.009 R	< 0.009 R	< 0.009 R	< 0.009 R	< 0.0018
Barium	2	**0.0362**	**0.0356**	**0.0341**	**0.0337**	< 0.00040
Cadmium	0.005	**0.00031 J**	**0.00033 J**	< 0.00030	< 0.00030	< 0.00030
Chromium	0.1	**0.0018 J**	**0.0020 J**	**0.0020 J**	**0.0016 J**	< 0.00050
Lead	0.015	**0.0016 J**	**0.0015 J**	0.0015 UJ	< 0.0015 U	< 0.0015
Mercury	0.002	< 0.00010 U	**0.00014 J**	< 0.00010 U	< 0.00010 U	< 0.00010
Selenium	0.05	< 0.0110 R	< 0.011 R	< 0.011 R	< 0.0110 R	< 0.0022
Silver	0.1	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020

N1 = Normal Sample
FD1 = Field Duplicate
EB1 = Equipment Blank
J = Estimated
R = Rejected
U = Undetected (validation flag)
BOLD indicates values above detection limits
Shading indicates that the concentration exceeds the applicable regulatory limit

TABLE 4-12
Groundwater Sampling Results
Total Dissolved Solids, pH, and Specific Conductance
Site Investigation, IWTP Site, Former Laredo Air Force Base, Laredo, Texas

Parameter	Regulatory Limits			Sample Number	
	USEPA MCL	TNRCC MCL	TNRCC RRS 2 GW-Ind	IWTPMWWG 001000N1	IWTPMWWG 003000N1
Well ID:				IWTPMW001	IWTPMW003
Sampling Date:				5/22/99	5/22/99
Specific Conductance (µmhos)	None	None	None	**6,210**	**8,500**
pH (standard units)	6.5-8.5	7.0	None	**7.0**	**6.9**
Total Dissolved Solids (mg/L)	500	1,000	None	**5,480 J**	**7,060 J**

N1 = Normal Sample
J = Estimated
BOLD indicates values above detection limits
Shading indicates that the concentration exceeds one or more regulatory limit

4.4 Groundwater Flow Gradient

Groundwater was encountered at the IWTP site at a depth of approximately 6.5 to 9 feet bgs. Based upon water-level measurements in the newly installed groundwater monitor wells, the groundwater apparently flows toward the south-southeast with a gradient of approximately 0.01 ft/ft. Based upon typical porosities (34 to 61 percent for silt and 26 to 53 percent for fine sand) and hydraulic conductivities ($3x10^{-4}$ to $6x10^{+0}$ feet per day for silt and $6x10^{-2}$ to $6x10^{+1}$ feet per day for fine sand) (Dominico and Schwartz, 1990), this flow gradient corresponds to estimated groundwater flow velocities ranging from $4.6x10^{-6}$ feet/day to 2.2 feet per day. It is noted that the flow gradient indicated by the monitor well water level measurements does not reflect surface topography. Surface topography in the immediate vicinity of the IWTP site slopes slightly toward the west.

During a previous investigation at the former fuel farm located adjacent (northeast) to the IWTP site, groundwater was found to flow toward the west-southwest (Raba-Kistner, 1996), generally in agreement with surface topography. An additional survey of the IWTP site monitor well elevations and an additional round of water-level measurements confirmed

the south-southeasterly groundwater flow direction at the IWTP site. It is noted that although different groundwater flow directions are indicated for the IWTP investigation and the previous fuel farm investigation, the groundwater elevations are comparable, indicating that the same aquifer appears to be assessed by both investigations. The cause of the variance in groundwater flow direction between the two sites is unknown.

The measured depth-to-water in the IWTP site monitor wells and the survey data for each well are presented in Table 4-13. A potentiometric surface map for the IWTP site, based upon water level measurements taken on May 22, 1999, is presented as Figure 4-1.

TABLE 4-13
Groundwater Elevation Data
Site Investigation, IWTP Site, Former Laredo Air Force Base, Laredo, Texas

		May 22, 1999		October 21, 1999	
Well ID	Elevation of Top of Casing (feet, amsl)	Depth to Water (feet, BTOC)	Water Elevation (feet, amsl)	Depth to Water (feet, BTOC)	Water Elevation (feet, amsl)
IWTPMW001	484.83	9.68	475.15	9.03	475.80
IWTPMW002	486.55	12.14	474.41	11.36	475.19
IWTPMW003	484.17	10.59	473.58	9.06	475.11

Top of casing elevations measured January 17, 2000
amsl – above mean sea level
BTOC – below top of casing

4.5 Nature and Extent of Contamination

4.5.1 VOCs

VOC compounds were detected in soil and groundwater samples at the IWTP site. The compounds reported to be present in site soils are methylene chloride, acetone, carbon disulfide, and PCE. None of the detected concentrations of VOCs in site soils exceed the applicable TNRCC RRS2 GWP-Ind or SAI-Ind MSCs. Vinyl chloride, 1,1-DCE, 1,1-DCA, 1,2-DCE, 1,2-dichlorobenzene, TCE, benzene, and chlorobenzene were detected in site groundwater. The detected concentrations of 1,1-DCE, 1,2-DCE, TCE, and benzene in the groundwater sample collected from well IWTPMW003 exceed the applicable TNRCC RRS2 GW-Ind MSCs. The distribution of VOCs in IWTP site soil samples is illustrated on

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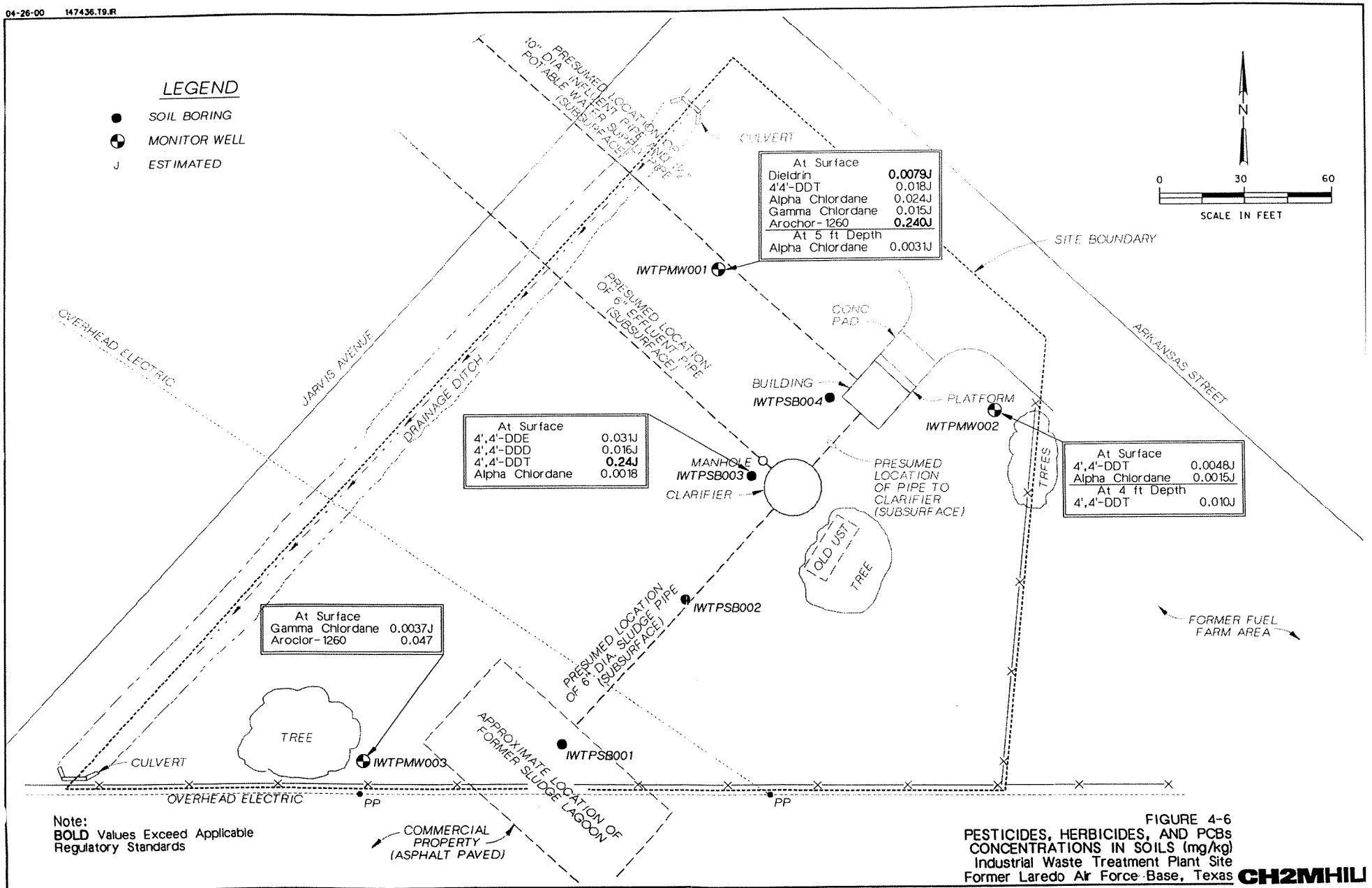

Note:
BOLD Values Exceed Applicable Regulatory Standards

FIGURE 4-6
PESTICIDES, HERBICIDES, AND PCBs CONCENTRATIONS IN SOILS (mg/kg)
Industrial Waste Treatment Plant Site
Former Laredo Air Force Base, Texas

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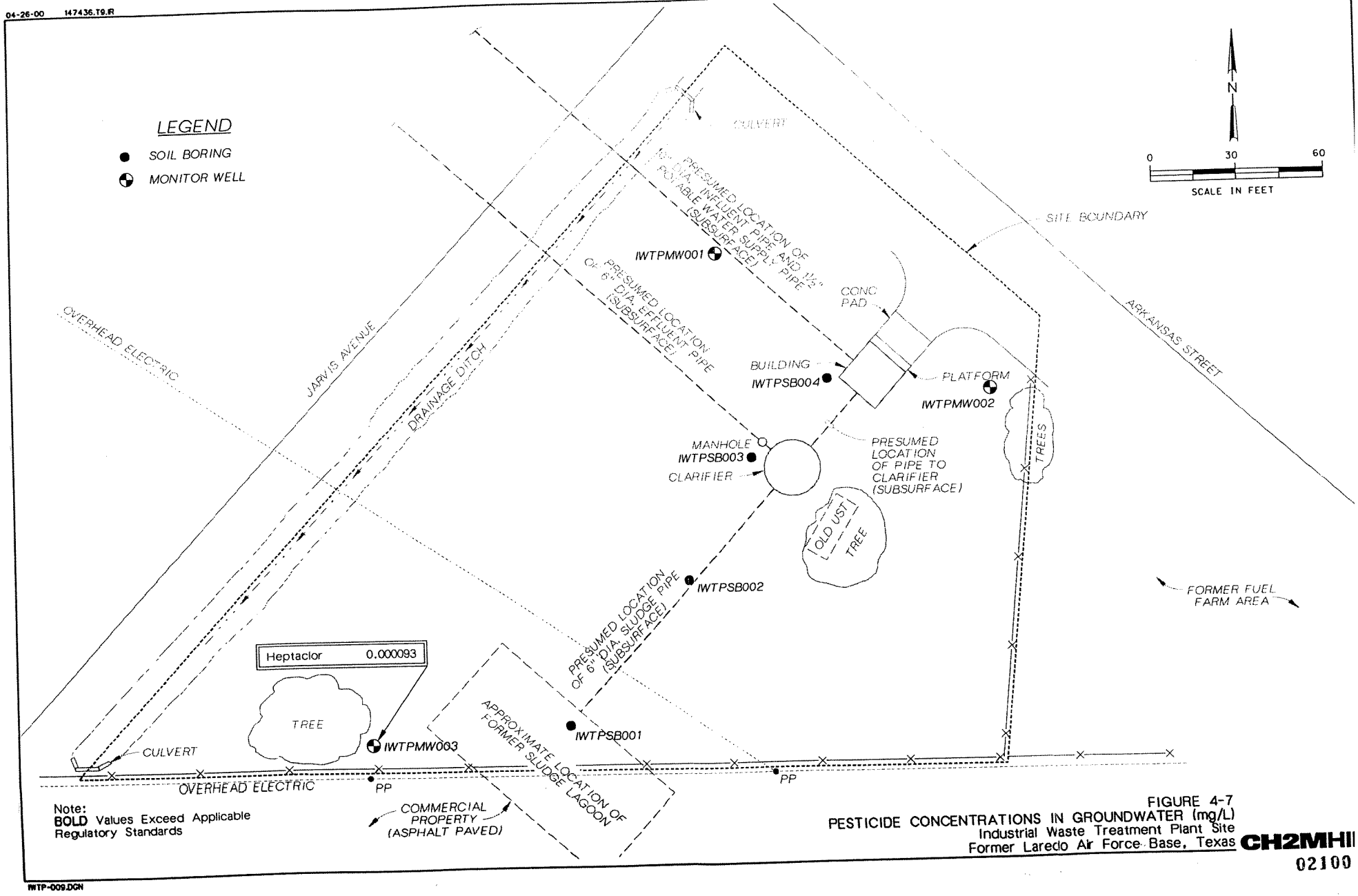
02099

IWTP-008.DGN

04-26-00 147436.T9.R



Note:
BOLD Values Exceed Applicable Regulatory Standards

FIGURE 4-7
PESTICIDE CONCENTRATIONS IN GROUNDWATER (mg/L)
Industrial Waste Treatment Plant Site
Former Laredo Air Force Base, Texas

CH2MHILL

02100

IWTP-009.DGN

IWTPMW001, and 4',4'-DDT was detected in the surficial sample from boring IWTPSB004. Neither compound was detected in deeper soil samples collected from the same borings. Because dieldrin and 4',4'-DDT were detected at concentrations exceeding applicable regulatory standards, those compounds are considered to be COPCs for IWTP site soils.

Only one groundwater sample, collected from monitor well IWTPMW003, was reported to contain a pesticide compound, Heptaclor. It was reported at a concentration well below the applicable TNRCC RRS2 GW-Ind MSC. Heptaclor was not reported to be present in any of the IWTP site soil samples. No pesticide compounds were identified as COPCs for IWTP site groundwater.

4.5.4 Herbicides

No detectable concentrations of herbicide compounds were reported for any of the soil or groundwater samples collected at the IWTP site.

4.5.5 PCBs

One PCB compound, Aroclor-1260, was reported for 2 of the 21 soil samples analyzed. The PCB compound was reported for the surficial soil samples from borings IWTPMW001 and IWTPMW003. Only the concentration reported for the sample from IWTPMW001, at 0.240 mg/kg, exceeds the applicable TNRCC RRS2 GWP-Ind MSC. Aroclor-1260 is therefore considered to be a COPC for IWTP site soils. No PCB compounds were detected in site groundwater samples.

4.5.6 TPH

TPH was detected in soil and groundwater samples collected at the IWTP site. TPH-GRO and TPH-DRO by EPA Method 8015 Modified and TPH by TNRCC Method 1005 were reported. The distributions of TPH in IWTP site soil and groundwater samples are illustrated in Figure 4-8 (soils) and Figure 4-9 (groundwater).

TPH-GRO was reported for the subsurface soil samples collected at the depth of the groundwater interface in borings IWTPMW001, IWTPMW002, IWTPMW003, and IWTPSB004. The greatest concentration of TPH-GRO was reported for the sample collected from IWTPSB004. Except for the sample from IWTPMW003, the samples exhibited visual indications of hydrocarbon contamination during sample collection.

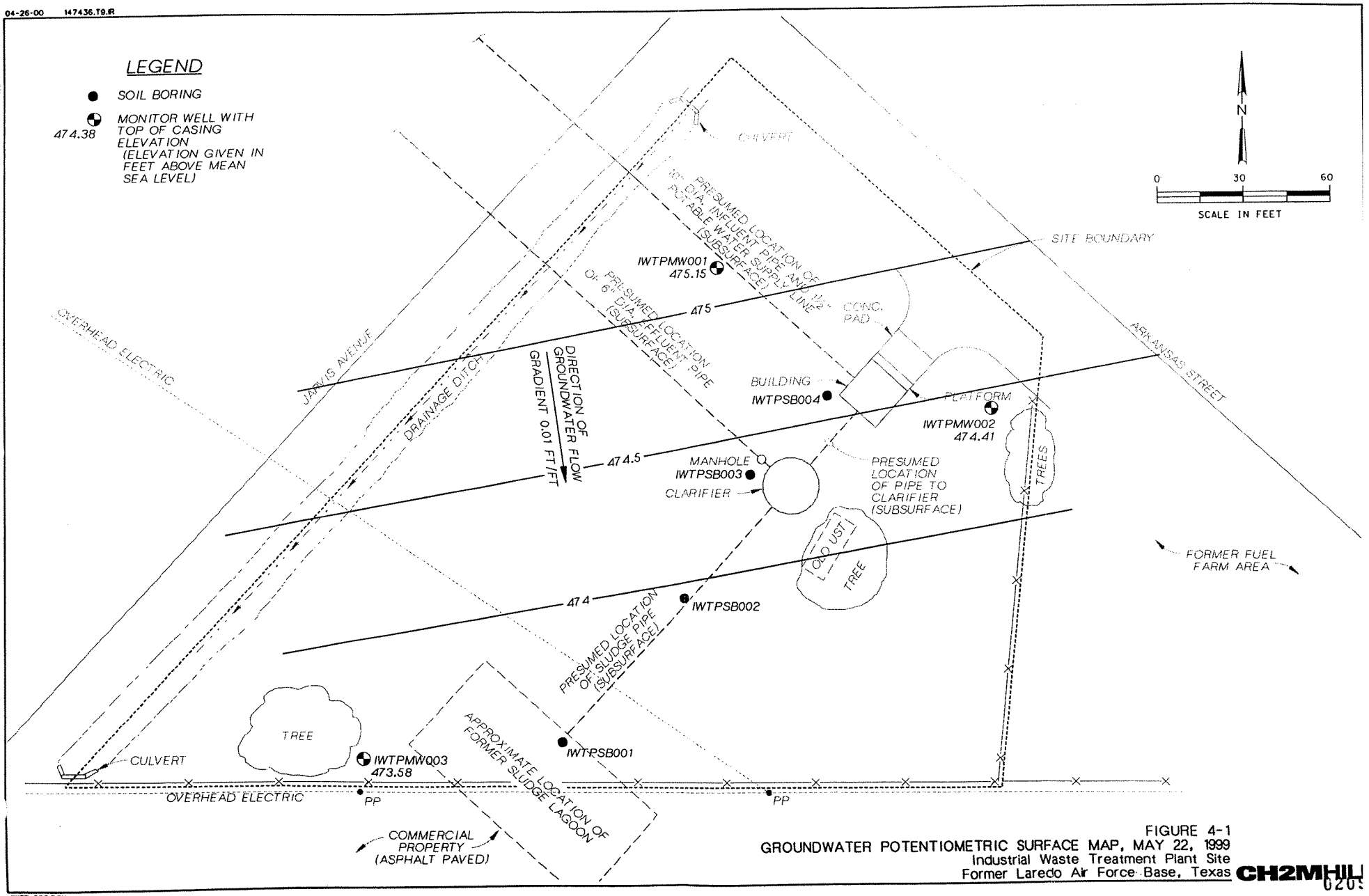


FIGURE 4-1
GROUNDWATER POTENTIOMETRIC SURFACE MAP, MAY 22, 1999
Industrial Waste Treatment Plant Site
Former Laredo Air Force Base, Texas

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IWTP-003.DGN

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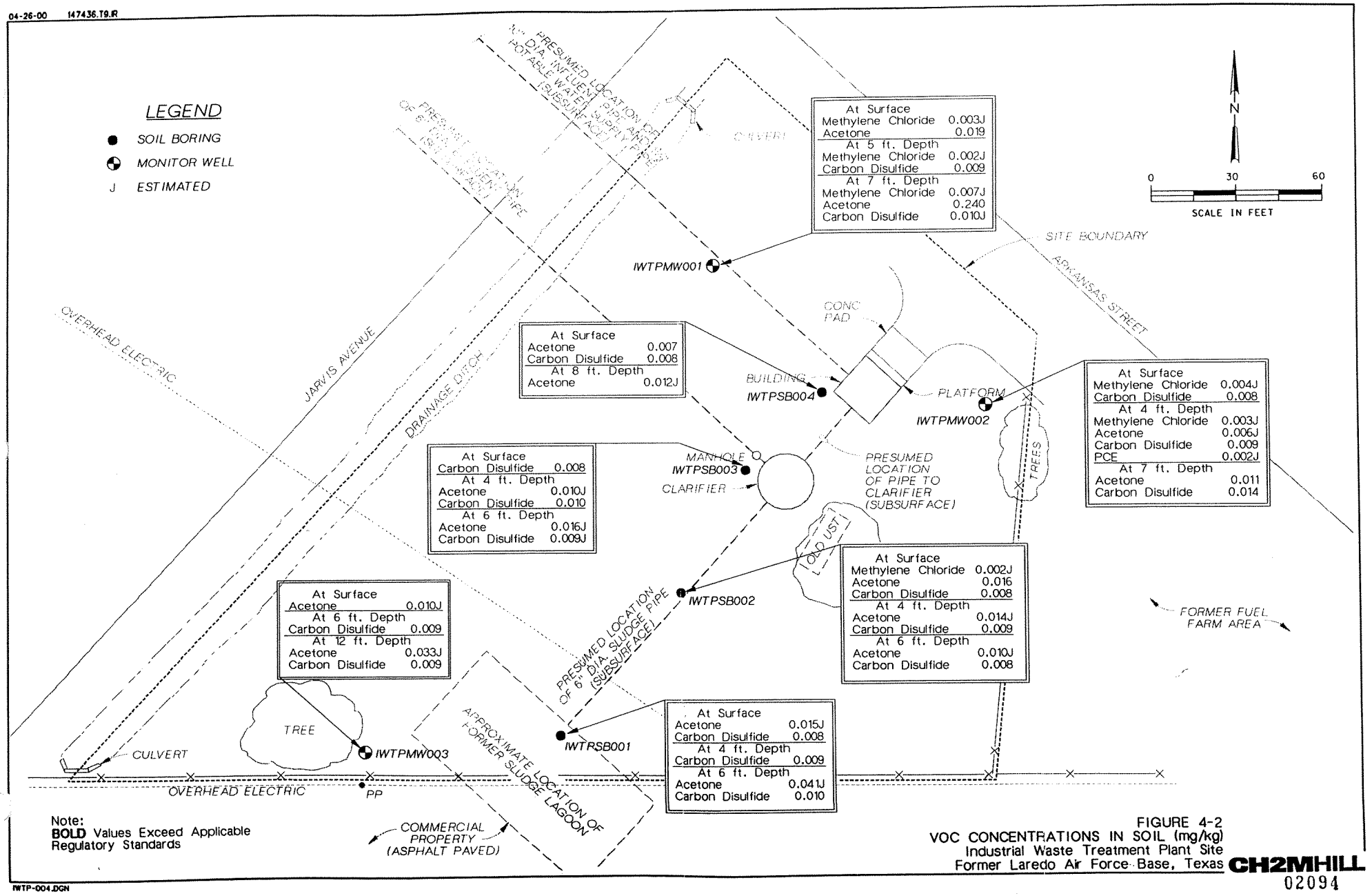

Note:
BOLD Values Exceed Applicable Regulatory Standards

FIGURE 4-2
VOC CONCENTRATIONS IN SOIL (mg/kg)
Industrial Waste Treatment Plant Site
Former Laredo Air Force Base, Texas

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IWTP-004.DGN

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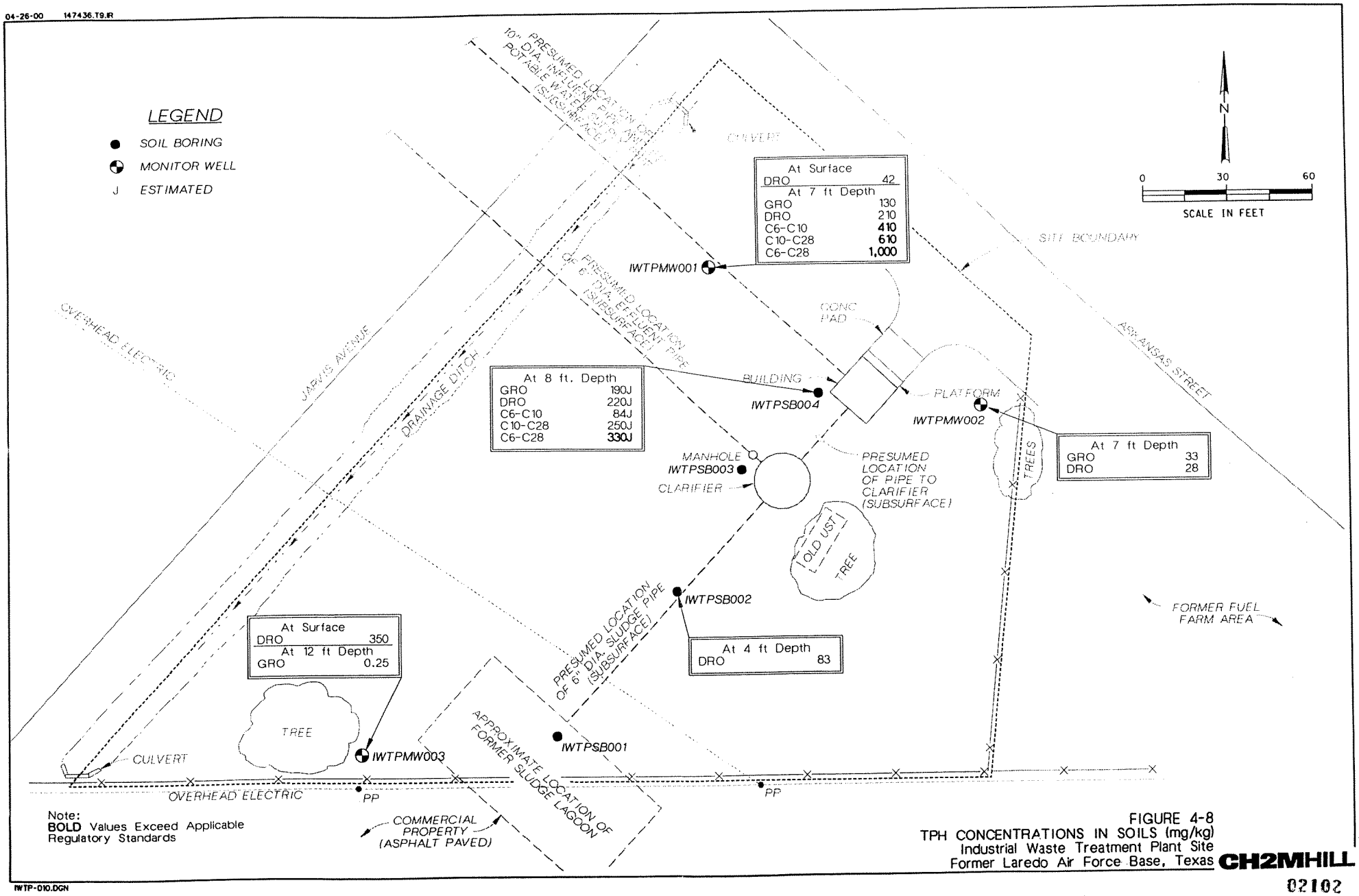

Note:
BOLD Values Exceed Applicable Regulatory Standards

FIGURE 4-8
TPH CONCENTRATIONS IN SOILS (mg/kg)
Industrial Waste Treatment Plant Site
Former Laredo Air Force Base, Texas

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IWTP-010.DGN

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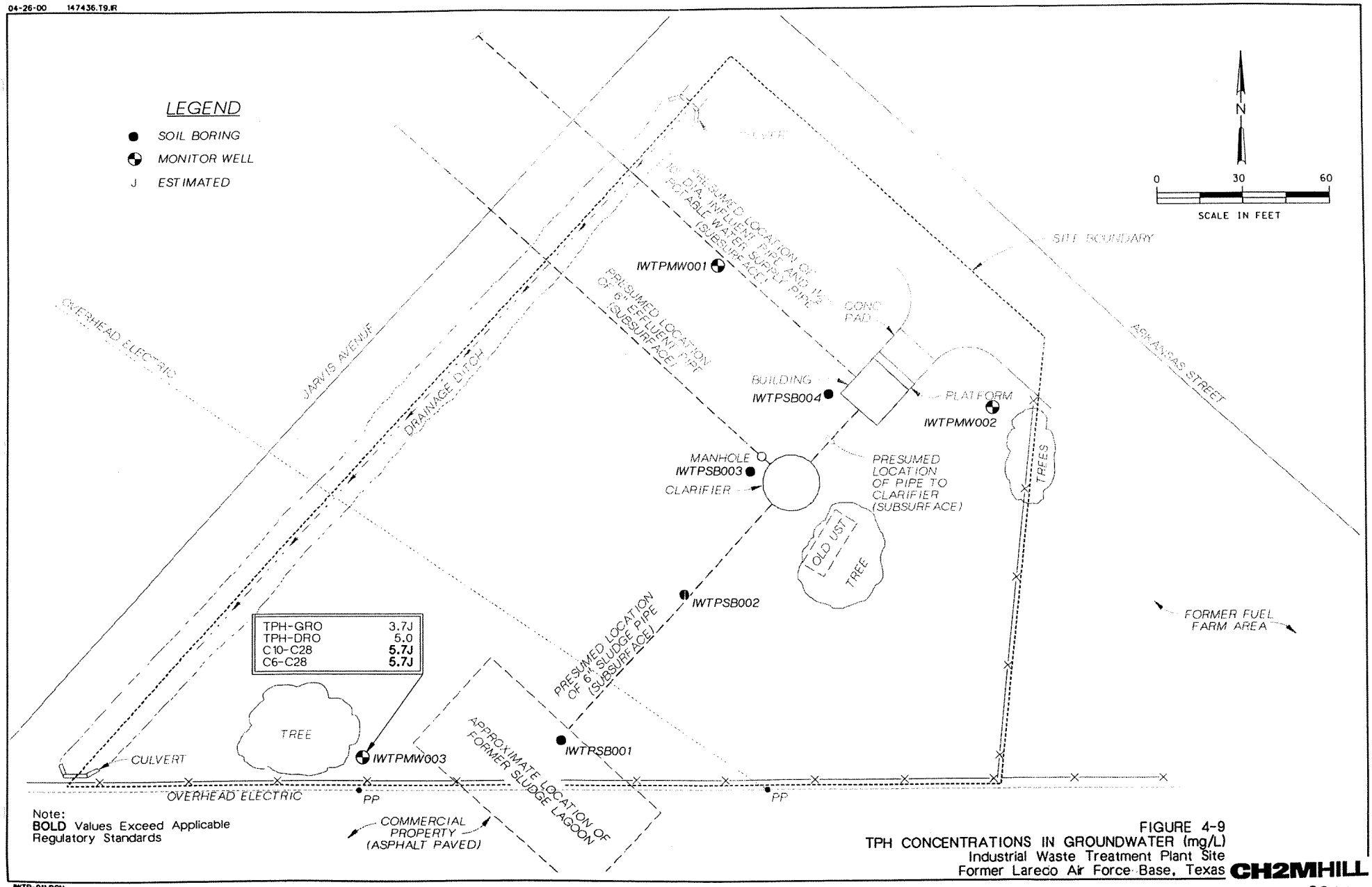

Note:
BOLD Values Exceed Applicable Regulatory Standards

FIGURE 4-9
TPH CONCENTRATIONS IN GROUNDWATER (mg/L)
Industrial Waste Treatment Plant Site
Former Lareco Air Force Base, Texas

CH2MHILL

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IWTP-011.DGN

The highest concentration of TPH-DRO was reported for the surficial sample collected from boring IWTPMW003. However, it is noted that the sample did not exhibit obvious indications of hydrocarbon contamination during sample collection. Samples IWTPMWSO001007 and IWTPSBSO004008 also were reported to have elevated concentrations of TPH-DRO. Both of these samples were collected at the groundwater interface in their respective borings, and exhibited obvious indications (staining and odors) of hydrocarbon contamination during sample collection.

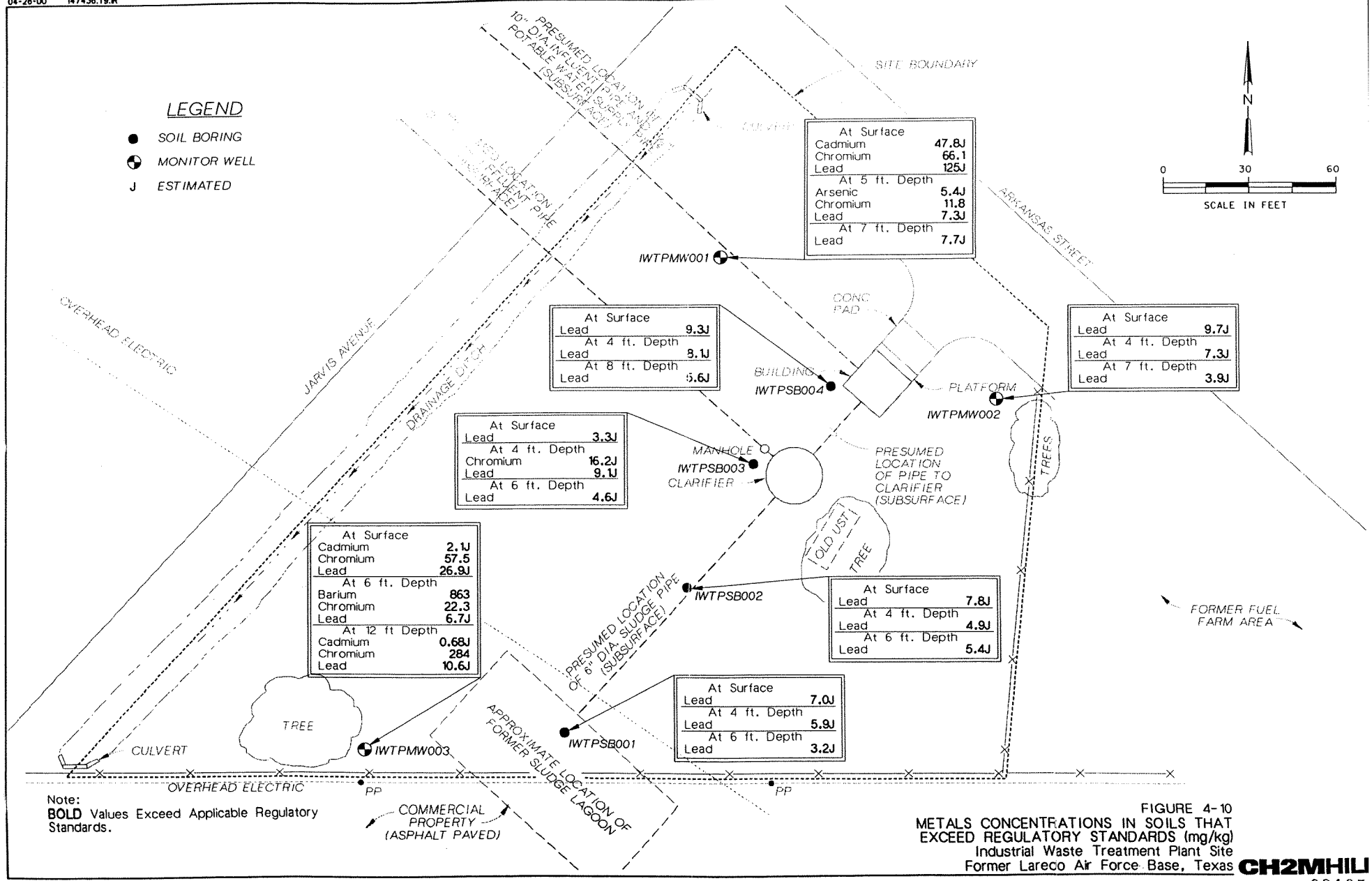
For the TNRCC Method 1005 analysis, TPH was reported only for the subsurface samples collected at the depth of the groundwater interface in borings IWTPMW001 and IWTPSB004. In both samples, the concentration of TPH from the C10-C28 range is greater than the concentration of TPH from the C6-C10 range. Both soil samples contain TPH exceeding the TNRCC RRS2 GWP-Ind MSC for TPH.

Of the three groundwater samples, TPH-GRO, TPH-DRO, and TPH by TNRCC Method 1005 were reported only for the groundwater sample collected from monitor well IWTPMW003. The reported concentration of TPH (by TNRCC Method 1005) exceeds the applicable TNRCC RRS2 GW-Ind MSC.

Because TPH exceeds the applicable TNRCC RRS2 regulatory standards for soil and groundwater, TPH is a COPC for IWTP site soils and groundwater.

4.5.7 Metals

Detectable concentrations of various metals were reported for all of the soil and groundwater samples. Figure 4-10 illustrates the distribution of the various metals detected in IWTP site soil samples that exceed the applicable TNRCC RRS2 GWP-Ind MSCs. The distribution of the various metals detected in IWTP site groundwater samples is illustrated on Figure 4-11. No studies regarding site-specific or former LAFB area-specific background concentrations for metals in soils have been performed. Background concentrations for various metals may be higher than the respective GWP-Ind MSCs. If background concentrations are found to be higher than the GWP-Ind, then the background value would be used for comparison rather than the GWP-Ind.



Note:
BOLD Values Exceed Applicable Regulatory Standards.

FIGURE 4-10
METALS CONCENTRATIONS IN SOILS THAT EXCEED REGULATORY STANDARDS (mg/kg)
Industrial Waste Treatment Plant Site
Former Lareco Air Force Base, Texas

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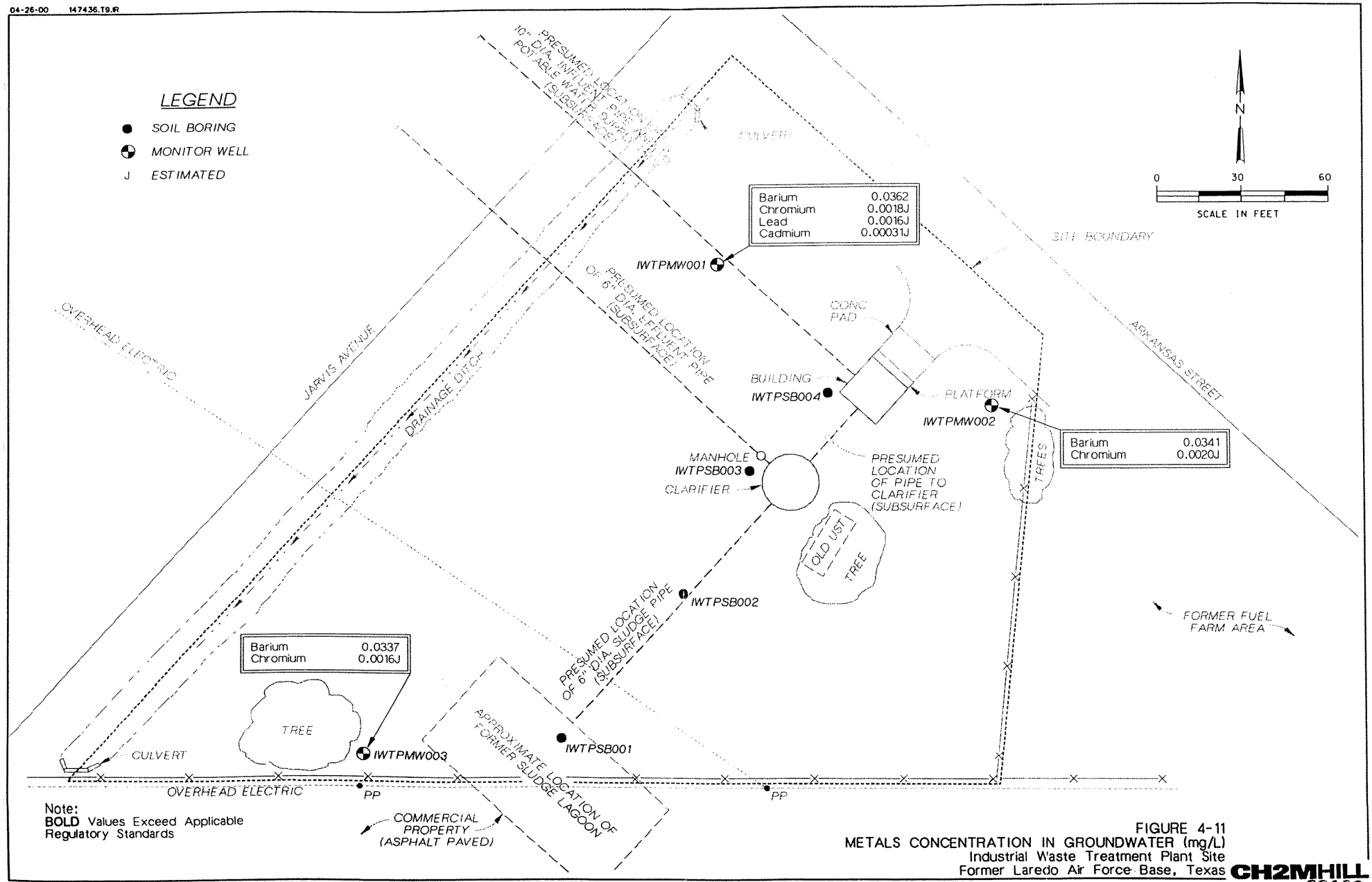
IWTP-013.DGN



Note:
BOLD Values Exceed Applicable Regulatory Standards

FIGURE 4-11
METALS CONCENTRATION IN GROUNDWATER (mg/L)
Industrial Waste Treatment Plant Site
Former Laredo Air Force Base, Texas

CH2MHILL

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IWTP-012.DGN

For the soil samples, all of the detected concentrations of lead and many of the detected concentrations of chromium (six samples), cadmium (three samples), barium (one sample), and arsenic (one sample) exceed applicable TNRCC RRS2 GWP-Ind MSCs. None of the detected concentrations of mercury or selenium exceed applicable TNRCC RRS2 GWP-Ind MSCs. Silver was not detected in any of the soil samples. Because arsenic, barium, cadmium, chromium, and lead exceed the applicable TNRCC RRS2 GWP-Ind MSCs, these metals are considered to be COPCs for IWTP site soils.

Barium, cadmium, chromium, and lead were each reported for one or more of the groundwater samples. None of the reported concentrations exceed applicable TNRCC RRS2 GW-Ind MSCs. Therefore none of the metals were identified as COPCs for IWTP site groundwater.

It is noted that all of the "non-detect" analytical results for selenium in soil samples (20 of the 21 samples) and for arsenic and selenium in all three groundwater samples were rejected during data validation due to low analytical spike recoveries. The low spike recoveries may indicate that the "non-detect" results are not accurate. However, selenium is not considered to be a concern at the IWTP based upon the following points:

- The most common uses of selenium during the period that the IWTP was operational were as a glass additive, as a pigment, and as a component in electronics. Given that the waste stream treated by the IWTP was primarily stormwater runoff from the southern flight line area, selenium would not be likely to have been present in the wastes treated by the IWTP.
- Selenium has not been identified as a contaminant of concern at other sites investigated at the former LAFB. For example, at the Sanitary Landfill Site, selenium was not detected in all 48 soil samples analyzed, and was detected in only 2 of 31 groundwater samples (at concentrations well below the TNRCC RRS2 GW-Ind MSC) (CH2M HILL, 2000).
- The analytical results for QA duplicate soil and groundwater samples collected at the IWTP (and analyzed by a different laboratory) were reported as "non detect" for arsenic (groundwater) and selenium (soils and groundwater). One of the QA duplicate soil

samples was collected from a location that exhibited other contamination, but was still reported as non-detect for selenium.

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Section 5
Contaminant Fate and Transport

5. Contaminant Fate and Transport

As identified in Section 4, the COPCs for the IWTP site at the former LAFB include:

VOCs:	Benzene	Groundwater
	1,1-DCE	Groundwater
	1,2-DCE	Groundwater
	TCE	Groundwater
SVOCs:	1,2-dichlorobenzene	Groundwater
	Carbazole	Soil
	Benzo(a)anthracene	Soil
	Benzo(b)fluoranthene	Soil
	Benzo(a)pyrene	Soil
	Indeno(1,2,3-cd)pyrene	Soil
Pesticides:	Dieldrin	Soil
	4',4'-DDT	Soil
PCBs:	Aroclor-1260	Soil
TPH:	TPH	Soil and groundwater
Metals:	Arsenic	Soil
	Barium	Soil
	Cadmium	Soil
	Chromium	Soil
	Lead	Soil

These COPCs were identified through comparison of analytical results of site soils and groundwater to TNRCC RRS2 GWP-Ind and GW-Ind MSCs. Those constituents found to exceed one or more of these standards are considered to be COPCs. This list of COPCs may be revised by the results of future site investigations. Inorganic (metals) constituents with detected concentrations that are below naturally occurring background concentrations (Risk Reduction Standard No. 1) would be removed from this list of COPCs.

The environmental fate of the various COPCs will depend on a variety of factors, namely the physical and chemical behavior of the contaminants, the geological and hydrogeological

conditions at each of the sites, the potential routes of migration, and the environmental condition of the contaminant source areas. Each of these factors is discussed in the following sections.

5.1 Chemical and Physical Nature of the Contaminants

The fate of a contaminant within the environment and the ability for that contaminant to migrate within the environment depends upon the chemical and physical nature of the contaminant. Properties that can affect a contaminant's fate and transport are water solubility, vapor pressure, molecular weight, organic carbon partition coefficient, octanol-water partition coefficient, Henry's law constant and specific gravity. These properties are necessary to discuss the transport and fate and the applicable remedial technologies for the COPC. The applicable physical and chemical properties for the COPCs at the former LAFB are presented in Table 5-1.

The potential for movement of COPCs from one environmental medium, such as soil, to another, such as the air or groundwater, is defined by partition coefficients. Partition coefficients estimate a COPCs propensity to accumulate in one environmental medium over another. For example, the more water soluble a COPC, the more likely it is that it will reside in the aqueous phase and move through the soil column to the saturated zone. These COPCs can be termed mobile. A COPC with a high affinity for organic carbon (high K_{oc} value, or log octanol-water coefficient) will prefer to remain attached to the soil organic matter or non-aqueous phases. These COPCs can be termed immobile. A COPC that has a high Henry's constant will prefer the gaseous phase over either the soil or water compartment. These COPCs will be mobile within the soil gas phase in any direction, depending on the pneumatic permeability of the soil and vapor phase density of the COPC.

5.1.1 Volatile Organic Compounds

The VOCs 1,1-DCE, 1,2-DCE, TCE, and benzene were identified as COPCs at the IWTP site. Generally, these VOCs are readily soluble in water (1,100 mg/L or more) and have relatively low K_{oc} and log K_{ow} values, indicating that the VOCs are more likely to be leached from soils by groundwater, migrate through soils, and enter the dissolved phase in groundwater (it is noted that none of these VOC COPCs were identified in site soils). The

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TABLE 5-1
Physical and Chemical Properties of COPCs
Site Investigation, IWTP Site, Former Laredo Air Force Base, Laredo, Texas

COPC	Molecular Weight (gm/mol)	Specific Gravity	Water Solubility (mg/l)	Vapor Pressure (mm Hg^2)	K_{oc}	Log K_{ow}	Henry's Constant (atm-m^3/mol)
Benzene	78.11	0.879	1,800	95.2	31 to 143	2.13	$5.3x10^{-3}$
1,1-DCE	96.94	1.21	2,500	591	150	1.48	$2.61x10^{-2}$
1,2-DCE	98.96	1.24	8,700	87	33	1.48	NR
TCE	131.4	1.46	1,100	57.8	100	2.61	$1.0x10^{-2}$
1,2-dichlorobenzene	147.00	1.30	156	1.4	280 to 20,000	3.43	$1.5x10^{-3}$
Carbazole	167.20	1.10	Insoluble	$1.37x10^{-6}$	637	3.72	$8.65x10^{-8}$
Benzo(a)anthracene	228.29	NR	$9.4x10^{-3}$	$1.9x10^{-6}$	$5.5x10^5$ to $1.8x10^6$	5.79	$8.0x10^{-6}$
Benzo(b)fluoranthene	252.32	NR	$1.5x10^{-3}$	$5.0x10^{-7}$	$1.8x10^6$ to $5.0x10^6$	6.60	$5.0x10^{-7}$
Benzo(a)pyrene	252.32	1.35	$1.6x10^{-3}$	$5.5x10^{-9}$	930 to 6,300	5.97	$4.57x10^{-7}$
Indeno(1,2,3-cd)pyrene	276.34	NR	$6.2x10^{-2}$	$1.3x10^{-10}$	$1.1x10^5$	6.7	$3.48x10^{-7}$
Dieldrin	380.93	1.75	0.195	$5.9x10^{-6}$	7,400	5.40	$5.8x10^{-5}$
4,4'-DDT	354.50	0.98	$3.4x10^{-3}$	$1.6x10^{-7}$	$1.1x10^5$ to $3.5x10^5$	6.36	$3.8x10^{-3}$
Arochlor-1260	375.7	1.58	0.027	$4.1x10^{-5}$	$6.1x10^4$ to $7.4x10^6$	6.8	$3.36x10^{-4}$
TPH	NA[2]	NA[2]	NA[2]	NA[2]	NA[2]	NA[2]	NA[2]
Arsenic	74.92	5.73	Insoluble[1]	0	NA	NA	NA
Barium	13.33	3.51	Insoluble[1]	0	NA	NA	NA
Cadmium	112.41	8.65	Insoluble[1]	0	NA	NA	NA
Chromium	51.996	7.14	Insoluble[1]	0	NA	NA	NA
Lead	207.20	11.34	Insoluble[1]	0	NA	NA	NA

NA – not applicable
1 This substance is not soluble in its elemental form, however, salts of this element may be soluble up to several thousands of mg/L.
2 TPH is a combination of multiple compounds and can therefor exhibit a wide range of characteristics.
Source: NLM, 1998

high vapor pressures and Henry's law constants indicate that VOCs have the potential to readily volatilize into the air. VOCs would therefore have the potential to migrate onsite and off-site through the air. All of the VOCs identified as COPCs at the IWTP were identified in the site groundwater. Therefore these COPCs have the potential to migrate offsite along with the migrating groundwater. These compounds would also have the potential to migrate onto the IWTP site from a source outside the site.

5.1.2 Semivolatile Organic Compounds

The SVOC 1,2-dichlorobenzene was identified as a COPC in site groundwater. Carbazole, benzo(a)anthracene, benzo(b)fluoranthene, benzo(a)pyrene, and indeno(1,2,3-cd)pyrene) were identified as COPCs in site soils. With the exception of 1,2-dichlorobenzene, these compounds have much lower solubility in water ($9.4x10^{-3}$ mg/L or less) than the VOCs. This indicates that the compounds would not readily dissolve into migrating groundwater. The higher K_{oc} and Log K_{ow} values for the SVOCs indicate that the compounds will tend to adsorb to soils, and would therefore not readily leach from soils. The ability for the compounds to adsorb to soils would increase with increasing soil organic carbon content. The low Henry's law constants and low vapor pressures for these compounds indicate that these compounds would not likely volatilize into the air. Because of the tendency for these compounds to adsorb to soils, it is unlikely that these SVOC compounds will migrate significantly across the site or off-site.

1,2-Dichlorobenzene, although a SVOC, has a much higher solubility, a higher Henry's Law constant, a higher vapor pressure, and lower K_{oc} and Log K_{ow} values than the other SVOCs. It would be somewhat more likely to dissolve in groundwater and leach from site soils. It would also be more likely to volatilize into the air. 1,2-Dichlorobenzene was identified only in site groundwater. Therefore, 1,2-dichlorobenzene has the potential to migrate off-site (or onto the IWTP site from an off-site source) in the dissolved phase along with migrating groundwater. It is noted that 1,2-dichlorobenzene was not detected in site soil samples.

5.1.3 Pesticides

The pesticides Dieldrin and 4',4'-DDT were identified as COPCs within the IWTP site soils. These compounds have low solubility in water, low vapor pressure, and high K_{oc} and log K_{ow} values. Therefore, these pesticide compounds are likely to adsorb to site soils and are not likely to migrate into groundwater in the dissolved phase or volatilize to the

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atmosphere. Dieldrin is somewhat more soluble in water than 4',4'-DDT and has a slightly lower K_{oc} and log K_{ow} and therefore would have a greater potential than 4',4'-DDT to enter site groundwater. However, neither compound was identified in groundwater at the IWTP site, indicating that significant dissolution and migration of Dieldrin and 4',4'-DDT is not occurring. The potential for these pesticide compounds to migrate significantly in site soils or groundwater is low.

5.1.4 PCBs

The PCB compound Aroclor-1260 was identified as a COPC within the IWTP site soils. The chemical and physical properties of Aroclor-1260 include low solubility in water, high K_{oc} and log K_{ow} values, low vapor pressure, and a low Henry's Law constant. Aroclor-1260 would not be likely to volatilize into the atmosphere. However, Aroclor-1260 could be expected to adsorb to site soils and not migrate into site groundwater. Therefore, the potential for Aroclor-1260 to migrate significantly in site soils or groundwater is low. It is noted that while Aroclor-1360 was identified in the surface soil sample from boring IWTPMW001, the compound was not identified in deeper soil samples from the same boring. This indicates that significant dissolution and migration of the compound is not occurring.

5.1.5 TPH

TPH is a combination of multiple hydrocarbon compounds. Therefore, TPH can exhibit a wide range of characteristics. Typically, TPH-GRO (and the C6-C10 fraction from the TNRCC 1005 analysis) includes the "lighter," more volatile compounds. These compounds can generally be expected to behave more like VOCs (more soluble, more easily leached from soils, and readily volatilized into the atmosphere). The TPH-DRO (and the C10-C28 fraction) includes the "heavier," less volatile compounds. These compounds can generally be expected to behave more like SVOCs (less soluble, more readily adsorbed to soil particles, and less likely to volatilize into the atmosphere). The TPH at the IWTP site was detected as TPH-GRO, as well as TPH-DRO (C6-C10 fraction, as well as the C10-C28 fraction). Therefore, some components of the TPH will likely adsorb to site soils and be relatively immobile, while other components may leach into groundwater and migrate with the groundwater in the dissolved phase.

5.1.6 Metals

The metals arsenic, barium, cadmium, chromium, and lead were identified as COPCs in soils at the IWTP site. The metals are essentially insoluble in elemental form, although salt compounds of the metals can be very soluble in water. Generally, metals are relatively immobile in soils, readily adsorbing to soil particles. It is noted that while arsenic, barium, cadmium, chromium, and lead were detected at concentrations above the GWP-Ind MSCs in site soils, none of the groundwater samples contained concentrations of the metals that exceeded the GW-Ind MSCs. Metals are non-volatile and have no vapor pressure, therefore they will not volatilize into the atmosphere.

5.2 Geological and Hydrogeological Conditions of the Site

As described in Sections 2.4.2 and 4.1, the soils at the IWTP site consist of silt, fine sandy silt, and clayey silt. The moisture content of the shallow soil is low, and the pH of the soil is slightly alkaline. Gypsum and caliche are present within the soils. Weathered fine-grained sandstone was encountered in some borings at a depth of about 10 feet, bgs. Groundwater was encountered at depths of 6 to 10 feet bgs.

Based upon water level measurements in the three monitor wells installed at the site, the groundwater flow gradient at the IWTP site is directed toward the south at a magnitude of about 0.01 ft/ft. Given typical porosities and hydraulic conductivities for silt and fine sand (Dominico and Schwartz, 1990), this flow gradient corresponds to estimated groundwater flow velocities ranging from 4.6×10^{-6} feet/day to 2.2 feet per day. It is noted that the south-southeasterly flow gradient indicated by the monitor well water level measurements does not correspond to surface topography. Surface topography slopes slightly toward the west.

5.3 Potential Routes of Migration

5.3.1 VOCs

The VOCs detected in the IWTP site soils were identified in both surficial and subsurface soil samples (it is noted that only the concentrations detected in the site groundwater exceed the applicable TNRCC RRS2 MSCs). Because the compounds were detected in surficial soil samples, physical transport by wind or surface water and volatilization to the atmosphere are both potential routes of migration. Additionally, since the VOCs have a low potential for

adsorption to soil particles and are readily soluble in water, dissolution and migration in groundwater are also potential routes of migration for the VOCs. However, as discussed in Section 4.5.1, the concentrations of VOCs reported for most of the IWTP site soil samples appear to be due to laboratory contamination and none of the VOCs detected in site soil samples were found in site groundwater samples. Therefore, significant migration of VOCs from IWTP site soils is not likely.

The groundwater sample collected from well IWTPMW003 was found to contain a number of VOCs, although not the same compounds as were detected in the site soil samples. Because the compounds are dissolved into the groundwater, migration of the VOCs with groundwater is a likely route of migration for VOCs.

The VOCs detected in site groundwater also have the potential to volatilize into the soil gas in the vadose zone of the soil, then migrate upward into the atmosphere and indoor air for structures situated over the contaminated groundwater. With the depth to groundwater at the IWTP site as shallow as 6 feet bgs, such volatilization and migration of the contaminants can occur.

5.3.2 SVOCs

The SVOCs detected at the IWTP site were identified in surface soil samples and subsurface soil samples collected from the depth of the groundwater interface. Because the SVOCs were identified in surficial soil samples, physical transport of contaminated soil particles by wind or surface water is a potential route of migration for the SVOCs. The relatively dry climate of the Laredo area, together with the possibility of occasional heavy rainfall, suggests that physical transportation of contaminated soil particles may be a likely route of migration for SVOCs. It is noted, however, that most of the site is covered with grass. The vegetative cover will reduce the potential for physical transport of contaminated soil particles.

Because SVOCs were identified in subsurface soil samples at the depth of the groundwater surface, a potential exists for the dissolution of the SVOCs into groundwater. The low solubility and high K_{oc} and log K_{ow} values for the SVOCs indicate that significant dissolution is not likely. It is noted that the only SVOC determined to be a COPC for site groundwater (1,2-dichlorobenzene) was not detected in site soils. Therefore, the dissolution

of SVOCs from site soils is limited. However, with the presence of 1,2-dichlorobenzene in site groundwater, the migration of the dissolved compound in groundwater is a likely route of migration for 1,2-dichlorobenzene .

Most of the highest concentrations of SVOCs reported for IWTP site soils were reported for subsurface soil samples. Due to the depth of these samples and due to the low vapor pressures and Henry's Law constants for the SVOCs, volatilization of the SVOCs to the atmosphere is not a likely route of migration.

5.3.3 Pesticides and PCBs

The pesticide and PCB compounds detected within the IWTP site soils were found in surficial and shallow subsurface soils. Because these compounds tend to adsorb to soils and have low solubility, the potential for dissolution and vertical migration of these compounds to groundwater is low. Because of the relatively low volatility of these compounds, the potential for volatilization and atmospheric transport is low. However, physical transport of contaminated soil particles by wind and surface water may be a route of migration. It is noted that the grass cover present over most of the site will reduce the potential for physical migration of contaminated soil particles.

The pesticide Heptaclor was detected at a low concentration in the groundwater sample collected from monitor well IWTPMW003. Therefore there is a potential for the migration of Heptaclor in the dissolved phase. However, the concentration of Heptachlor was below the TNRCC RRS2 GW-Ind MSC. It is noted that heptaclor was not detected in any of the IWTP site soil samples.

5.3.4 TPH

The TPH detected at the IWTP site soils was identified in both surficial and subsurface soil samples. The physical behavior of TPH will vary depending upon whether the TPH is made up of shorter chain hydrocarbons (TPH-GRO or C6-C10 fractions, which would behave more like VOCs) or longer chain hydrocarbons (TPH-DRO or C10-C28 fractions, which would behave more like SVOCs). The TPH detected in surficial samples is reported as TPH-DRO. Therefore, physical transport by wind or surface water could be a route of migration for TPH, but volatilization to the atmosphere would be expected to be minimal. Both TPH-GRO (and C6-C10 fraction) and TPH-DRO (and C10-C28 fraction) were reported for

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subsurface soils, including samples collected at the depth of the groundwater interface. Therefore, dissolution and migration in groundwater are potential routes of migration for the TPH. TPH-GRO, TPH-DRO, and C10-C-28 fraction TPH were reported for the groundwater sample collected from well IWTPMW003.

5.3.5 Metals

Metals were identified in IWTP site soils and groundwater. Although salt compounds of the various metals can be very soluble in water, the metals tend to adsorb to soils. At the IWTP site, the potential for the metals to dissolve and migrate downward into groundwater is limited by the clay content and slightly alkaline condition of the soil, as well as the limited amount of rainfall that occurs in the Laredo area. It is noted that none of the groundwater samples collected at the IWTP site were found to contain concentrations of metals exceeding the applicable TNRCC RRS2 GW-Ind MSCs. This indicates that significant dissolution and migration of metals in site soils is not occurring. Therefore, the dissolution and migration of metals with groundwater is not considered a route of migration.

Metals are non-volatile, therefore atmospheric transport is not a potential route of migration for metals contaminants. Because metals readily adsorb to soil particles, physical transport of contaminated soil particles by wind or surface water can be a potential route of migration. It is noted that the grass cover present on most of the IWTP site would reduce the physical transport of contaminated soil particles.

5.4 Potential Receptors

COPCs were identified in site soils and site groundwater. The COPCs identified in site soils are all compounds that are relatively non-volatile, with low solubility and a tendency to adsorb to soils. It is noted that none of the COPCs identified in the IWTP site soils were detected at concentrations exceeding the applicable TNRCC RRS2 SAI-Ind MSCs. The potential receptors for these contaminants would be those persons who would have the potential to come into direct contact with site soils, such as construction personnel and City and private utility personnel. Exposure would be through direct dermal contact or through ingestion/inhalation of contaminants adsorbed to airborne particles. Those involved in activities that disturb the site soils (construction, excavation, etc.) would be most at risk for exposure.

The COPCs identified in site groundwater include a number of VOCs and one SVOC compound. It is noted that groundwater is not utilized as a water supply in the vicinity of the IWTP. Therefore, the most likely route of exposure would be through inhalation of volatilized contaminants. Since the site is open, volatilization to the atmosphere is not likely to generate atmospheric concentrations at detectable levels. Therefore, the persons who would have the greatest potential to be exposed to the volatilized contaminants would be those persons working in excavations or enclosed spaces, such as construction personnel and utility personnel.

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Section 6
Conclusions and Recommendations

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6. Conclusions and Recommendations

6.1 Conclusions

The IWTP Site was utilized for industrial wastewater treatment from 1969 until base closure in 1974. No information regarding the amounts of waste processed by the system or regarding the disposal of sludges of waste from the system is available. Therefore, site soils and groundwater were analyzed for VOCs, SVOCs, TPH, pesticides, herbicides, PCBs, and total RCRA metals. The results of the investigation indicate that:

6.1.1 Soils

- Various VOCs and SVOCs, TPH, pesticides, a PCB compound, and various metals were detected in site soil samples. Of the detected compounds, those reported at concentrations exceeding TNRCC RRS2 MSCs were identified as COPCs. The COPCs for site soils include the SVOCs benzo(a)pyrene, benzo(a)anthracene, benzo(b)fluoranthene, carbazole, and indeno(1,2,3-cd)pyrene, the pesticides dieldrin and 4',4'-DDT, the PCB compound Aroclor-1260, TPH, and the metals arsenic, barium, cadmium, chromium, and lead. This list of COPCs may be revised by the results of future site investigations. Inorganic (metals) constituents with detected concentrations that are below naturally occurring background concentrations (Risk Reduction Standard No. 1) would be removed from this list of COPCs.

- Three of the four VOCs identified in site soils, methylene chloride, acetone, and carbon disulfide, are likely to be due to laboratory contamination. This is based upon the scattered occurrence of the compounds in the soil samples (including surficial samples), the low concentrations reported for the compounds, the warm, dry climate of the Laredo area, and the fact that these compounds are recognized as typical laboratory contaminants. It is noted however, that because these compounds were not identified in blank samples associated with the analysis of the IWTP site soil samples, data validation cannot qualify the reported concentrations as being due to laboratory contamination. PCE, not a common laboratory contaminant, was detected in a subsurface soil sample (four feet bgs) collected from monitor well boring IWTPMW002.

- Except for one surficial soil sample that contained benzo(a)pyrene at a concentration above the applicable MSC, all of the SVOC concentrations exceeding MSCs are from subsurface samples. Those subsurface samples exhibited obvious indications of contamination during sampling (hydrocarbon staining and odors, elevated PID readings). Those samples were collected from the depth of the groundwater interface in monitor well boring IWTPMW001 and soil boring IWTPSB004. The soil sample collected at the depth of the groundwater interface in the boring for monitor well IWTPMW002 also exhibited hydrocarbon staining and odors, however, no SVOC compounds were detected for the soil sample. The presence of the SVOCs (and hydrocarbon staining and odors) primarily in samples collected from the groundwater capillary fringe zone is consistent with migration of the contaminants from another source.

- The three locations where hydrocarbon staining and odors were observed are the most upgradient locations sampled at the site. Locations IWTPMW001 and IWTPSB004 are adjacent to or downgradient from system piping, indicating that the piping may be the source of the SVOC contamination in the subsurface soils. However, IWTPMW002 is not downgradient of any of the IWTP facilities, suggesting that the SVOC contamination detected in these subsurface soils may be due to off-site activities upgradient of the IWTP.

- The highest concentrations of TPH in IWTP site soils generally corresponds to the presence of observable indications of contamination (staining and odors) that were noted during drilling. The presence of the TPH (and hydrocarbon staining and odors) primarily in samples collected from the groundwater capillary fringe zone is consistent with migration of the contaminants from another source. The detected TPH in subsurface soil and groundwater samples from boring IWTPMW003 does not correspond to observed indications of contamination, but it does correspond with VOC contamination in the groundwater. No staining or other indications of contamination were observed to correspond with the detected TPH reported for the shallow subsurface sample from boring IWTPSB002 or the surface soil sample from IWTPMW003.

- The pesticide compounds detected in IWTP site soils were found in surficial and shallow (4- to 5-feet depth) subsurface soils. Those samples exceeding TNRCC RRS2 MSCs are

surficial samples. This indicates that the pesticide contamination is more likely due to normal use of these compounds, rather than to the treatment of waste materials through the IWTP.

- One PCB compound, Arochlor 1260, was identified in two surficial soil samples, with only the surficial sample from monitor well boring IWTPMW001 exceeding the applicable TNRCC RRS2 MSC. Because the compound occurs in surface soil samples but not subsurface samples, the presence of the compound is more likely due to inadvertent spills or leaks of the compound rather than to the treatment of waste materials through the IWTP. PCB containing equipment or materials could have been stored on the IWTP site prior to the construction of the IWTP.

- No herbicide compounds were detected in site soils.

- Detectable concentrations of various RCRA metals in soils were reported for samples collected throughout the site. Generally, the detected concentrations for each metal were fairly consistent across the site, within one or two orders of magnitude. Arsenic, barium, cadmium, chromium, and lead were reported at concentrations exceeding applicable TNRCC RRS2 GWP-Ind MSCs for at least one sample. However, none of the groundwater samples exhibited metals at concentrations exceeding the applicable regulatory standards, indicating that significant leaching of the metals into the groundwater is not occurring. It is noted that the "non-detect" analytical results for selenium (20 of the 21 samples) were rejected during data validation due to low analytical spike recoveries. The low spike recoveries could suggest that the non-detect results for the field samples are not accurate. However, selenium would not appear to be a concern for IWTP site soils because: a) the most common uses of selenium were as a glass additive, as a pigment, and as a component in electronics, during the period that the IWTP was operational and that the waste stream treated by the IWTP was primarily stormwater runoff from the southern flight line area; b) selenium has not been identified as a contaminant of concern at other sites investigated at the former LAFB; and c) QA duplicate soil and groundwater samples analyzed for selenium by a different analytical laboratory were "non-detect".

- The soil samples from boring IWTPSB001 were reported to contain few contaminants. As this location was intended to be located within the former IWTP sludge lagoon, a significant amount of contamination was expected. Because no indication of the presence of the sludge lagoon is visible at the site, the former location of the lagoon was estimated from maps and aerial photographs. Also, overhead electric utilities along the southern edge of the IWTP site caused the boring to be drilled further north than planned. It is therefore possible that the boring missed the lagoon area.

6.1.2 Groundwater

- Various VOCs and SVOCs, TPH, a pesticide compound, and various metals were detected in site groundwater samples. Of the detected compounds, those identified as COPCs for site groundwater include the VOCs benzene, 1,1-DCE, 1,2-DCE (total), and TCE, the SVOC 1,2-dichlorobenzene, and TPH. This list of COPCs may be revised by the results of future site investigations.

- The VOCs that were detected in groundwater were reported only for the groundwater sample collected from monitor well IWTPMW003. This well is located in the southwestern area of the site, adjacent to the west of the former location of the sludge lagoon associated with the IWTP. Given the south-southeasterly groundwater flow gradient determined during this investigation, the well is located upgradient from all of the IWTP facilities. Therefore, the VOC contamination reported for the IWTPMW003 groundwater sample may be due to some unknown source located north-northwest from the IWTP site, rather than from former IWTP site operations. Possible sources located to the north-northwest include the warehouses along Jarvis Street or the former motor pool area.

- None of the VOC compounds detected in IWTP site groundwater were reported for IWTP site soil samples.

- The SVOC compounds detected in site groundwater were reported for samples from IWTPMW003 and IWTPMW001. The compounds detected at IWTPMW001 are acenaphthene, dibenzofuran, and fluoranthene, which appear to reflect the hydrocarbon staining and odors observed (as well as the analytical results reported) in the deeper subsurface soil sample from boring IWTPMW001. The compounds detected at

IWTPMW003 are 1,2-dichlorobenzene, 1,3-dichlorobenzene, 1,4-dichlorobenzene, and 1,2,4-trichlorobenzene. These are lighter SVOCs and appear to complement the VOCs detected in the groundwater sample from IWTPMW003. None of the SVOC compounds detected in the groundwater sample from IWTPMW003 were detected in the soil samples from that boring.

- TPH was detected in groundwater only at well IWTPMW003.
- No RCRA metals constituents were detected in groundwater samples at concentrations exceeding the applicable RRS2 GW-Ind MSCs. The "non-detect" results for arsenic and selenium were rejected during data validation due to low analytical spike recoveries. As with the rejected selenium results for the IWTP soil samples, the low spike recoveries might indicate that the "non-detect" results are not accurate. However, selenium does not appear to be a concern for IWTP site groundwater based upon the points set forth for the soil samples. Similarly, arsenic does not appear to be a concern for IWTP site groundwater samples because only one of the 21 soil samples contained arsenic at a concentration slightly exceeding theTNRCC RRS2 GWP-Ind MSC. Further, a deeper soil sample collected at the same location contained arsenic at a concentration below the GWP-Ind MSC. This indicates that arsenic would not be likely to leach into groundwater at significant concentrations. It is noted that the QA duplicate groundwater sample (analyzed by a different laboratory) was reported as "non-detect" for arsenic.
- At the airport fuel farm area, located adjacent to the northeast of the IWTP site (on the opposite side of Arkansas Street Extension), a west-southwesterly groundwater flow gradient was reported, which generally reflects surface topography. At the IWTP site, the groundwater flow gradient does not reflect surface topography. Surface topography generally slopes toward the west, while the groundwater flow gradient is directed toward the south-southeast.

6.1.3 General

- A dry cleaning shop was reportedly operating for a number of years in the strip shopping center located on the commercial property located adjacent to the south of the IWTP site. It is noted that most of the VOC constituents detected in the groundwater sample from monitor well IWTPMW003 are utilized as dry cleaning agents or are

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degradation products of PCE, which is commonly utilized as a dry cleaning solvent. Other petroleum-based solvents are also utilized in dry cleaning. While this dry cleaning shop was located downgradient from the IWTP site, the location and orientation of the sanitary sewer and storm sewer systems associated with the shopping center are unknown. If the sewers are located along the north side of the commercial property, a leak from one of these systems could be a source of the VOC contamination detected in well IWTPMW003.

- The UST release investigation at the fuel farm indicates a groundwater flow gradient to the west-southwest. The IWTP site would therefore be downgradient of the fuel farm. The south-southeasterly groundwater flow gradient at the IWTP site may be seasonal or caused by artificial groundwater recharge (from leaking underground piping, for example). Therefore, the fuel farm may be a potential source of the TPH and SVOC contamination at the IWTP site.

- Given the south-southeasterly groundwater flow gradient measured at the IWTP, the former motor pool area that was located about 100 yards northwest of the IWTP may be a source of the contamination at the IWTP.

- The potential receptors for the contaminants at the IWTP site are those likely to come into direct contact with site soils or those working in excavations or enclosed spaces, particularly excavations that would reach the depth of groundwater. Those potential receptors would include persons such as construction or utility personnel.

6.2 Recommendations

Contamination is present within the soil and groundwater at the IWTP site. Therefore, additional investigation is warranted:

- Additional investigation into the past use of the IWTP site should be performed. In particular, information should be obtained regarding whether any of the subsurface piping associated with the IWTP was removed from the ground. If the piping is found to remain in the ground, then its integrity should be evaluated. The materials stored in the storage areas that were formerly on the site should also be researched.

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- An investigation into the past and current use of properties adjacent to the IWTP site should be performed in order to determine whether other potential sources exist for the contamination at the IWTP site. In particular, potential sources for the groundwater contamination at well IWTPMW003 and the soil contamination at wells IWTPMW001 and IWTPMW002 and soil boring IWTPSB004 should be researched. The location and orientation of the sanitary and storm sewers on the commercial property adjacent to the south of the IWTP site should be identified.

- A study to identify other potentially off-site sources of the site contamination should be undertaken. Possible off-site sources include the fuel farm area, the former motor pool area, materials stored in the warehouses along Jarvis Street, and the former dry cleaner on the commercial property south of the IWTP site.

- Periodic groundwater level measurements should be performed over at least one year's time in order to observe seasonal fluctuations in the groundwater level and flow direction.

- Slug tests should be performed on all three site monitor wells to better estimate the hydraulic conductivity of the subsurface soils.

- Confirmation sampling of the surficial and shallow subsurface soils in the vicinity of IWTPMW001, IWTPSB002, and IWTPSB004 should be performed. These samples will be utilized to verify the reported concentrations of SVOCs, pesticides, and PCBs that exceed applicable regulatory standards at these locations. The new samples would be collected from the same intervals as the SI soil samples, and in the same locations as borings IWTPMW001, IWTPSB002, and IWTPSB004. The confirmation samples should be analyzed for Synthetic Precipitation Leachate Procedure (SPLP) and total SVOCs, pesticides, and/or PCBs as appropriate, based upon the results of the SI investigation. The SPLP results will indicate whether the detected concentrations of contaminants are likely to migrate through the soils into groundwater and to determine compliance with groundwater protection. It is suggested that since the SVOC compounds of most concern at the site are polynuclear aromatic hydrocarbons (PAH) and since the detection limits achieved for some of the PAH compounds by method 8270C were above the

TNRCC RRS2 GWP-Ind MSCs, the SVOCs should be analyzed by EPA Method 8310 to achieve lower detection limits.

- Additional subsurface investigation is recommended to further delineate the soil and groundwater contamination and to define the source area(s) of the contamination. It is recommended that direct push methods be used to collect additional soil and groundwater samples at more or less regular intervals across the site, as well as on the commercial property south of the IWTP site. Based upon the results of the direct push samples, additional monitor wells could be installed. It is suggested that one shallow monitor well be placed in the area shown to have the highest contamination, and other additional shallow wells should be placed at the eastern, western, and southern extent of the contamination. A deep monitor well should be installed near the apparent source area, as determined by the direct push sampling, in order to assess the vertical extent of the contamination.

- Additional sampling of present and future groundwater monitor wells should include analysis for natural attenuation parameters.

- A background metals study should be performed to determine local background metals concentrations in soils in the former LAFB vicinity. These background values can then be compared to concentrations reported for soil samples collected at the IWTP site, as well as other investigation sites near the LIA.

Section 7
References

Section 7
References

7. References

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USACE, 1946, General Plan, Laredo Army Airfield, Texas, map, dated January 23, 1946.

USACE, 1969, Storm Drainage Plan Map, Laredo Air Force Base, July 28, 1966 (revised January 1969).

USACE, 1973-1, Master Plan, Water Distribution System, Laredo AFB, map sheet G-1, March 27, 1967 (revised January 1973).

USACE, 1973-2, Master Plan, Sanitary Sewage System, Laredo AFB, map sheet G-1, no date, revised January 1973.

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USDA (US Department of Agriculture), Soil Conservation Service, Soil Survey, Webb County, Texas, (date unknown).

02131

Appendix A
Soil Boring Logs

CH2MHILL

PROJECT NUMBER	BORING NUMBER		
147436.T9.FW	IWTPSB001	SHEET 1	OF 1

SOIL BORING LOG

PROJECT : Former Laredo AFB SI LOCATION : IWTP ELEVATION (TBM or MSL) : 481.2

DRILLING CONTRACTOR : Jones Environmental Drilling NAME OF DRILLER : David Rogers

DRILLING METHOD/EQUIPMENT: CME Model 75 HSA rig SIZE/TYPE OF BIT : 6" OD HSA

DIRECTION OF HOLE : **vertical** inclined _____ deg from vertical

OVERBURDEN THICKNESS : >10 DEPTH DRILLED INTO ROCK : 0 TOTAL DEPTH OF BORING : 10 ft

WATER LEVELS : about 8.5 ft bgs START : 5/19/99 0715 END : 0840 LOGGER : Dougherty

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL (FT) Time	RECOVERY (IN)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Headspace Analysis
1		24	SM-ML		Silty fine sand, yellowish brown, 10 YR 5/6, soft, dry to, slightly moist, a few pieces of gravel	Triplicate sample collected from this interval
2						0 ppm
3		12			3.0 - 4.0 No Recovery	1 ppm
4			ML -SM		4.0 Silt, Sandy (fine), yellow brown 10 YR 5/6, very moist, soft, some gypsum crystal growth at 5.8 ft	0 ppm
5		24				2 ppm
6						2 ppm
7		24			6.5 silt, as above, olive yellow 2.5 Y 6/6, very moist to wet, abundant gypsum crystal growth below 7 ft., iron oxide in laminations	1 ppm
8	0826 ▽				8.0 Heavy iron oxide staining	2 ppm
9		24	SM-ML		8.5 silty fine sand, olive 5Y 5/4, with iron oxide staining, gypsum in several thin streaks, soft, very moist to wet.	Started using hammer @ 8.5 ft 3 ppm Approximate depth of groundwater while drilling
10						
11	0840				TD = 10.0 ft	3 ppm Boring backfilled to surface with benonite chips
12						
13						

02133

CH2MHILL

PROJECT NUMBER	BORING NUMBER		
147436.T9.FW	IWTPSB002	SHEET 1	OF 1

SOIL BORING LOG

PROJECT : Former Laredo AFB SI LOCATION : IWTP ELEVATION (TBM or MSL) : 481.9

DRILLING CONTRACTOR : Jones Environmental Drilling NAME OF DRILLER : David Rogers

DRILLING METHOD/EQUIPMENT: CME Model 75 HSA rig SIZE/TYPE OF BIT : 6" HSA

DIRECTION OF HOLE : **vertical** inclined _____ deg from vertical

OVERBURDEN THICKNESS : > 8 ft DEPTH DRILLED INTO ROCK : 0 TOTAL DEPTH OF BORING : 8 ft

WATER LEVELS : ≈ 8 ft bgs START : 0910 - 5/19/99 END : 1000 LOGGER : Dougherty

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL (FT) Time	RECOVERY (IN)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Headspace Analysis
1		24	SM-ML		Silty, fine sand, yellowish brown, 10 YR 5/6, stiff dry, becoming soft, moist at about 0.5 ft, some pieces of gravel	
2			ML -SM		2.0 Silt, sandy (fine), yellowish brown, soft, moist, some gypsum streaks	0 ppm
3		24				0 ppm
4						0 ppm
5		24			4.5 As above, moist, yellowish brown 10 YR 5/8	0 ppm
6			ML		5.8 Silt, lightl grey 2.5 Y 7/2, soft, wet 6.0 As above, abundant iron oxide staining, moist, stiff	0 ppm
7		24			6.5 silt, sandy (fine), light yellowish brown 2.5 Y 6/4, some iron oxide, abundant gypsum crystals, moist, stiff	0 ppm Hammered from 7 - 8 ft
8	▽					0 ppm Approximate depth of groundwater while drilling
					TD = 8.0 ft	Boring backfilled with benonite chips
9						
10						
11						
12						
13						

0213

CH2MHILL

PROJECT NUMBER	BORING NUMBER		
147436.T9.FW	IWTPSB003	SHEET 1	OF 1

SOIL BORING LOG

PROJECT : Former Laredo AFB SI LOCATION : IWTP ELEVATION (TBM or **MSL**) : 483.4

DRILLING CONTRACTOR : Jones Environmental Drilling NAME OF DRILLER : David Rogers

DRILLING METHOD/EQUIPMENT: CME Model 75 HSA rig SIZE/TYPE OF BIT : 6" HSA

DIRECTION OF HOLE : **vertical** inclined _____ deg from vertical

OVERBURDEN THICKNESS : > 8 ft DEPTH DRILLED INTO ROCK : 0 TOTAL DEPTH OF BORING : 8 ft

WATER LEVELS : about 7 ft START : 1030 - 5/19/99 END : 1135 LOGGER : Dougherty

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL (FT) / Time	RECOVERY (IN)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Headspace Analysis
1		24	ML-SM		Slit, sandy (fine), light olive brown, 2.5 Y 5/4, dry, slightly stiff, gypsum streaks	
2						
3		18			2.5 As above, dark yellowish brown 10YR 4/4, moist, moderately stiff	0 ppm
4						0 ppm
5		24				0 ppm
6					6.2 Silt, sandy (fine), light olive brown 2.5 Y 5/4, soft, very moist	
7	▽	24			Wet at 7 ft bgs	0 ppm Approximate depth of groundwater while drilling
8					7.5 Weathered sandstone, fine grained, wet, light olive brown 2.5 Y 5/4	
					TD = 8.0 ft	0 ppm
9						Boring backfilled with bentonite chips
10						
11						
12						
13						

02135

CH2MHILL

PROJECT NUMBER	BORING NUMBER		
147436.T9.FW	IWTPSB004	SHEET 1	OF 1

SOIL BORING LOG

PROJECT : Former Laredo AFB SI LOCATION : IWTP ELEVATION (TBM or **MSL**) : 483.7

DRILLING CONTRACTOR : Jones Environmental Drilling NAME OF DRILLER : David Rogers

DRILLING METHOD/EQUIPMENT: CME Model 75 HSA rig SIZE/TYPE OF BIT : 6" HSA

DIRECTION OF HOLE : **vertical** inclined _____ deg from vertical

OVERBURDEN THICKNESS : > 10 ft DEPTH DRILLED INTO ROCK : 0 TOTAL DEPTH OF BORING : 10 ft

WATER LEVELS : about 9 ft START : 1350 5/19/99 END : 1600 LOGGER : Dougherty

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL (FT) Time	RECOVERY (IN)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Headspace Analysis
1		24	ML-SM		Silt, sandy (fine), light olive brown, 2.5 Y 5/3, dry, moderately stiff, some pieces of gravel	
					1.5 As above, yellowish brown, 10 YR 5/4, grades in to dark yellowish brown 10 YR 4/6, gypsum streaks.	
2						0 ppm
3		8			2.7 - 4.0 No Recovery	
4					4.0 Silt, sandy (fine), dark yellowish brown 10 YR 4/6, dry, moderately stiff, gypsum streaks	0 ppm
5		24				
6	1415		ML		6.0 Silt, yellowish brown, 10YR 5/6, moderately soft, moist, grades to olive yellow 2.5 Y 6/6	0 ppm
7		24				0 ppm
					7.7 As above, hydrocarbon staining & odor (dark bluish grey 10 B 4/1)	
8	1450					95 ppm
						Triplicate samples collected from this interval
9	▽	24	SM - ML		9.0 Grading into fine grained weathered sandstone, wet	325 ppm Approximate depth of groundwater while drilling
10	1500				TD = 10 ft	PID = 130 ppm
						Note: 3 borings drilled to obtain sufficient sample volume for duplicate sample @ 8 - 10 FT
11						Borings backfilled with bentonite chips
12						
13						

CH2MHILL

PROJECT NUMBER	BORING NUMBER		
147436.T9.FW	IWTPMW001	SHEET 1	OF 2

SOIL BORING LOG

PROJECT : Former Laredo AFB SI LOCATION : IWTP ELEVATION (TBM or **MSL**) : 481.8

DRILLING CONTRACTOR : Jones Environmental Drilling NAME OF DRILLER : Joe Medrano

DRILLING METHOD/EQUIPMENT: CME Model 75 HSA rig SIZE/TYPE OF BIT : 10" HSA

DIRECTION OF HOLE : **vertical** inclined _____ deg from vertical

OVERBURDEN THICKNESS : >15' DEPTH DRILLED INTO ROCK : 0 TOTAL DEPTH OF BORING : 15 ft

WATER LEVELS : about 8 ft bgs START : 0855 5/18/99 END : 1030 LOGGER : Dougherty

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL (FT) Time	RECOVERY (IN)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Headspace Analysis
1		24	ML-SM		Silt, brownish yellow, 10 YR 6/6, stiff, moist to dry, some fine sand, some coarse sand, carbonate nodules	PID=0 ppm
2					3" clayey zone at 2 ft bgs	0 ppm
3		24			2" cobble @ 2.5 ft	
4						0 ppm
5		24				
6	0940		SM		5.75 As above, moist 6.0 Sand, silty, medium to fine grain, brownish yellow 10YR 6/6, moist, stiff	0 ppm
7	▼	24			7.0 Sand, as above, grey, strong hydrocarbon odor, very moist to wet	Approximate depth of groundwater in well (5/22/99) 202 ppm
8	▽					380 ppm Approximate depth of groundwater while drilling
9		15				13 ppm
10					9.5 - 10.0 No Recovery	2 ppm
11		20			10.0 Sand and weathered sandstone, fine grained, light olive brown, 2.5Y 5/6, wet, slight hydrocarbon odor, some thin laminations of coarse sand	Used hammer to recover samples below 10ft bgs 0 ppm PID
12						0 ppm
13		20				

02137

CH2MHILL

PROJECT NUMBER	BORING NUMBER		
147436.T9.FW	IWTPMW001	SHEET 2	OF 2

SOIL BORING LOG

PROJECT : Former Laredo AFB SI LOCATION : IWTP ELEVATION (TBM or **MSL**) : 481.8

DRILLING CONTRACTOR : Jones Environmental Drilling NAME OF DRILLER : Joe Medrano

DRILLING METHOD/EQUIPMENT: CME Model 75 HSA rig SIZE/TYPE OF BIT : 10" HSA

DIRECTION OF HOLE : **vertical** inclined _____ deg from vertical

OVERBURDEN THICKNESS : >15' DEPTH DRILLED INTO ROCK : 0 TOTAL DEPTH OF BORING : 15 ft

WATER LEVELS : about 8 ft bgs START : 0855 5/18/99 END : 1030 LOGGER : Dougherty

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL (FT) Time	RECOVERY (IN)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Headspace Analysis
12						
13		24				
14					NO RECOVERY 14-15 ft	
15		0			TD = 15.0 ft	Boring completed as well
16						
17						

02138

CH2MHILL

PROJECT NUMBER	BORING NUMBER		
147436.T9.FW	IWTPMW002	SHEET 1	OF 2

SOIL BORING LOG

PROJECT : Former Laredo AFB SI LOCATION : IWTP ELEVATION (TBM or **MSL**) : 483.6

DRILLING CONTRACTOR : Jones Environmental Drilling NAME OF DRILLER : Joe Medrano

DRILLING METHOD/EQUIPMENT: CME Model 75 HSA rig SIZE/TYPE OF BIT : 10" HSA

DIRECTION OF HOLE : **vertical** inclined _____ deg from vertical

OVERBURDEN THICKNESS : >15' DEPTH DRILLED INTO ROCK : 0 TOTAL DEPTH OF BORING : 15 ft

WATER LEVELS : about 10 ft bgs START : 5/18/99 / 1255 END : 1345 LOGGER : Dougherty

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL (FT) Time	RECOVERY (IN)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Headspace Analysis
1		24	ML		Silt, brown, 10 YR 5/3, dry, stiff, some carbonates	
2	1257				2.0 As Above, dark yellowish brown, 10 YR 4/6, moist, stiff	PID = 0 ppm
3		24				
4						0 ppm
5		24	SM-ML		5.5 Grades into silty sand, moderately soft, moist	
6						0 ppm
7		24	SM		7.0 silty sand, pale yellow 5 Y 8/4, streaks of hydrocarbon staining, soft, moist, hydrocarbon odor, gypsum crystals in some stained streaks	
8						
9		18				27 ppm Approximate depth of groundwater in well (5/22/99)
10			SM		9.5 - 10.0 No Recovery 10.0 Sand & weathered sandstone, light olive brown 2.5 Y 5/6, wet, slightly hard, no odor	3 ppm Approximate depth of groundwater while drilling
11		18			11.5 -12 No Recovery	
12					12.0 Sand & weathered sandstone, as above	
13		8			12.7 - 15 No Recovery	

CH2MHILL

PROJECT NUMBER	BORING NUMBER		
147436.T9.FW	IWTPMW002	SHEET 2	OF 2

SOIL BORING LOG

PROJECT : Former Laredo AFB SI LOCATION : IWTP ELEVATION (TBM or **MSL**) : 483.6

DRILLING CONTRACTOR : Jones Environmental Drilling NAME OF DRILLER : Joe Medrano

DRILLING METHOD/EQUIPMENT: CME Model 75 HSA rig SIZE/TYPE OF BIT : 10" HSA

DIRECTION OF HOLE : **vertical** inclined _____ deg from vertical

OVERBURDEN THICKNESS : >15' DEPTH DRILLED INTO ROCK : 0 TOTAL DEPTH OF BORING : 15 ft

WATER LEVELS : about 8 ft bgs START : 5/18/99 / 1255 END : 1345 LOGGER : Dougherty

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL (FT) Time	RECOVERY (IN)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Headspace Analysis
12						
13		8			12.7 - 15 No Recovery	
14		0				
15					TD = 15.0 ft	Boring completed as well
16						
17						

02140

CH2MHILL

PROJECT NUMBER	BORING NUMBER		
147436.T9.FW	IWTPMW003	SHEET 1	OF 2

SOIL BORING LOG

PROJECT : Former Laredo AFB SI LOCATION : IWTP ELEVATION (TBM or **MSL**) : 481.2

DRILLING CONTRACTOR : Jones Environmental Drilling NAME OF DRILLER : Joe Medrano

DRILLING METHOD/EQUIPMENT: CME Model 75 HSA rig SIZE/TYPE OF BIT : 10" OD HSA

DIRECTION OF HOLE : **vertical** inclined _____ deg from vertical

OVERBURDEN THICKNESS : >16' DEPTH DRILLED INTO ROCK : 0 TOTAL DEPTH OF BORING : 16 ft

WATER LEVELS : about 7.5 ft START : 1445 - 5/18/99 END : 1615 LOGGER : Dougherty

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL (FT) Time	RECOVERY (IN)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Headspace Analysis
1		24	ML-GM		Gravelly, silt, light olive brown 2.5 Y 5/4, dry, stiff, some carbonate material	
2			ML		2.0 As above, no gravel	0 ppm
3		24				
4	1500		ML-SM		4.0 As above, increasing fine sanc	0 ppm
5		24	SM		5.0 silty fine sand, yellowish brown, 10 YR 5/6, soft, moist	0 ppm
6						0 ppm
7		24				
8	▽ ▼		SM		7.5 Silty fine sand, pale olive, 5 Y 6/4 and olive yellow, 2.5 Y 6/6, with iron oxide staining, laminated, some crystal growth (gypsum), wet, soft	0 ppm — Approximate depth of groundwater while drilling (open symbol) and in well (5/22/99 [solid symbol])
9		24				
10			ML-CL		10.0 - 10.5 Clayey silt, grey 2.5 Y 5/1, laminated, iron oxide in some laminations, moist	1 ppm
11		24			11.0 - 12 Clayey silt, as above, abundant gypsum	
12					1" thick layer of gypsum crystals @ 12 ft 12.0 Clayey silt, as above, less gypsum	3 ppm
13		24				

CH2MHILL

PROJECT NUMBER	BORING NUMBER		
147436.T9.FW	IWTPMW003	SHEET 2	OF 2

SOIL BORING LOG

PROJECT : Former Laredo AFB SI LOCATION : IWTP ELEVATION (TBM or **MSL**) : 481.2

DRILLING CONTRACTOR : Jones Environmental Drilling NAME OF DRILLER : Joe Medrano

DRILLING METHOD/EQUIPMENT: CME Model 75 HSA rig SIZE/TYPE OF BIT : 10" OD HSA

DIRECTION OF HOLE : **vertical** inclined _____ deg from vertical

OVERBURDEN THICKNESS : >16' DEPTH DRILLED INTO ROCK : 0 TOTAL DEPTH OF BORING : 16 ft

WATER LEVELS : about 7.5 ft START : 1445 - 5/18/99 END : 1615 LOGGER : Dougherty

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL (FT) Time	RECOVERY (IN)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Headspace Analysis
13						
14						5 ppm
15		24	CL		15.1 ≈ 1" thick layer of gypsum crystals, iron oxide staining 15.2 Clay, light olive grey, 5Y 6/2, moist, stiff, iron oxide in laminations	
16					TD = 16 ft	7 ppm Boring completed as well

02142

Appendix B
Monitor Well Construction
Diagrams and State Well Forms

Appendix B
Monitor Well Construction Diagrams and State Well Forms

CH2MHILL

PROJECT NUMBER	WELL NUMBER		
147436	IWTPMW001	SHEET 1	OF 1

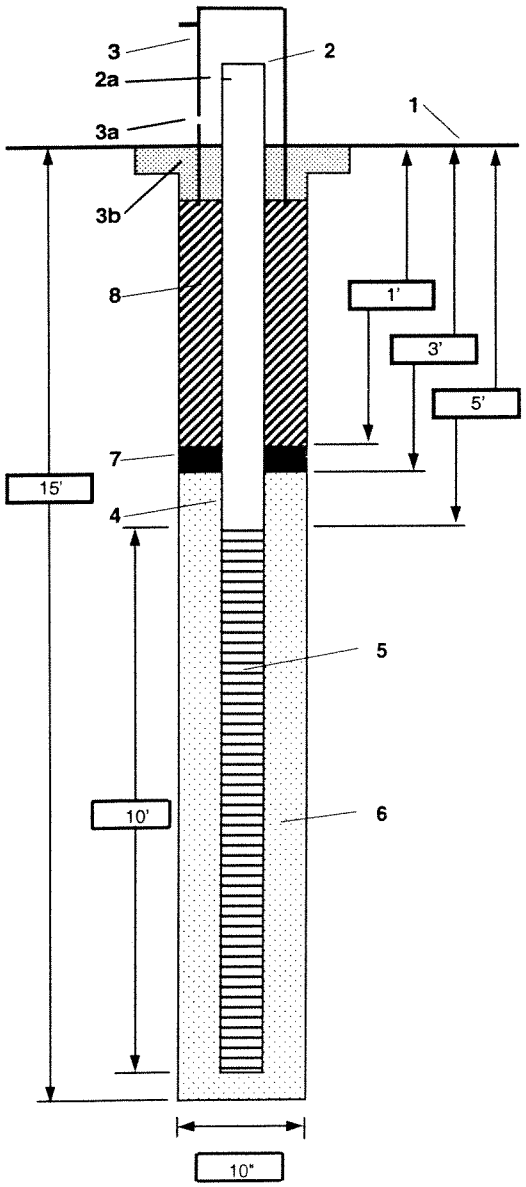
WELL COMPLETION DIAGRAM

PROJECT : Former Laredo AFB SI, IWTP Site LOCATION : IWTP Site

DRILLING CONTRACTOR : Jones Environmental Drilling

DRILLING METHOD AND EQUIPMENT USED : CME Model 75, 10 inch hollow stem augers

WATER LEVELS : 9.68 ft BTOC, 5/22/99 START : 0855 on 5/18/99 END : 1115 LOGGER : C. Dougherty



1- Ground elevation at well	481.8 ft amsl
2- Top of casing elevation	484.83 ft amsl
a) vent hole?	none
3- Wellhead protection cover type	Steel monument
a) weep hole?	none
b) concrete pad dimensions	3' X 3'
4- Dia./type of well casing	4 inch, Schedule 40 PVC
5- Type/slot size of screen	4 inch, Schedule 40 PVC, 0.010 inch factory slotted
6- Type screen filter	#20-#40 silica sand
a) Quantity used	600 pounds
7- Type of seal	bentonite chips
a) Quantity used	50 pounds
8- Grout	
a) Grout mix used	none
b) Method of placement	n/a
c) Vol. of well casing grout	n/a
Development method	bailing
Development time	55 minutes
Estimated purge volume	55 gallons

Comments Water was eventualy slightly turbid brownish yellow, with hydrocarbon odor. Temperature, conductivity, and pH were stabilized Three gallons of potable water, obtained locally, were utilized to hydrate bentonite pellets.

CH2MHILL

PROJECT NUMBER	WELL NUMBER		
147436	IWTPMW002	SHEET 1	OF 1

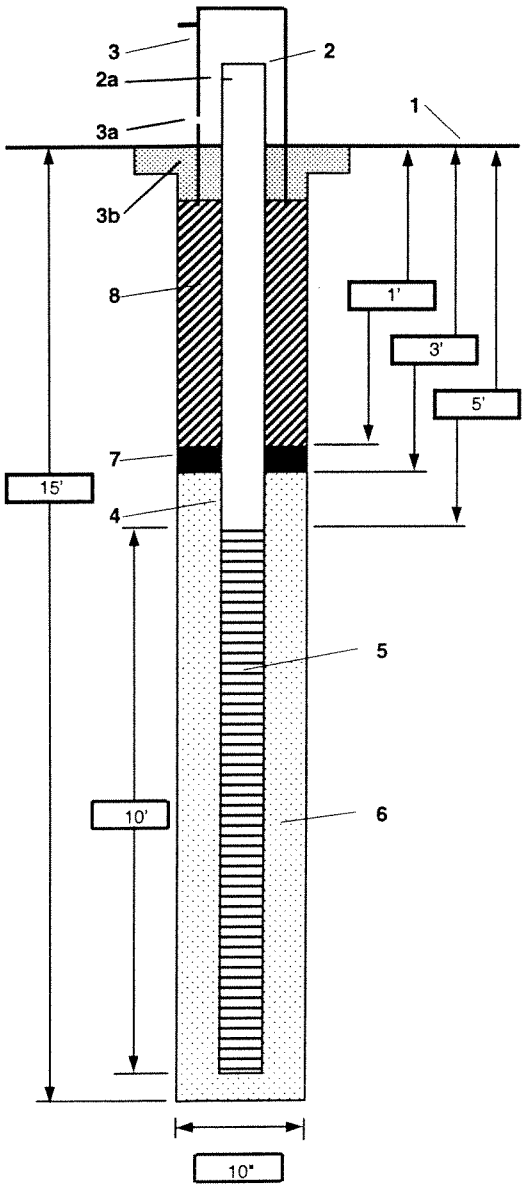
WELL COMPLETION DIAGRAM

PROJECT : Former Laredo AFB SI, IWTP Site LOCATION : IWTP Site

DRILLING CONTRACTOR : Jones Environmental Drilling

DRILLING METHOD AND EQUIPMENT USED : CME Model 75, 10 inch hollow stem augers

WATER LEVELS : 12.14 ft BTOC, 5/22/99 START : 1245 on 5/18/99 END : 1420 LOGGER : C. Dougherty



1- Ground elevation at well	483.6 ft amsl
2- Top of casing elevation	486.55 ft amsl
a) vent hole?	none
3- Wellhead protection cover type	Steel monument
a) weep hole?	none
b) concrete pad dimensions	3' X 3'
4- Dia./type of well casing	4 inch, Schedule 40 PVC
5- Type/slot size of screen	4 inch, Schedule 40 PVC, 0.010 inch factory slotted
6- Type screen filter	#20-#40 silica sand
a) Quantity used	600 pounds
7- Type of seal	bentonite chips
a) Quantity used	50 pounds
8- Grout	
a) Grout mix used	none
b) Method of placement	n/a
c) Vol. of well casing grout	n/a
Development method	bailing
Development time	1 hour, 45 minutes
Estimated purge volume	48 gallons

Comments Water was eventualy slightly turbid yellowish brown. Temperature, conductivity, and pH were stabilized. Three gallons of potable water obtained locally were utilized to hydrate bentonite pellets.

CH2MHILL

PROJECT NUMBER	WELL NUMBER		
147436	IWTPMW003	SHEET 1	OF 1

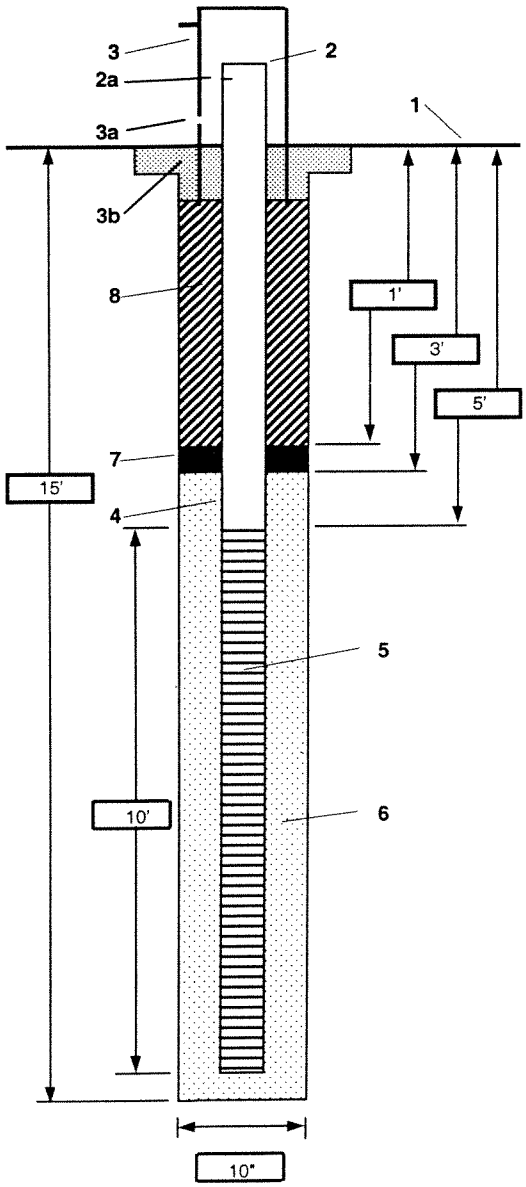
WELL COMPLETION DIAGRAM

PROJECT : Former Laredo AFB SI, IWTP Site LOCATION : IWTP Site

DRILLING CONTRACTOR : Jones Environmental Drilling

DRILLING METHOD AND EQUIPMENT USED : CME Model 75, 10 inch hollow stem augers

WATER LEVELS : 10.59 ft BTOC, 5/22/99 START : 1445 on 5/18/99 END : 1655 LOGGER : C. Dougherty



1- Ground elevation at well	481.2 ft amsl
2- Top of casing elevation	484.17 ft amsl
a) vent hole?	none
3- Wellhead protection cover type	Steel monument
a) weep hole?	none
b) concrete pad dimensions	3' X 3'
4- Dia./type of well casing	4 inch, Schedule 40 PVC
5- Type/slot size of screen	4 inch, Schedule 40 PVC, 0.010 inch factory slotted
6- Type screen filter	#20-#40 silica sand
a) Quantity used	600 pounds
7- Type of seal	bentonite chips
a) Quantity used	50 pounds
8- Grout	
a) Grout mix used	none
b) Method of placement	n/a
c) Vol. of well casing grout	n/a
Development method	bailing
Development time	6 hours
Estimated purge volume	48 gallons

Comments Water was eventualy clear, with temperature, conductivity, and pH stabilized. Water had a slight "old paint" odor. Three gallons of potable water, obtained locally, were utilized to hydrate bentonite pellets.

Send original copy by certified return receipt requested mail to: TDLR, P.O. Box 12157, Austin, TX 78711

ATTENTION OWNER: *Confidentiality Privilege Notice on reverse side of Well Owner's copy (pink)*

State of Texas
WELL REPORT

Texas Department of Licensing & Regulation
P.O. Box 12157
Austin, TX 78711
512-463-7880

OWNER Laredo AF Base (Name) ADDRESS Arkansas Street (Street or RFD) Laredo (City) Tx. (State) (Zip)

2) ADDRESS OF WELL'S LOCATION: County Webb — Arkansas Street, Laredo, Tx. (Street, RFD or other) (City) (State) (Zip) Long. _____ Lat. _____ Grid # 85-29-7

3) TYPE OF WORK (Check): ☑ New Well ☐ Deepening ☐ Reconditioning ☐ Plugging

(4) PROPOSED USE (Check): ☑ Monitor ☐ Environmental Soil Boring ☐ Domestic ☐ Industrial ☐ Irrigation ☐ Injection ☐ Public Supply ☐ De-watering ☐ Testwell
If Public Supply well, were plans submitted to the TNRCC? ☐ Yes ☐ No

5)

6) WELL LOG: MW-1, MW-2, MW-3
Date Drilling: Started 5-18 19 99 Completed 5-18 19 99

DIAMETER OF HOLE		
Dia. (in.)	From (ft.)	To (ft.)
8	Surface	15
8	0	15
8	0	15

7) DRILLING METHOD (Check): ☐ Driven ☐ Air Rotary ☐ Mud Rotary ☐ Bored ☐ Air Hammer ☐ Cable Tool ☐ Jetted ☑ Other H.S.A.

From (ft.)	To (ft.)	Description and color of formation material
0	15	Clay, (Brt Grey) Silty fine 12.5'

(Use reverse side of Well Owner's copy, if necessary)

8) Borehole Completion (Check): ☐ Open Hole ☐ Straight Wall ☐ Underreamed ☐ Gravel Packed ☑ Other SAND 20-40
If Gravel Packed give interval from 3 ft. to 15 ft.

CASING, BLANK PIPE, AND WELL SCREEN DATA:

Dia. (in.)	New or Used	Steel, Plastic, etc. Perf., Slotted, etc. Screen Mfg., if commercial	Setting (ft.) From	Setting (ft.) To	Gage Casting Screen
2	N	PVC Riser	0	5	
2	N	PVC Screen	5	15	.010

13) ☐ Well plugged within 48 hours

Casing left in well: From (ft)	Casing left in well: To (ft)	Cement/bentonite placed in well: From (ft)	Cement/bentonite placed in well: To (ft)	Sacks used:

9) CEMENTING DATA
Cemented from _____ ft. to _____ ft. No. of sacks used _____
Chips 1 ft. to 3 ft. No. of sacks used _____
Method used Poured from Surface
Cemented by JEDF
Distance to septic system field lines or other concentrated contamination _____ ft.
Method of verification of above distance _____

14) TYPE PUMP:
☐ Turbine ☐ Jet ☐ Submersible ☐ Cylinder
☐ Other _____
Depth to pump bowls, cylinder, jet, etc., _____ ft.

10) SURFACE COMPLETION
☑ Specified Surface Slab Installed
☐ Specified Steel Sleeve Installed
☐ Pitless Adapter Used
☐ Approved Alternative Procedure Used

15) WELL TESTS:
Type test: ☐ Pump ☐ Bailer ☐ Jetted ☐ Estimated
Yield: _____ gpm with _____ ft. drawdown after _____ hrs.

11) WATER LEVEL:
Static level _____ ft. below land surface Date _____
Artesian flow _____ gpm. Date _____

16) WATER QUALITY:
Did you knowingly penetrate any strata which contained undesirable constituents?
☐ Yes ☐ No If yes, submit "REPORT OF UNDESIRABLE WATER"
Type of water? _____ Depth of strata _____
Was a chemical analysis made? ☐ Yes ☐ No

12) PACKERS: Type Depth

I certify that I drilled this well (or the well was drilled under my direct supervision) and that each and all of the statements herein are true and correct. I understand that failure to complete items 1 thru 16 will result in the log(s) being returned for completion and resubmittal.

COMPANY NAME J.E.O.T. (Type or print) WELL DRILLER'S LICENSE NO. 4603-M

ESS 445 S. 6th (Street or RFD) Raymondville (City) Tx. (State) 78580 (Zip)

(Signed) Jon Meadows (Licensed Well Driller) (Signed) _____ (Registered Driller Trainee)

Please attach electric log, chemical analysis, and other pertinent information, if available.

TDLR FORM 001WWD (4/98) White - TDLR Yellow - DRILLER Pink - WELL OWNER

02147

Send original copy by certified return receipt requested mail to: TNRCC, MC 177, P.O. Box 13087, Austin, TX 78711-3087

ATTENTION OWNER: *Confidentiality Privilege Notice on on reverse side of Well Owner's copy (pink)*

State of Texas WELL REPORT

Texas Water Well Drillers Advisory Council
MC 177
P.O. Box 13087
Austin, TX 78711-3087
512-239-0530

OWNER Laredo H.F.B. (Name) ADDRESS Arkansas Street, Laredo, Tx (Street or RFD) (City) (State) (Zip)

2) ADDRESS OF WELL: County WEBB Arkansas Street, Laredo TX (Street, RFD or other) (City) (State) (Zip) GRID # 85-29-7

3) TYPE OF WORK (Check): ☐ New Well ☐ Deepening ☐ Reconditioning ☑ Plugging

4) PROPOSED USE (Check): ☐ Monitor ☑ Environmental Soil Boring ☐ Domestic ☐ Industrial ☐ Irrigation ☐ Injection ☐ Public Supply ☐ De-watering ☐ Testwell
If Public Supply well, were plans submitted to the TNRCC? ☐ Yes ☐ No

5)

6) WELL LOG:
Date Drilling:
Started 5-19 1999
Completed 5-19 1999

DIAMETER OF HOLE

Dia. (in.)	From (ft.)	To (ft.)
9	Surface	2 - SB-1A
9	"	8 - SB-1A
9	"	8 - SB-2A

7) DRILLING METHOD (Check): ☐ Driven ☐ Air Rotary ☐ Mud Rotary ☐ Bored ☐ Air Hammer ☐ Cable Tool ☐ Jetted ☑ Other HSA

N

From (ft.)	To (ft.)	Description and color of formation material
		0-2 ft - silt, clay, calc. Total of 2 ft Drilled SB-1A
		0-8 ft - silt, clay, calc. Total of 8 ft Drilled SB-1A
		0-8 ft - silty clay, tan, calc. Total of 8 ft Drilled SB-2A

(Use reverse side of Well Owner's copy, if necessary)

8) Borehole Completion (Check): ☑ Open Hole ☐ Straight Wall ☐ Underreamed ☐ Gravel Packed ☐ Other
If Gravel Packed give interval ... from ____ ft. to ____ ft.

CASING, BLANK PIPE, AND WELL SCREEN DATA:

Dia. (in.)	New or Used	Steel, Plastic, etc. Perf., Slotted, etc. Screen Mfg., if commercial	Setting (ft.) From	Setting (ft.) To	Gage Casting Screen

9) CEMENTING DATA [Rule 338.44(1)] 0 [illegible] 2 ft [illegible] sks used - 1½
Cemented from 0 ft. to 8 ft. No. of sacks used 6
Chips 0 ft. to 8 ft. No. of sacks used 6
Method used Surface Jar
Cemented by J.E.D.I.
Distance to septic system field lines or other concentrated contamination ✓ ft.
Method of verification of above distance ✓

10) SURFACE COMPLETION
☐ Specified Surface Slab Installed [Rule 338.44(2)(A)]
☐ Specified Steel Sleeve Installed [Rule 338.44(3)(A)]
☐ Pitless Adapter Used [Rule 338.44(3)(b)]
☐ Approved Alternative Procedure Used [Rule 338.71]

11) WATER LEVEL:
Static level ____ ft. below land surface Date ____
Artesian flow ____ gpm. Date ____

12) PACKERS: Type Depth

13) TYPE PUMP:
☐ Turbine ☐ Jet ☐ Submersible ☐ Cylinder
☐ Other ____
Depth to pump bowls, cylinder, jet, etc., ____ ft.

14) WELL TESTS:
Type test: ☐ Pump ☐ Bailer ☐ Jetted ☐ Estimated
Yield: ____ gpm with ____ ft. drawdown after ____ hrs.

15) WATER QUALITY:
Did you knowingly penetrate any strata which contained undesirable constituents?
☐ Yes ☐ No If yes, submit "REPORT OF UNDESIRABLE WATER"
Type of water? ____ Depth of strata ____
Was a chemical analysis made? ☐ Yes ☐ No

I hereby certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein are true to the best of my knowledge and belief. I understand that failure to complete items 1 thru 15 will result in the log(s) being returned for completion and resubmittal.

COMPANY NAME J.E.D.I. (Type or print) WELL DRILLER'S LICENSE NO. 52037-m

ADDRESS 445 S. 6th Street (Street or RFD) Raymondville (City) TX (State) 78580 (Zip)

(Signed) David P. Rogers (Licensed Well Driller) (Signed) ____ (Registered Driller Trainee)

Please attach electric log, chemical analysis, and other pertinent information, if available.

TNRCC-0199 (Rev. 05-21-96) 02148 *White - TNRCC* *Yellow - DRILLER* *Pink - WELL OWNER*

Send original copy by certified return receipt requested mail to: **TNRCC, MC 177, P.O. Box 13087, Austin, TX 78711-3087**

ATTENTION OWNER: *Confidentiality Privilege Notice on on reverse side of Well Owner's copy (pink)*

State of Texas
WELL REPORT

Texas Water Well Drillers Advisory Council
MC 177
P.O. Box 13087
Austin, TX 78711-3087
512-239-0530

1) OWNER Laredo AFB (Name) ADDRESS Arkansas Street Laredo, Tx. (Street or RFD) (City) (State) (Zip)

2) ADDRESS OF WELL: County Webb Arkansas Street Laredo Tx. (Street, RFD or other) (City) (State) (Zip) GRID # 85-29-7

3) **TYPE OF WORK (Check):** ☐ New Well ☐ Deepening ☐ Reconditioning ☑ Plugging

4) **PROPOSED USE (Check):** ☐ Monitor ☑ Environmental Soil Boring ☐ Domestic ☐ Industrial ☐ Irrigation ☐ Injection ☐ Public Supply ☐ De-watering ☐ Testwell
If Public Supply well, were plans submitted to the TNRCC? ☐ Yes ☐ No

5)

6) **WELL LOG:**
Date Drilling: Started 5-19 19 99 Completed 5-19 19 99

DIAMETER OF HOLE		
Dia. (in.)	From (ft.)	To (ft.)
9	Surface	8ft - SB-3A
9	"	10 - SB-2A
9	"	10 - SB-4B

7) **DRILLING METHOD (Check):** ☐ Driven ☐ Air Rotary ☐ Mud Rotary ☐ Bored ☐ Air Hammer ☐ Cable Tool ☐ Jetted ☑ Other HSA

From (ft.)	To (ft.)	Description and color of formation material
0	8ft	Silty clay, tan, calc. Total of 8ft drilled SB-3A
0	10ft	Silty clay, tan, calc Total of 10ft drilled SB-2A
0	10ft	Silty clay, tan, calc Total of 10ft+ drilled SB-4B

(Use reverse side of Well Owner's copy, if necessary)

8) **Borehole Completion (Check):** ☑ Open Hole ☐ Straight Wall ☐ Underreamed ☐ Gravel Packed ☐ Other
If Gravel Packed give interval ... from ____ ft. to ____ ft.

CASING, BLANK PIPE, AND WELL SCREEN DATA:

Dia. (in.)	New or Used	Steel, Plastic, etc. Perf., Slotted, etc. Screen Mfg., if commercial	Setting (ft.) From	Setting (ft.) To	Gage Casting Screen

9) **CEMENTING DATA** [Rule 338.44(1)] 0 ft to 8ft - SKS used = 6
Cemented from 0 ft. to 10 ft. No. of sacks used 8
0 ft. to 10 ft. No. of sacks used 8
Method used Surface pour
Cemented by J.E.D.T.
Distance to septic system field lines or other concentrated contamination ____ ft.
Method of verification of above distance ____

10) **SURFACE COMPLETION**
☐ Specified Surface Slab Installed [Rule 338.44(2)(A)]
☐ Specified Steel Sleeve Installed [Rule 338.44(3)(A)]
☐ Pitless Adapter Used [Rule 338.44(3)(b)]
☐ Approved Alternative Procedure Used [Rule 338.71]

11) **WATER LEVEL:**
Static level ____ ft. below land surface Date ____
Artesian flow ____ gpm. Date ____

12) **PACKERS:** Type Depth

13) **TYPE PUMP:**
☐ Turbine ☐ Jet ☐ Submersible ☐ Cylinder ☐ Other
Depth to pump bowls, cylinder, jet, etc., ____ ft.

14) **WELL TESTS:**
Type test: ☐ Pump ☐ Bailer ☐ Jetted ☐ Estimated
Yield: ____ gpm with ____ ft. drawdown after ____ hrs.

15) **WATER QUALITY:**
Did you knowingly penetrate any strata which contained undesirable constituents?
☐ Yes ☐ No If yes, submit "REPORT OF UNDESIRABLE WATER"
Type of water? ____ Depth of strata ____
Was a chemical analysis made? ☐ Yes ☐ No

I hereby certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein are true to the best of my knowledge and belief. I understand that failure to complete items 1 thru 15 will result in the log(s) being returned for completion and resubmittal.

COMPANY NAME J.E.D.T. (Type or print) WELL DRILLER'S LICENSE NO. 52037-M

ADDRESS 445 S. 6th St. (Street or RFD) Raymondville (City) TX (State) 78580 (Zip)

(Signed) David R. Rogers (Licensed Well Driller) (Signed) ____ (Registered Driller Trainee)

Please attach electric log, chemical analysis, and other pertinent information, if available.

TNRCC-0199 (Rev. 05-21-96) *White - TNRCC Yellow - DRILLER Pink - WELL OWNER*

02143

Send original copy by certified return receipt requested mail to: TNRCC, MC 177, P.O. Box 13087, Austin, TX 78711-3087

ATTENTION OWNER: *Confidentiality Privilege Notice on reverse side of Well Owner's copy (pink)*

State of Texas
WELL REPORT

Texas Water Well Drillers Advisory Council
MC 177
P.O. Box 13087
Austin, TX 78711-3087
512-239-0530

OWNER Laredo A.E.S. (Name) ADDRESS Arkansas Street, Laredo, Tx (Street or RFD) (City) (State) (Zip)

2) ADDRESS OF WELL: County Webb Arkansas Street, Laredo TX (Street, RFD or Other) (City) (State) (Zip) GRID # 85-29-7

3) TYPE OF WORK (Check): ☐ New Well ☐ Deepening ☐ Reconditioning ☑ Plugging

4) PROPOSED USE (Check): ☐ Monitor ☑ Environmental Soil Boring ☐ Domestic ☐ Industrial ☐ Irrigation ☐ Injection ☐ Public Supply ☐ De-watering ☐ Testwell
If Public Supply well, were plans submitted to the TNRCC? ☐ Yes ☐ No

5)

6) WELL LOG:
Date Drilling:
Started 5-19 19 99
Completed 5-19 19 99

DIAMETER OF HOLE		
Dia. (in.)	From (ft.)	To (ft.)
	Surface	
9	0	10 Ft SB-4C

7) DRILLING METHOD (Check): ☐ Driven ☐ Air Rotary ☐ Mud Rotary ☐ Bored ☐ Air Hammer ☐ Cable Tool ☐ Jetted ☑ Other HSA

N

From (ft.)	To (ft.)	Description and color of formation material
0	10ft	Silty clay, tan, dk
Total of 10ft drilled		
SB-4C		

(Use reverse side of Well Owner's copy, if necessary)

8) Borehole Completion (Check): ☑ Open Hole ☐ Straight Wall ☐ Underreamed ☐ Gravel Packed ☐ Other
If Gravel Packed give interval ... from _____ ft. to _____ ft.

CASING, BLANK PIPE, AND WELL SCREEN DATA:

Dia. (in.)	New or Used	Steel, Plastic, etc. Perf., Slotted, etc. Screen Mfg., if commercial	Setting (ft.) From	Setting (ft.) To	Gage Casing Screen

9) CEMENTING DATA [Rule 338.44(1)]
Cemented from 0 ft. to 10 ft. No. of sacks used 3
_____ ft. to _____ ft. No. of sacks used _____
Method used Surface Pour
Cemented by T.E.D.I.
Distance to septic system field lines or other concentrated contamination _____ ft.
Method of verification of above distance _____

10) SURFACE COMPLETION
☐ Specified Surface Slab Installed [Rule 338.44(2)(A)]
☐ Specified Steel Sleeve Installed [Rule 338.44(3)(A)]
☐ Pitless Adapter Used [Rule 338.44(3)(b)]
☐ Approved Alternative Procedure Used [Rule 338.71]

11) WATER LEVEL:
Static level _____ ft. below land surface Date _____
Artesian flow _____ gpm. Date _____

12) PACKERS: Type Depth

13) TYPE PUMP:
☐ Turbine ☐ Jet ☐ Submersible ☐ Cylinder
☐ Other _____
Depth to pump bowls, cylinder, jet, etc., _____ ft.

14) WELL TESTS:
Type test: ☐ Pump ☐ Bailer ☐ Jetted ☐ Estimated
Yield: _____ gpm with _____ ft. drawdown after _____ hrs.

15) WATER QUALITY:
Did you knowingly penetrate any strata which contained undesirable constituents?
☐ Yes ☐ No If yes, submit "REPORT OF UNDESIRABLE WATER"
Type of water? _____ Depth of strata _____
Was a chemical analysis made? ☐ Yes ☐ No

I hereby certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein are true to the best of my knowledge and belief. I understand that failure to complete items 1 thru 15 will result in the log(s) being returned for completion and resubmittal.

COMPANY NAME J.E.D.I. (Type or print) WELL DRILLER'S LICENSE NO. 52037-111

ADDRESS 445 S. 6th St. (Street or RFD) Raymondville (City) TX (State) 78580 (Zip)

(Signed) David R. Rogers (Licensed Well Driller) (Signed) _____ (Registered Driller Trainee)

Please attach electric log, chemical analysis, and other pertinent information, if available.

TNRCC-0199 (Rev. 05-21-96) 02150 *White - TNRCC Yellow - DRILLER Pink - WELL OWNER*

Appendix C
Monitor Well Development

Appendix C
Monitor Well Development Forms

CH2MHILL

PROJECT NUMBER	WELL NUMBER	
147436.T9.FW	IWTPMW001	SHEET 1 OF 1

WELL DEVELOPMENT LOG

PROJECT : Former Laredo AFB SI LOCATION : IWTP

DEVELOPMENT CONTRACTOR : Jones Environmental Drilling

DEVELOPMENT METHOD AND EQUIPMENT USED : Hand Bailing, 3-inch x 3ft PVC bailer

START WATER LEVELS : 9.56 BTOC START : 1310 5/20/99 END : 1415 LOGGER : Dougherty

MAXIMUM DRAWDOWN DURING PUMPING : not measured

RANGE AND AVERAGE DISCHARGE RATE : not measured

TOTAL QUANTITY OF WATER DISCHARGED : ≈ 55 gallons

DISPOSITION OF DISCHARGE WATER : Stored at Laredo International Airport property nearby

Time	Water Volume Discharged (gal)	Water Level (ft BTOC)	Turbidity (NTU)	Temperature (°C)	pH	Conductivity (µmhos/cm)	Remarks (color, odor, sheen, sediment, etc.)
1310	0	9.56	-------	-------	-------	-------	brownish yellow, hydrocarbon odor
1317	10	-------	-------	26.6	6.99	6,000	brownish yellow, hydrocarbon odor
1325	20	-------	-------	26.3	6.97	6,000	brownish yellow, hydrocarbon odor
1400	40	-------	-------	26.8	6.91	6,000	brownish yellow, hydrocarbon odor
1410	50	-------	-------	26.3	6.92	5,900	slightly turbid brownish yellow, hydrocarbon odor
1415	55	-------	-------	26.3	6.90	5,900	slightly turbid brownish yellow, hydrocarbon odor

02152

CH2MHILL

PROJECT NUMBER	WELL NUMBER	
147436.T9.FW	IWTPMW002	SHEET 1 OF 1

WELL DEVELOPMENT LOG

PROJECT : Former Laredo AFB SI LOCATION : IWTP

DEVELOPMENT CONTRACTOR : Jones Environmental Drilling

DEVELOPMENT METHOD AND EQUIPMENT USED : Hand Bailing, 3-inch x 3ft PVC bailer

START WATER LEVELS : 9.10 BTOC* START : END : LOGGER : Dougherty

MAXIMUM DRAWDOWN DURING PUMPING : not measured, well almost bailed dry

RANGE AND AVERAGE DISCHARGE RATE : not measured

TOTAL QUANTITY OF WATER DISCHARGED : about 48 gallons

DISPOSITION OF DISCHARGE WATER : Stored at nearby Laredo International Airport property

* No riser yet installed

Time	Water Volume Discharged (gal)	Water Level (ft BTOC)	Turbidity (NTU)	Temperature (°C)	pH	Conductivity (µmhos/cm)	Remarks (color, odor, sheen, sediment, etc.)
1000	0	9.10	-------	-------	-------	-------	yellow-brown cloudy
1015	10	-------	-------	26.1	6.65	9,000	yellow-brown cloudy
1032	20	-------	-------	26.0	6.63	9,000	yellow-brown cloudy
1100	30	-------	-------	26.2	6.61	9,100	less cloudy
1140	48	-------	-------	26.2	6.58	8,900	less cloudy

CH2MHILL

PROJECT NUMBER	WELL NUMBER	
147436.T9.FW	IWTPMW003	SHEET 1 OF 1

WELL DEVELOPMENT LOG

PROJECT : Former Laredo AFB SI LOCATION : IWTP

DEVELOPMENT CONTRACTOR : Jones Environmental Drilling

DEVELOPMENT METHOD AND EQUIPMENT USED : Hand Bailing, 3-inch x 3ft PVC bailer

START WATER LEVELS : 12.97 BTOC* START : END : LOGGER : Dougherty

MAXIMUM DRAWDOWN DURING PUMPING : well went dry

RANGE AND AVERAGE DISCHARGE RATE : not measured

TOTAL QUANTITY OF WATER DISCHARGED : not measured

DISPOSITION OF DISCHARGE WATER : Stored at nearby Laredo International Airport property

* Casing not at final elevation

Time	Water Volume Discharged (gal)	Water Level (ft BTOC)	Turbidity (NTU)	Temperature (°C)	pH	Conductivity (µmhos/cm)	Remarks (color, odor, sheen, sediment, etc.)
0930	10	12.97	-------	-------	-------	-------	cloudy yellow-brown
0950	20	-------	-------	26.0	6.85	9,000	cloudy, slight "old paint" odor
1103	30	-------	-------	26.1	6.87	8,300	cloudy, slight "old paint" odor
1250	40	-------	-------	27.1	6.80	8,700	less cloudy, slight odor
1340	48	-------	-------	26.7	6.81	8,900	less cloudy, slight odor
1515	55	-------	-------	26.7	6.82	9,100	clear, slight odor

Appendix D
Monitor Well Purging and
Sampling Forms

Appendix D
Monitor Well Purging and Sampling Forms

CH2MHILL

WELL PURGE AND SAMPLING FIELD SHEET

PROJECT# 147436.T9.FW

WELL NUMBER: IWTPMW001 **SITE:** Former Laredo AFB IWTP site

FIELD CREW: Chuck Dougherty, Katie Swanson (leave blank if on previous page)

		CASING DIAMETER		GAL/FT OF CASING	
DEPTH TO WATER (FT):	= 9.68				
WELL DEPTH (FT):	- 17.48	2 IN.		0.1632	
WATER COLUMN (FT):	= 7.8	(4) IN.		(0.6528)	
GAL/FT OF CASING	x 0.6528	6 IN.		1.4688	
CASING VOLUME (GAL)	= 5.09	8 IN.		2.611	
NO. OF VOLUMES min.(3)	x 3	10 IN.		4.0797	
PURGE VOLUME (GAL)	= 15.3	12 IN.		5.8748	

METHOD OF PURGING (circle one)

PUMP: SUB. CENT. PERIST. **OTHER:** **BAILER:** TEFLON / SS , OTHER:

TIME ON:
FLOW RATE (gpm):
PUMP TIME (min):
VOL. PURGED (gals):

BAILER VOL.. (gal) (.25) / .33
REQUIRED PULLS: 61
VOL. PURGED (gals): ≈ 15.3
OTHER:

FIELD PARAMETERS	FIELD MEASUREMENTS					WITHIN10% Y / N
	1st	2nd	3rd	4th	5th	6th
TIME	1435	1440	1444	1448	1452	1456
VOL. (gal)	0	10	20	30	40	50
pH (s.units)	6.95	6.94	6.93	6.91	6.91	6.92
TEMP.(C)	28.1	26.5	26.1	26.2	26.3	26.0
COND.(umhos/cm)	6,200	5,900	6,000	6,000	5,900	6,000

SAMPLE PARAMETERS ((GRAB) OR **COMPOSITE**) : same

FILTERED METALS COLLECTED: Y / (N) 1.0um,0.45um, OTHER:

OBSERVATIONS

COLOR: CLEAR , AMBER , (TAN) , BROWN , GREY , MILKY WHITE , OTHER:

ODOR: NONE , (LOW) MEDIUM , HIGH , VERY STRONG , H2S , (FUEL LIKE) CHEMICAL ?, UNKNOWN

TURBIDITY: NONE , (LOW) , MEDIUM , HIGH , VERY TURBID. HEAVY SILTS

COMMENTS: Sample ID No is IWTPMWG001000N1, also collected FDI & FD2

OTHER: PLEASE USE BACK OF SHT.FOR SKETCHING MAPS ,WELL LOCATION NOTES ECT. **SEE BACK OF SHT** Y / (N)

Q.C. SAMPLE TYPE: (DUPLICATE) , EQUIPMENT BLANK , OTHER :

Q.C. PARAMETERS: same

SAMPLE DATE/ TIME: 05/22/1999 / @ 1530

SIGNED/SAMPLER:

02156

CH2MHILL

WELL PURGE AND SAMPLING FIELD SHEET

PROJECT# 147436.T9.FW

WELL NUMBER: IWTPMW002 **SITE:** Former Laredo AFB IWTP site

FIELD CREW: Chuck Dougherty, Katie Swanson (leave blank if on previous page)

		CASING DIAMETER		GAL/FT OF CASING	
DEPTH TO WATER (FT):	= 12.14				
WELL DEPTH (FT):	- 18.31	2 IN.		0.1632	
WATER COLUMN (FT):	= 6.17	(4) IN.		(0.6528)	
GAL/FT OF CASING	x 0.6528	6 IN.		1.4688	
CASING VOLUME (GAL)	= 4.03	8 IN.		2.611	
NO. OF VOLUMES min.(3)	x 3	10 IN.		4.0797	
PURGE VOLUME (GAL)	= 12.1	12 IN.		5.8748	

METHOD OF PURGING (circle one)

PUMP: SUB. CENT. PERIST. **OTHER:** **BAILER**: TEFLON, SS, OTHER:

TIME ON:
FLOW RATE (gpm):
PUMP TIME (min):
VOL. PURGED (gals):

BAILER VOL.. (gal) (.25) / .33
REQUIRED PULLS: 49
VOL. PURGED (gals): ≈ 12 gallons
OTHER:

FIELD PARAMETERS	FIELD MEASUREMENTS					WITHIN10% Y / N
	1st	2nd	3rd	4th	5th	6th
TIME	0911	0915	0918	0922	0926	0931
PULLS	8	16	24	32	40	50
pH (s.units)	6.62	6.62	6.63	6.60	6.61	6.63
TEMP.(C)	25.9	25.9	25.9	25.8	25.7	26.0
COND.(umhos/cm)	9,000	9,000	9,000	9,000	9,000	9,000

SAMPLE PARAMETERS ((GRAB) OR COMPOSITE) : same as other wells

FILTERED METALS COLLECTED: Y / (N) 1.0um,0.45um, OTHER:

OBSERVATIONS

COLOR: CLEAR , AMBER , (TAN) , BROWN , GREY , MILKY WHITE , OTHER:

ODOR: NONE , (LOW) MEDIUM , HIGH , VERY STRONG , (H2S) FUEL LIKE , CHEMICAL ?, UNKNOWN

TURBIDITY: NONE , (LOW) , MEDIUM , HIGH , VERY TURBID. HEAVY SILTS

COMMENTS: Sample ID No is IWTPMWG002000N1, also MS1 and an equipment blank IWTPMWWQ002000EB1

OTHER: PLEASE USE BACK OF SHT.FOR SKETCHING MAPS ,WELL LOCATION NOTES ECT. **SEE BACK OF SHT Y /** (N.)

Q.C. SAMPLE TYPE: DUPLICATE , (EQUIPMENT BLANK) , OTHER : MS1

Q.C. PARAMETERS: same as regular sample

SAMPLE DATE/ TIME: 05/23/1999 / @ 1000

SIGNED/SAMPLER:

02157

CH2MHILL

WELL PURGE AND SAMPLING FIELD SHEET

PROJECT# 147436.T9.FW

WELL NUMBER: IWTPMW003 **SITE:** Former Laredo AFB IWTP site

FIELD CREW: Chuck Dougherty, Katie Swanson (leave blank if on previous page)

		CASING DIAMETER		GAL/FT OF CASING	
DEPTH TO WATER (FT):	= 10.59				
WELL DEPTH (FT):	- 17.84	2 IN.		0.1632	
WATER COLUMN (FT):	= 7.25	(4) IN.		(0.6528)	
GAL/FT OF CASING	x 0.6528	6 IN.		1.4688	
CASING VOLUME (GAL)	= 4.73	8 IN.		2.611	
NO. OF VOLUMES min.(3)	x 3	10 IN.		4.0797	
PURGE VOLUME (GAL)	= 14.2	12 IN.		5.8748	

METHOD OF PURGING (circle one)

PUMP: SUB. CENT. PERIST.	**OTHER:**	**BAILER:** TEFLON, SS, OTHER:
TIME ON:		BAILER VOL.. (gal) (.25) / .33
FLOW RATE (gpm):		REQUIRED PULLS: 57
PUMP TIME (min):		VOL. PURGED (gals): ≈ 14.2 gallons
VOL. PURGED (gals):		OTHER:

FIELD PARAMETERS	**FIELD MEASUREMENTS**					WITHIN10% Y / N
	1st	2nd	3rd	4th	5th	6th
TIME	1307	1313	1323	1331	1339	1345
PULLS	10	20	30	40	50	57
pH (s.units)	6.73	6.74	6.74	6.79	6.81	6.8
TEMP.(C)	27.0	27.1	27.2	27	27.1	26.8
COND.(umhos/cm)	8,900	9,000	9,200	9,100	9,100	9,000

SAMPLE PARAMETERS ((GRAB) OR **COMPOSITE**): VOC, SVOC, Pest., PCBs, Herb, TPHDRO, TPHGRO, TPH 1005, RCRA Metals

FILTERED METALS COLLECTED: Y / (N) 1.0um,0.45um, OTHER:

OBSERVATIONS

COLOR: (CLEAR), AMBER , TAN , BROWN , GREY , MILKY WHITE , OTHER:

ODOR: NONE (LOW), MEDIUM , HIGH , VERY STRONG , H2S , FUEL LIKE , (CHEMICAL ?), UNKNOWN

TURBIDITY: (NONE) , LOW , MEDIUM , HIGH , VERY TURBID. HEAVY SILTS

COMMENTS: Slight "old paint" odor, water became clear during purging Sample ID No IWTPMWG003000N1

OTHER: PLEASE USE BACK OF SHT.FOR SKETCHING MAPS ,WELL LOCATION NOTES ECT. **SEE BACK OF SHT Y / (N.)**

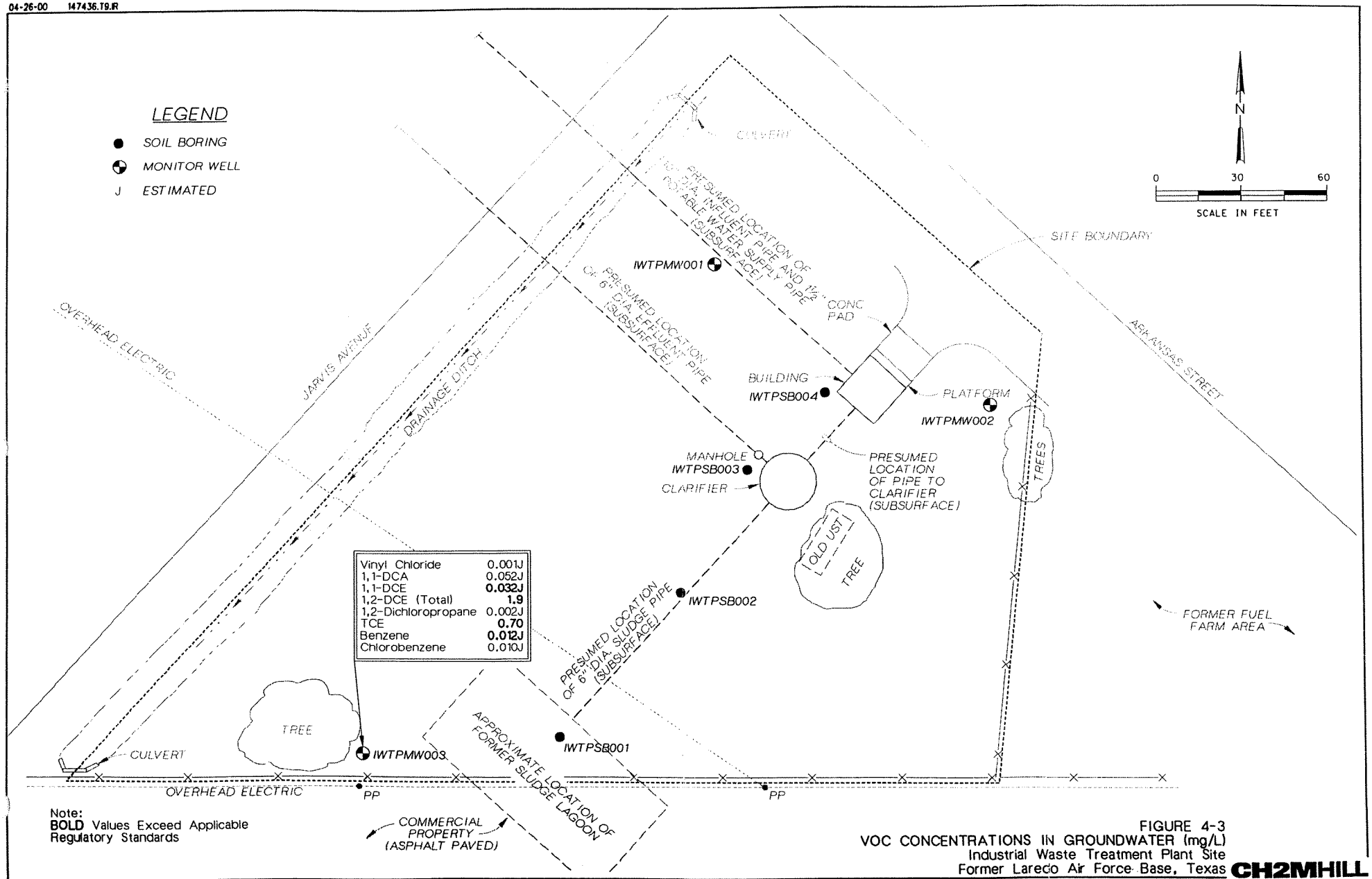
Q.C. SAMPLE TYPE: (DUPLICATE), EQUIPMENT BLANK , OTHER : None

Q.C. PARAMETERS: same as regular sample

SAMPLE DATE/ TIME: 05/22/1999 / @ 1400

SIGNED/SAMPLER:

02158



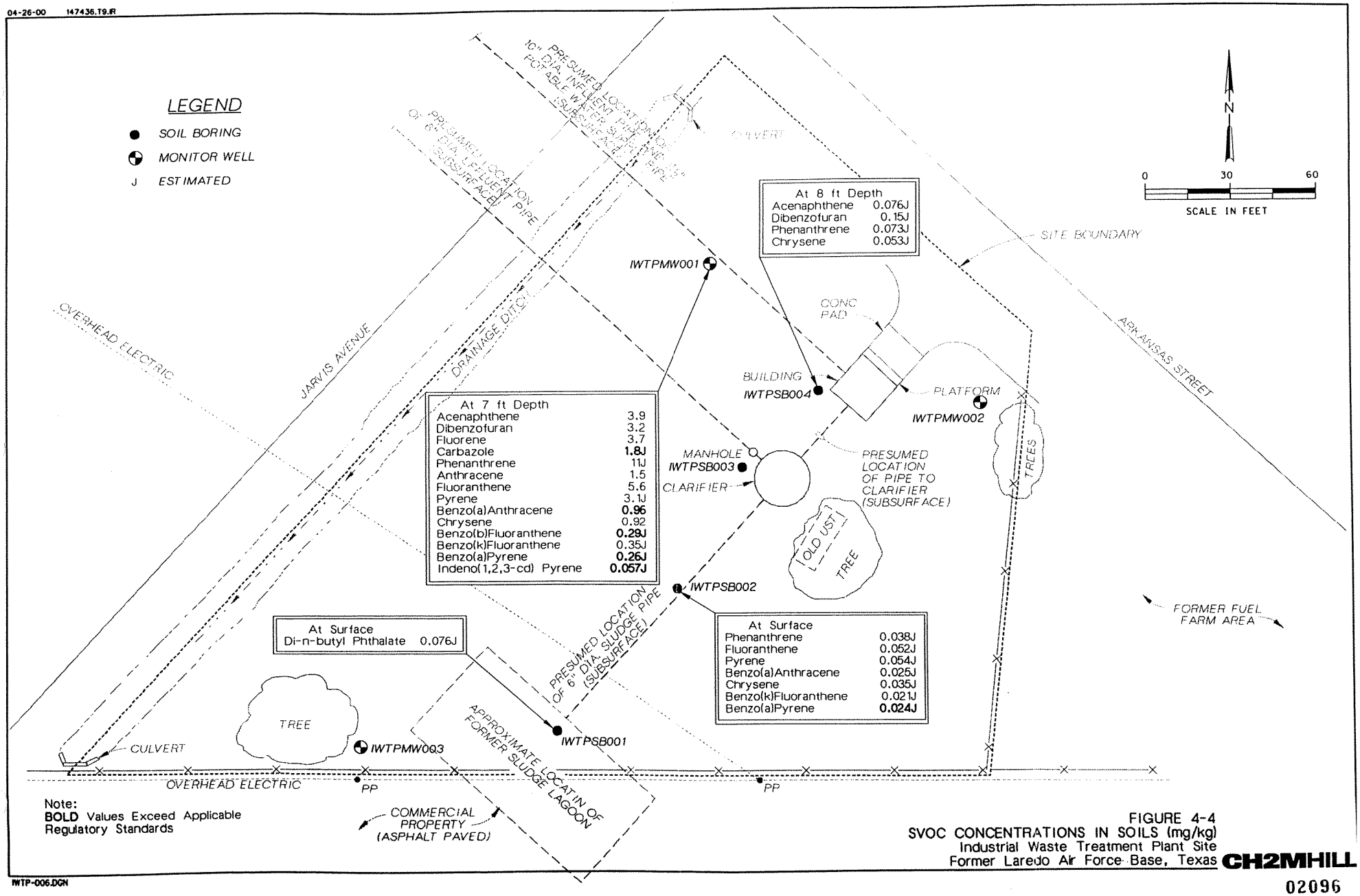
Note:
BOLD Values Exceed Applicable Regulatory Standards

FIGURE 4-3
VOC CONCENTRATIONS IN GROUNDWATER (mg/L)
Industrial Waste Treatment Plant Site
Former Laredo Air Force Base, Texas

CH2MHILL

0209

IWTP-005.DGN



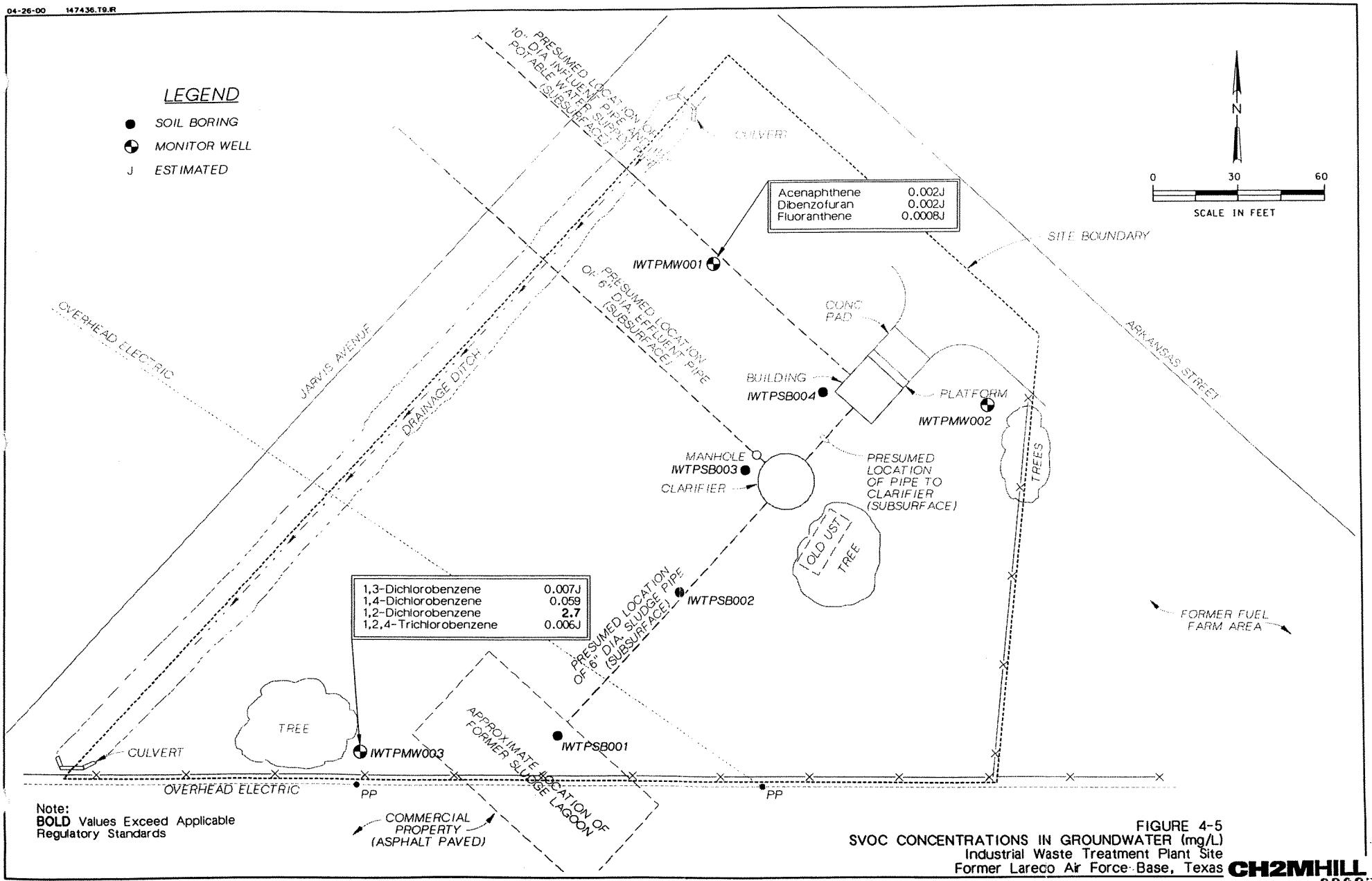
Note:
BOLD Values Exceed Applicable Regulatory Standards

FIGURE 4-4
SVOC CONCENTRATIONS IN SOILS (mg/kg)
Industrial Waste Treatment Plant Site
Former Laredo Air Force Base, Texas

CH2MHILL

IWTP-006.DGN

02096



Note:
BOLD Values Exceed Applicable Regulatory Standards

FIGURE 4-5
SVOC CONCENTRATIONS IN GROUNDWATER (mg/L)
Industrial Waste Treatment Plant Site
Former Lareco Air Force Base, Texas

CH2MHILL

02097

IWTP-007.DGN

Figure 4-2. The distribution of VOCs in IWTP groundwater samples is illustrated on Figure 4-3.

The reported concentrations for the VOCs in IWTP site soils are generally low. It is noted that EPA recognizes acetone, methylene chloride, and carbon disulfide as common laboratory contaminants. Because these compounds were not identified in blank samples associated with the analysis of the IWTP site soil samples, data validation cannot qualify the reported concentrations as being due to laboratory contamination. However, the low concentrations reported for these compounds together with a lack of pattern of occurrence for the compounds across the site suggest that laboratory contamination may be the source of the reported concentrations of these compounds. Also, the presence of the VOC compounds in the surficial soil samples is unlikely, given the warm, dry climate of the Laredo area. Therefore, it appears likely that the presence of acetone, methylene chloride, and carbon disulfide in the IWTP site soil samples may be due to laboratory contamination.

Only one groundwater sample, collected from monitor well IWTPMW003, was reported to contain VOC compounds. Of these detected compounds, 1,1-DCE, 1,2-DCE, TCE, and benzene were reported at concentrations that exceed the applicable TNRCC RRS2 GW-Ind MSCs. It is noted that none of the VOCs detected in the groundwater sample were detected in site soils.

Because none of the VOC compounds reported for IWTP site soils exceed applicable regulatory standards, no VOC compounds are identified as COPCs for IWTP site soils. 1,1-DCE, 1,2-DCE, TCE, and benzene are identified as COPCs for IWTP site groundwater, but their occurrence is limited to well IWTPMW003.

4.5.2 SVOCs

SVOC compounds were detected in soil and groundwater samples at the IWTP site. Only four of the 21 soil samples (IWTPMWSO001007N1, IWTPSBSO002000N1, IWTPSBSO004008N1, and IWTPSB001000N1) and two of the three groundwater samples (IWTPMWWG001000N1 and IWTPMWWG003000N1) were reported to contain SVOCs. The distribution of SVOCs in IWTP site soil samples is illustrated on Figure 4-4. The distribution of SVOCs in IWTP site groundwater samples is illustrated on Figure 4-5.

The highest SVOC concentrations in soils are reported for sample IWTPMWSO001007N1, which was collected from just above the groundwater surface in boring IWTPMW001. The reported concentrations for carbazole, benzo(a)anthracene, benzo(b)fluoranthene, benzo(a)pyrene, and indeno(1,2,3-cd)pyrene in this sample exceed the applicable TNRCC RRS 2 GWP-Ind MSCs. Sample IWTPSBSO002000N1 was reported to contain benzo(a)pyrene at a low, estimated concentration below the method quantitation limit. However, the reported concentration for benzo(a)pyrene in the sample exceeds the TNRCC RRS2 GWP-Ind MSC. None of the other detected concentrations of SVOCs exceed the applicable GWP-Ind MSCs. None of the detected concentrations of SVOCs in site soils exceed the applicable SAI-Ind MSCs.

Detectable concentrations of SVOCs were reported for the groundwater samples collected from monitor wells IWTPMW001 and IWTPMW003. Only the detected concentration of 1,2-dichlorobenzene reported for the sample from IWTPMW003 exceeds the applicable TNRCC RRS2 GW-Ind MSC. It is noted that 1,2-dichlorobenzene was not detected in site soil samples.

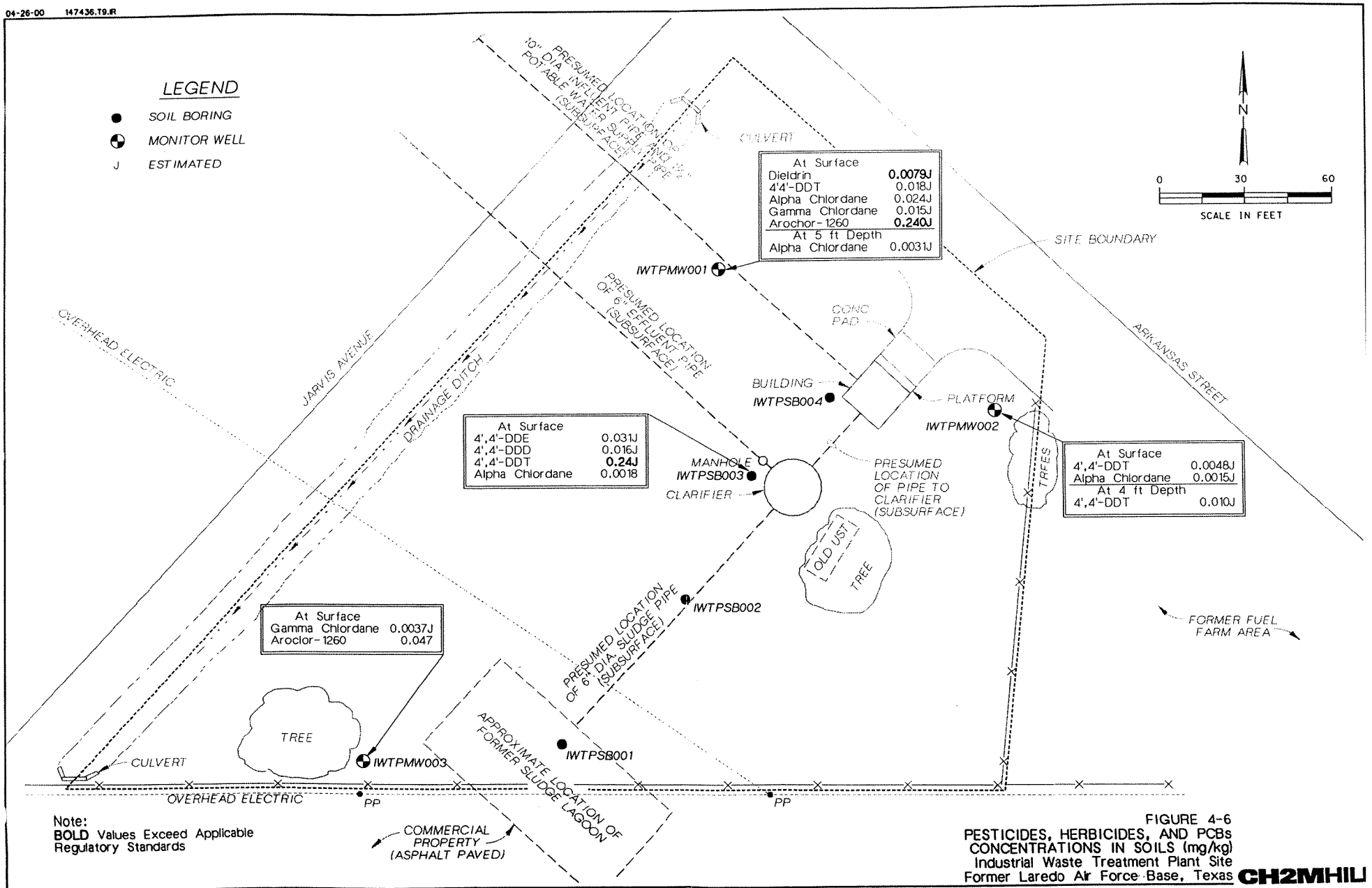
Because the detected concentrations of carbazole, benzo(a)anthracene, benzo(b)fluoranthene, benzo(a)pyrene, indeno(1,2,3-cd)pyrene, and benzo(a)pyrene exceed applicable TNRCC RRS2 GWP-Ind MSCs in one or more of the IWTP site soil samples, these compounds are considered to be COPCs for IWTP site soils. Because the concentration of 1,2-dichlorobenzene exceeds the TNRCC RRS2 GW-Ind MSC in the sample collected from monitor well IWTPMW003, 1,2-dichlorobenzene is considered to be a COPC for IWTP site groundwater.

4.5.3 Pesticides

Pesticide compounds were detected in site soils and groundwater. The distributions of pesticide compounds (as well as herbicides and PCB compounds) in IWTP site soil and groundwater samples are illustrated on Figure 4-6 (soils) and Figure 4-7 (groundwater).

Detectable concentrations of pesticide compounds were reported for 6 of the 21 soil samples. The compounds were detected in four surficial soil samples and two shallow (4-5 feet bgs) subsurface soil samples. Two compounds were reported at concentrations exceeding TNRCC RRS2 GWP-Ind MSCs. Dieldrin was detected in the surficial sample from boring

04-26-00 147436.T9.IR



Note:
BOLD Values Exceed Applicable Regulatory Standards

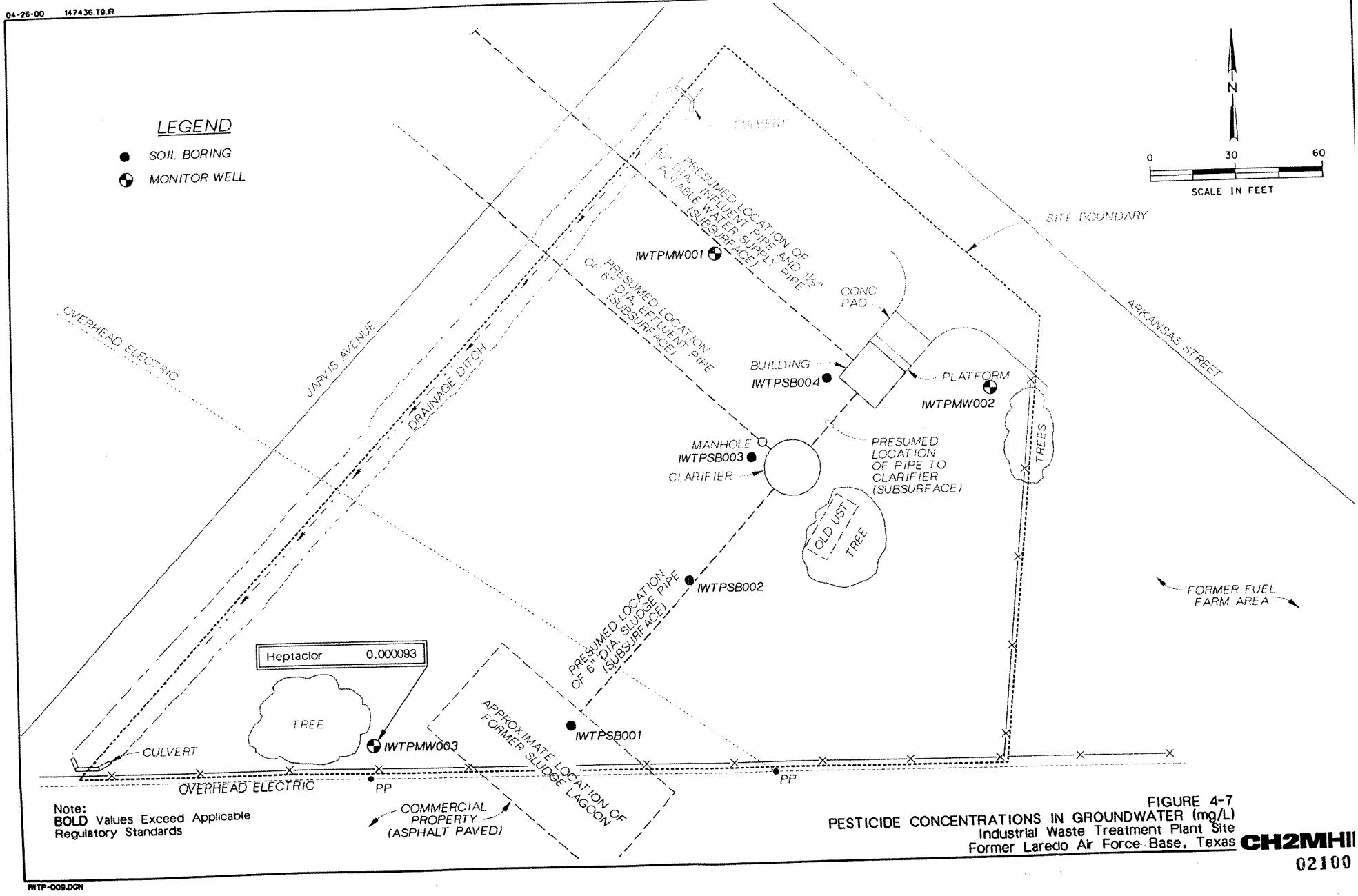
FIGURE 4-6
PESTICIDES, HERBICIDES, AND PCBs CONCENTRATIONS IN SOILS (mg/kg)
Industrial Waste Treatment Plant Site
Former Laredo Air Force Base, Texas

CH2MHILL

02099

IWTP-008.DGN

04-26-00 147436.T9.R



Note:
BOLD Values Exceed Applicable Regulatory Standards

FIGURE 4-7
PESTICIDE CONCENTRATIONS IN GROUNDWATER (mg/L)
Industrial Waste Treatment Plant Site
Former Laredo Air Force Base, Texas

CH2MHILL

02100

IWTP-009.DGN

IWTPMW001, and 4',4'-DDT was detected in the surficial sample from boring IWTPSB004. Neither compound was detected in deeper soil samples collected from the same borings. Because dieldrin and 4',4'-DDT were detected at concentrations exceeding applicable regulatory standards, those compounds are considered to be COPCs for IWTP site soils.

Only one groundwater sample, collected from monitor well IWTPMW003, was reported to contain a pesticide compound, Heptaclor. It was reported at a concentration well below the applicable TNRCC RRS2 GW-Ind MSC. Heptaclor was not reported to be present in any of the IWTP site soil samples. No pesticide compounds were identified as COPCs for IWTP site groundwater.

4.5.4 Herbicides

No detectable concentrations of herbicide compounds were reported for any of the soil or groundwater samples collected at the IWTP site.

4.5.5 PCBs

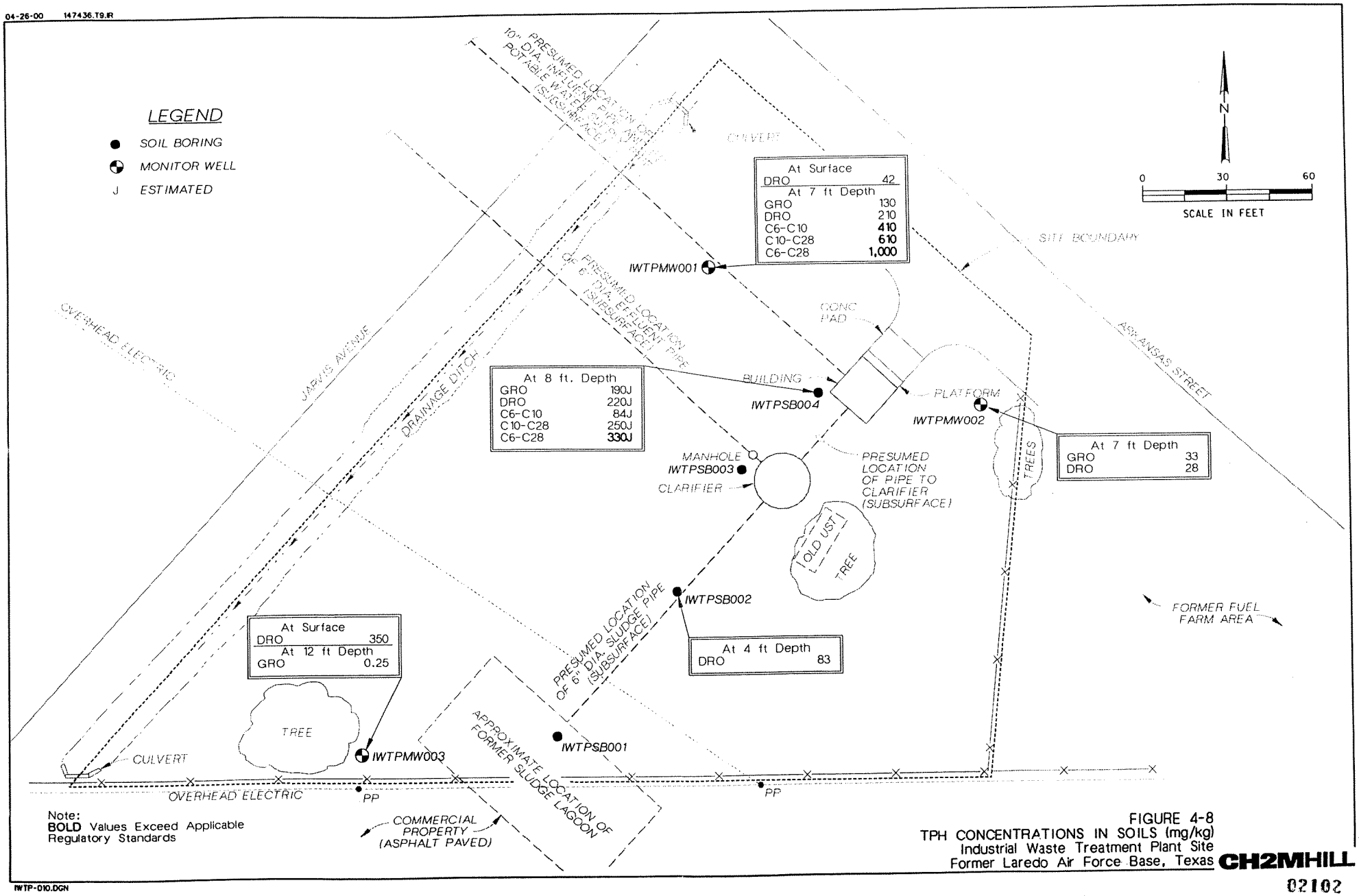
One PCB compound, Aroclor-1260, was reported for 2 of the 21 soil samples analyzed. The PCB compound was reported for the surficial soil samples from borings IWTPMW001 and IWTPMW003. Only the concentration reported for the sample from IWTPMW001, at 0.240 mg/kg, exceeds the applicable TNRCC RRS2 GWP-Ind MSC. Aroclor-1260 is therefore considered to be a COPC for IWTP site soils. No PCB compounds were detected in site groundwater samples.

4.5.6 TPH

TPH was detected in soil and groundwater samples collected at the IWTP site. TPH-GRO and TPH-DRO by EPA Method 8015 Modified and TPH by TNRCC Method 1005 were reported. The distributions of TPH in IWTP site soil and groundwater samples are illustrated in Figure 4-8 (soils) and Figure 4-9 (groundwater).

TPH-GRO was reported for the subsurface soil samples collected at the depth of the groundwater interface in borings IWTPMW001, IWTPMW002, IWTPMW003, and IWTPSB004. The greatest concentration of TPH-GRO was reported for the sample collected from IWTPSB004. Except for the sample from IWTPMW003, the samples exhibited visual indications of hydrocarbon contamination during sample collection.

04-26-00 147436.T9.R



Note:
BOLD Values Exceed Applicable Regulatory Standards

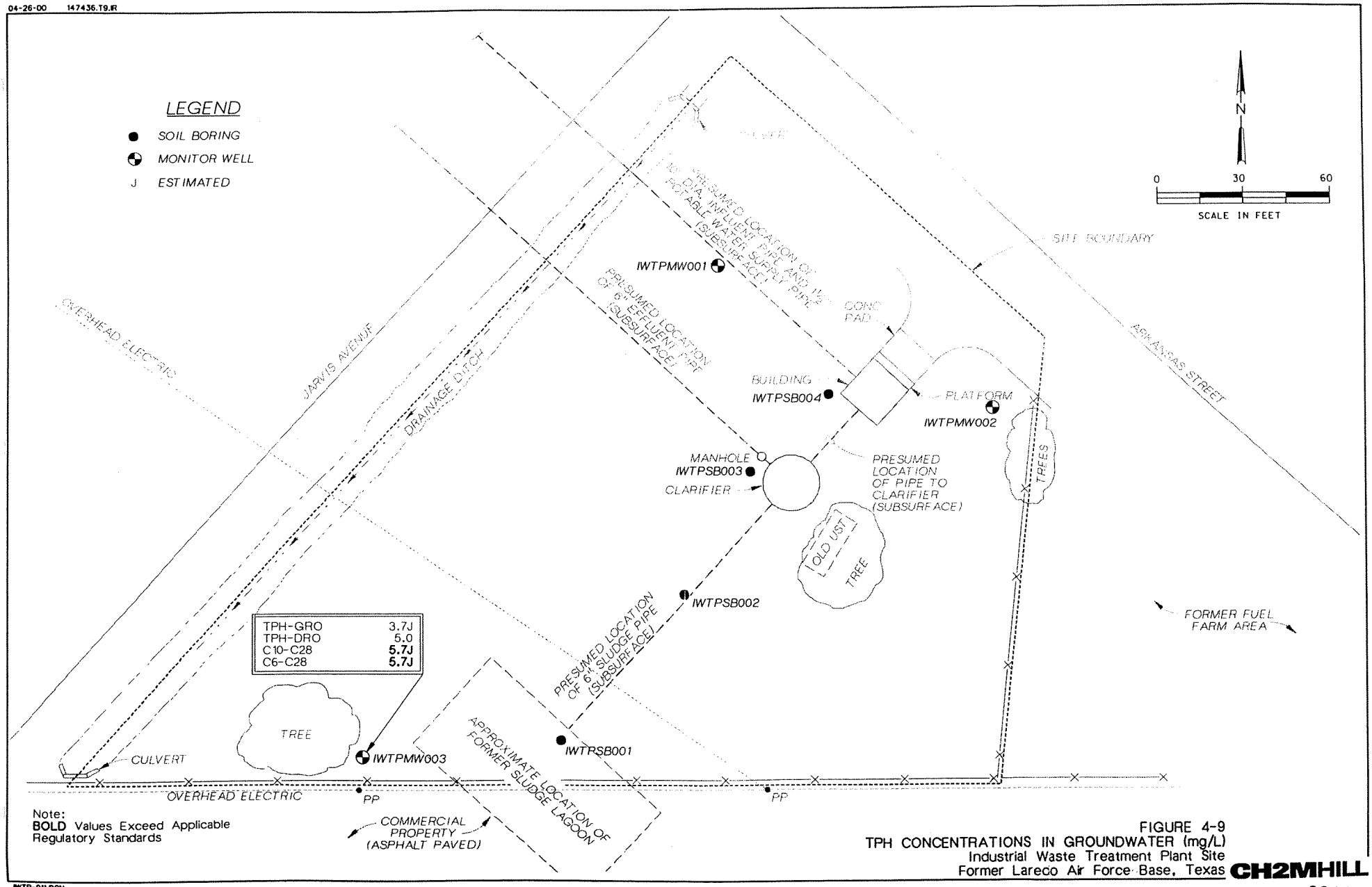
FIGURE 4-8
TPH CONCENTRATIONS IN SOILS (mg/kg)
Industrial Waste Treatment Plant Site
Former Laredo Air Force Base, Texas

CH2MHILL

02102

IWTP-010.DGN

04-26-00 147436.T9.IR



Note:
BOLD Values Exceed Applicable Regulatory Standards

FIGURE 4-9
TPH CONCENTRATIONS IN GROUNDWATER (mg/L)
Industrial Waste Treatment Plant Site
Former Lareco Air Force Base, Texas

CH2MHILL

02103

IWTP-011.DGN

The highest concentration of TPH-DRO was reported for the surficial sample collected from boring IWTPMW003. However, it is noted that the sample did not exhibit obvious indications of hydrocarbon contamination during sample collection. Samples IWTPMWSO001007 and IWTPSBSO004008 also were reported to have elevated concentrations of TPH-DRO. Both of these samples were collected at the groundwater interface in their respective borings, and exhibited obvious indications (staining and odors) of hydrocarbon contamination during sample collection.

For the TNRCC Method 1005 analysis, TPH was reported only for the subsurface samples collected at the depth of the groundwater interface in borings IWTPMW001 and IWTPSB004. In both samples, the concentration of TPH from the C10-C28 range is greater than the concentration of TPH from the C6-C10 range. Both soil samples contain TPH exceeding the TNRCC RRS2 GWP-Ind MSC for TPH.

Of the three groundwater samples, TPH-GRO, TPH-DRO, and TPH by TNRCC Method 1005 were reported only for the groundwater sample collected from monitor well IWTPMW003. The reported concentration of TPH (by TNRCC Method 1005) exceeds the applicable TNRCC RRS2 GW-Ind MSC.

Because TPH exceeds the applicable TNRCC RRS2 regulatory standards for soil and groundwater, TPH is a COPC for IWTP site soils and groundwater.

4.5.7 Metals

Detectable concentrations of various metals were reported for all of the soil and groundwater samples. Figure 4-10 illustrates the distribution of the various metals detected in IWTP site soil samples that exceed the applicable TNRCC RRS2 GWP-Ind MSCs. The distribution of the various metals detected in IWTP site groundwater samples is illustrated on Figure 4-11. No studies regarding site-specific or former LAFB area-specific background concentrations for metals in soils have been performed. Background concentrations for various metals may be higher than the respective GWP-Ind MSCs. If background concentrations are found to be higher than the GWP-Ind, then the background value would be used for comparison rather than the GWP-Ind.

Appendix E
Instrument Calibration Log

CH2MHILL

PROJECT NUMBER	PROJECT NAME	
147436.T9.FW	Former Laredo AFB SI	SHEET _1__ OF _1__

EQUIPMENT CALIBRATION LOG

DATES OF PROJECT : 05/18/1999 - 05/24/1999

INSTRUMENT	DATE	TIME	ZERO OK?	SPAN	CALIBRATE OK?
ThermoEnviron. 580B PID	05/18/1999	0845	Yes	100 ppm isobutylene	yes, 99.7 ppm
ThermoEnviron. 580B PID	05/19/1999	0910	Yes	100 ppm isobutylene	yes, 99.7 ppm
YSI Model 33 Conductivity	05/20/1999	0920	Yes	1,000 @ µmhos 258°C	yes, 1,000 @ 26°C
Orion 250, pH	05/20/1999	0935	n/a	4.00 & 7.00 solns	yes, slope 98%
Orion 250	05/22/1999	1230	n/a	4.00 & 7.00 solns	yes, slope 97.7
YSI Model 33	05/22/1999	1230	Yes	1,000 @ µmhos 258°C	yes, 1090@ 30°C
Orion 250	05/23/1999	0900	n/a	4.00 & 7.00 solns	yes, slope 95.0
YSI Model 33	05/23/1999	0900	Yes	1,000 @ µmhos 258°C	yes

Appendix F
IDW Disposal Documentation

Appendix F
IDW Disposal Documentation

CH2MHILL

PROJECT NUMBER	PROJECT NAME	
147436.T9.FW	Former Laredo AFB SI	SHEET _1__ OF _1__

IDW DRUM INVENTORY LIST

DATES OF PROJECT :

DRUM NUMBER	DATE FILLING BEGUN	DATE FILLED	CONTENTS	NAME OF PERSON FILLING DRUM
1	05/18/1999	05/18/1999	Soil cutings MW001	Dougherty
2	05/18/1999	05/20/1999	Soil cutings MW001, plastic sheet	Dougherty
3	05/18/1999	05/18/1999	Soil cuttings IWTPMW003	Dougherty
4	05/19/1999	05/19/1999	Soil cuttings IWTPSB001, SN002, SB003, SB004	Dougherty
5	05/18/1999	05/18/1999	Soil cuttings IWTPMW002	Dougherty
6	05/18/1999	05/19/1999	Decon water, all IWTP borings	Dougherty
7	05/19/1999	05/20/1999	Decon water, all IWTP borings	Dougherty
8	05/20/1999	05/20/1999	Development water IWTPMW003	Dougherty
9	05/20/1999	05/20/1999	Development water IWTPMW001	Dougherty
10	05/20/1999	05/20/1999	Development water IWTPMW002	Dougherty
11	05/24/1999	05/24/1999	Soil from SGR borings	Dougherty
12	05/24/1999	05/24/1999	Purge water, All IWTP wells	Dougherty
13				
14				
15				
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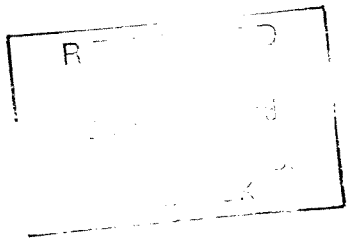
26				

EET Environmental Services LLC

June 23, 1999

Mr. Dave Epperly
CH2M Hill
502 S. Main, 4th Floor
Tulsa, OK 74103



RE: Manifests for Waste at the Former Laredo AFB

Dear Dave:

Per Chuck Dougherty's instructions, I am sending you the manifests for the waste currently staged at Laredo International Airport. Based upon the analytical data, both the purge/decon water and the soil cuttings are classified as Non-hazardous Class II wastes. The soil cuttings will be disposed of at the City of Laredo Landfill. The purge/decon water will be disposed of at the BFI facility here in Austin.

I spoke to Randall Kepenbrock, Manager of the City of Laredo landfill, and he stated that they could accept the Class II soil waste. He requested that a non-hazardous waste manifest be utilized and that the corresponding analytical data be attached to this manifest. The City landfill does not provide their own non-hazardous manifests, so I was forced to use a non-hazardous manifest from another landfill facility. Mr. Kepenbrock stated that this was acceptable. This is the cause of the sorry appearance of the manifest for the soil cuttings. I had to whiteout existing facility information over which I wrote the information for the Laredo landfill. Analytical data that will be submitted to the Laredo landfill is attached for your review.

If you have any questions regarding the manifests, please do not hesitate to give me a call.

Please sign the manifest as the generator's representative and then federal express back to me for Friday delivery. I am planning to mobilize to the site on Monday, June 28th. I have included a completed Fed Ex return shipment label for your convenience.

Again, please do not hesitate to give me a call if you have any questions.

Sincerely,

Ann Harasimowitz
Regulatory Chemist

BFI Waste Systems
ING-FERRIS INDUSTRIES

TEXAS
NON-HAZARDOUS SPECIAL WASTE MANIFEST

NO. 356584

GENERATOR

GENERATOR NAME U.S. Army Corp. of Engineers
ADDRESS 1645 South 101 East Avenue
Tulsa, OK 74128-4629

GENERATING LOCATION Laredo International Airport
ADDRESS Laredo, TX 78401

PHONE NO. 918 669 7519

STATE GENERATOR ID NUMBER CESQG

T.N.R.C.C.	DESCRIPTION OF WASTE	QUANTITY	UNITS
	Purge/Decon Water		D

BFI WASTE CODE TX 755 000623 NP3028 4

T.N.R.C.C.	DESCRIPTION OF WASTE	QUANTITY	UNITS

BFI WASTE CODE

T.N.R.C.C.	DESCRIPTION OF WASTE	QUANTITY	UNITS

BFI WASTE CODE

D-DRUM
C-CARTON
B-BAG
T-TRUCK
P-POUNDS
Y-YARDS
O-OTHER

GENERATOR'S CERTIFICATION: I hereby certify that the above named material is not a hazardous waste as defined by 40 CFR Part 261 or any applicable state law, has been properly described, classified and packaged, and is in proper condition for transportation according to applicable regulations; **AND, if the waste is a treatment residue of a previously restricted hazardous waste** subject to the Land Disposal Restrictions, I certify and warrant that the waste has been treated in accordance with the requirements of 40 CFR Part 268 and is no longer a hazardous waste as defined by 40 CFR Part 261.

J. Daniel ARTHUR
GENERATOR AUTHORIZED AGENT NAME

SIGNATURE

SHIPMENT DATE

TRANSPORTER

TRUCK NO. #002

TRANSPORTER NAME EET Environmental Services

ADDRESS 11405 Conroy Lane
Manchaca, TX 78652

I HEREBY CERTIFY THAT THE ABOVE NAMED MATERIAL WAS PICKED UP AT THE GENERATOR SITE LISTED ABOVE.

DRIVER SIGNATURE

SHIPMENT DATE

PHONE NO. 512-291-1100

DRIVER NAME (PRINT) James Zezula

VEHICLE LICENSE NO./STATE 1HN-T66 / Texas

STATE TRANSPORTER ID NO. 85665

I HEREBY CERTIFY THAT THE ABOVE NAMED MATERIAL WAS DELIVERED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

DRIVER SIGNATURE

DELIVERY DATE

DESTINATION

SITE NAME BROWNING-FERRIS IND. / SUNSET FARMS LANDFILL

PHONE NO. 512-272-4327

ADDRESS 9912 GILES RD. AUSTIN, TX 78754

MSW#1447

I CERTIFY THAT THE ABOVE NAMED MATERIAL HAS BEEN ACCEPTED AND TO THE BEST OF MY KNOWLEDGE THE FOREGOING IS TRUE AND ACCURATE.

NAME OF AUTHORIZED AGENT

SIGNATURE

02164

AUG 27 '99 09:29AM CH2MHILL P.3/4

TEXAS

BFI Waste Systems

NON-HAZARDOUS SPECIAL WASTE MANIFEST

GENERATOR

GENERATOR NAME

GENERATOR ID NO.

ADDRESS

ADDRESS

PHONE NO.

STATE GENERATOR ID NUMBER

T.N.R.C.C. | DESCRIPTION OF WASTE | QUANTITY | UNITS

Purge/Decon Water

BFI WASTE CODE TX 755 000623 NP3028

T.N.R.C.C. | DESCRIPTION OF WASTE

BFI WASTE CODE

T.N.R.C.C. | DESCRIPTION OF WASTE

BFI WASTE CODE

D-DRUM, C-CARTON, B-BAG, T-TRUCK, P-POUNDS, Y-YARDS, O-OTHER

GENERATOR'S CERTIFICATION: I hereby certify that the above named material is not a hazardous waste as defined by 40 CFR Part 261 or any applicable state law, has been properly described, classified and packaged, and is in proper condition for transportation according to applicable regulations; AND, if the waste is a treatment residue of a previously restricted hazardous waste subject to the Land Disposal Restrictions, I certify and warrant that the waste has been treated in accordance with the requirements of 40 CFR Part 268 and is no longer a hazardous waste as defined by 40 CFR Part 261.

J. Daniel Arthur

GENERATOR AUTHORIZED AGENT NAME | SIGNATURE | SHIPMENT DATE

TRANSPORTER

TRUCK NO. #002

PHONE NO. 512-291-1100

TRANSPORTER NAME EET Environmental Services

DRIVER NAME (PRINT) James Zezula

ADDRESS 11405 Conroy Lane

Manchaca, TX 78652

VEHICLE LICENSE NO./STATE 1HN-T66 / Texas

STATE TRANSPORTER ID NO. 85665

I HEREBY CERTIFY THAT THE ABOVE NAMED MATERIAL WAS PICKED UP AT THE GENERATOR SITE LISTED ABOVE.

James Zezula | 062999

DRIVER SIGNATURE | SHIPMENT DATE

I HEREBY CERTIFY THAT THE ABOVE NAMED MATERIAL WAS DELIVERED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

James Zezula | 0[illegible]

DRIVER SIGNATURE | DELIVERY DATE

DESTINATION

SITE NAME BROWNING-FERRIS IND. / SUNSET FARMS LANDFILL

PHONE NO.

ADDRESS 9012 GILES [illegible]

I HEREBY CERTIFY THAT THE ABOVE NAMED MATERIAL HAS BEEN ACCEPTED AND TO THE BEST OF MY KNOWLEDGE THE FOREGOING IS TRUE AND ACCURATE.

[illegible]

NAME OF AUTHORIZED AGENT | SIGNATURE

02165

TRANSPORTER RETAIN

City of Laredo Landfill
Hwy 359
Laredo, TX

39321

NON-HAZARDOUS MANIFEST

GENERATOR

Generator U.S. Army Corp of Engineers I.D. # CESQG
Address 1645 South 101 East Avenue Gen. Shipping Location Laredo Int. Airport
Tulsa, OK 74128-4629 Address Laredo, TX 78401
Phone 918-669-7519 Phone

Description of Waste Materials	Profile Number	Total Quantity	Unit of Measure	Container Type
Non hazardous soil cuttings	see attached analytical			DM

I hereby certify that the above-described materials are not hazardous wastes as defined by 40 CPR, Part 261 or any applicable state law, have been fully and accurately described, classified and packaged, and are in proper condition for transportation according to applicable regulations.

J. Daniel ARTHUR
Generator Authorized Agent Name (Print) Signature Delivery Date

TRANSPORTER

Transporter Name EET Environmental Svs.
Address 11405 Conroy Lane
Manchaca TX 78652

Driver Name James Zezula
Truck Number 002
Truck Type Ford 1 ton

I hereby acknowledge receipt of the above described materials for transport from the generator site listed above.

Driver Signature Shipment Date

I hereby acknowledge that the above described materials were received from the generator site were transported without incident to the destination listed below.

Driver Signature Delivery Date

DESTINATION

Site Name City of Laredo Landfill Phone Number (956) 795-2515
Address Hwy 359, Laredo TX 78401
Disposal Location: North East Level

I hereby acknowledge receipt of the above described materials.

Name of Authorized Agent (Print) Signature Receipt Date

White - Original Canary - Disposer Retain Pink - Transporter Retain Goldenrod - Generator Retain

GRAY BUSINESS FORMS (210) 822-6984 D-37668

02165

Hwy 359
Laredo, TX

39321

NON-HAZARDOUS MANIFEST

GENERATOR

Generator U.S. Army Corp of Engineers
Address 1645 South 101 East Avenue
Tulsa, OK 74128-4629
Phone 918-669-7519

I.D. # CESQG
~~Shipping~~ Gen Location Laredo Int. Airport
Address Laredo, TX 78401
Phone

Description of Waste Materials	Profile Number	Total Quantity	Unit of Measure	Container Type
Non hazardous soil cuttings	see attached analytical	6		DM

I hereby certify that the above-described materials are not hazardous wastes as defined by 40 CPR, Part 261 or any applicable state law, have been fully and accurately described, classified and packaged, and are in proper condition for transportation according to applicable regulations.

[illegible]
Generator Authorized Agent Name (Print)

[signature]
Signature

Delivery Date

TRANSPORTER

Transporter Name EET Environmental Svs.
Address 11405 Conroy Lane
Manchaca TX 78652

Driver Name James Zezula
Truck Number 202
Truck Type Ford 1 ton

I hereby acknowledge receipt of the above described materials for transport from the generator site listed above.

James Zezula 06-29-99
Driver Signature Shipment Date

I hereby acknowledge that the above described materials were received from the generator site were transported without incident to the destination listed below.

Driver Signature Delivery Date

DESTINATION

Site Name City of Laredo Landfill
Phone Number (956) 795-2515
Address HWY 359 Laredo TX 78401
Disposal Location: North AA East 17 Level 1

I hereby acknowledge receipt of the above described materials.

Jose Luis Villarreal
Name of Authorized Agent (Print)

[signature] 6/29/99
Signature Receipt Date

White - Original Canary - Disposer Retain Pink - Transporter Retain Goldenrod - Generator Retain

GRAY BUSINESS FORMS (210) 822-6964 D-37888

ANA-LAB CORP.
COMPLETE SERVICE LAB

Central TX Region

8101 Cameron Rd #306 -- Austin, TX 78754
512/821-0045 FAX 512/821-0237

Report Date: 06/11/1999

Project Report: 102380
Client: EET1

EET, Inc
PO Box 1890
Manchaca, TX 78652-1890
Attention: A. Harasimowitz

Results for Project 102380

409349 Purge/Decon Water Former Laredo AFB Liquid Aqueous Taken: 05/20/1999 By: Client Rec:05/26/1999

Parameter	*Result*	*Unit*	*MAL*	*Method*	*Analyzed*	*By*	*CAS*
Flash Point (Reg. Limit 140.0 F)	>200	Degrees F		EPA Method 1010	05/28/1999 1515	PRE	
Total Petroleum Hydrocarbon	39	mg/L	1	EPA Method 418.1	06/09/1999 1730	GDG	
TCLP Silver (Reg. Limit 5.0)	ND	mg/L	0.0500	EPA Method 6010B	06/08/1999 1139	WOB	7440-22-4
TCLP Arsenic (Reg. Limit 5.0)	ND	mg/L	0.500	EPA Method 6020	06/02/1999 1300	WOB	7440-38-2
TCLP Barium (Reg. Limit 100.0)	0.242	mg/L	0.0500	EPA Method 6020	06/02/1999 1300	WOB	7440-39-3
TCLP Cadmium (Reg. Limit 1.0)	ND	mg/L	0.0500	EPA Method 6020	06/02/1999 1300	WOB	7440-43-9
TCLP Chromium (Reg. Limit 5.0)	ND	mg/L	0.100	EPA Method 6020	06/02/1999 1300	WOB	7440-47-3
TCLP Lead (Reg. Limit 5.0)	ND	mg/L	0.250	EPA Method 6020	06/02/1999 1300	WOB	7439-92-1
TCLP Selenium (Reg. Limit 1.0)	ND	mg/L	0.250	EPA Method 6020	06/02/1999 1300	WOB	7782-49-2
Reactivity Cyanide (RL 250)	ND	mg/kg	4.0	EPA Method 7.3.3	05/28/1999 1500	RSV	
TCLP Mercury (Reg. Limit 0.2)	ND	mg/L	0.0015	EPA Method 7470A	06/02/1999 1412	WOB	7439-97-6
TC mma-BHC (Lindane) RL	ND	mg/L	0.001	EPA Method 8081A	06/03/1999 0546	KLB	58-89-9
TCLP Chlordane (Reg. Limit 0.03)	ND	mg/L	0.005	EPA Method 8081A	06/03/1999 0546	KLB	57-74-9
TCLP Endrin (Reg. Limit 0.02)	ND	mg/L	0.001	EPA Method 8081A	06/03/1999 0546	KLB	72-20-8
TCLP Heptachlor (Limit .008)	ND	mg/L	0.001	EPA Method 8081A	06/03/1999 0546	KLB	76-44-8
TCLP Heptachlor Epoxide (.008)	ND	mg/L	0.001	EPA Method 8081A	06/03/1999 0546	KLB	1024-57-3
TCLP Methoxychlor (RL 10)	ND	mg/L	0.001	EPA Method 8081A	06/03/1999 0546	KLB	72-43-5
TCLP Toxaphene (Reg. Limit 0.5)	ND	mg/L	0.05	EPA Method 8081A	06/03/1999 0546	KLB	8001-35-2
TCLP 2,4 D (Reg. Limit 10)	ND	mg/L	2.5	EPA Method 8150-TCLP	06/02/1999 1642	KLB	94-75-7
TCLP 2,4,5-TP (Silvex) (RL 1)	ND	mg/L	0.25	EPA Method 8150-TCLP	06/02/1999 1642	KLB	93-72-1
TCLP 1,2-Dichloroethane (RL .5)	ND	mg/L	0.1	EPA Method 8260B	06/03/1999 0010	KLB	107-06-2
TCLP 1,1-Dichloroethene (.7)	ND	mg/L	0.1	EPA Method 8260B	06/03/1999 0010	KLB	75-34-3
TCLP Benzene (Reg. Limit 0.5)	ND	mg/L	0.1	EPA Method 8260B	06/03/1999 0010	KLB	71-43-2
TCLP Carbon Tetrachloride (.5)	ND	mg/L	0.1	EPA Method 8260B	06/03/1999 0010	KLB	56-23-5
TCLP Chlorobenzene (Limit 100)	ND	mg/L	0.1	EPA Method 8260B	06/03/1999 0010	KLB	108-90-7
TCLP Chloroform (Reg. Limit 6.0)	ND	mg/L	0.1	EPA Method 8260B	06/03/1999 0010	KLB	67-66-3
TCLP MEK (Reg. Limit 200)	ND	mg/L	2.00	EPA Method 8260B	06/03/1999 0010	KLB	78-93-3
TCLP Tetrachloroethylene (.7)	ND	mg/L	0.1	EPA Method 8260B	06/03/1999 0010	KLB	127-18-4
TCLP Trichloroethylene (.5)	ND	mg/L	0.1	EPA Method 8260B	06/03/1999 0010	KLB	79-01-6
TCLP Vinyl Chloride (.4)	ND	mg/L	0.2	EPA Method 8260B	06/03/1999 0010	KLB	75-01-4
TCLP 1,4-Dichlorobenzene	ND	mg/L	0.1	EPA Method 8270C	06/04/1999 1519	KLB	106-46-7
TCLP 2,4-Dinitrotoluene (.13)	ND	mg/L	0.1	EPA Method 8270C	06/04/1999 1519	KLB	121-14-2
TCLP Hexachlorethane (Limit 3)	ND	mg/L	0.1	EPA Method 8270C	06/04/1999 1519	KLB	67-72-1
TCLP Hexachlorobenzene (.13)	ND	mg/L	0.1	EPA Method 8270C	06/04/1999 1519	KLB	118-74-1
TCLP xachlorobutadiene (.5)	ND	mg/L	0.1	EPA Method 8270C	06/04/1999 1519	KLB	87-68-3
TCL obenzene (Limit 2)	ND	mg/L	0.1	EPA Method 8270C	06/04/1999 1519	KLB	98-95-3
TCLP Pentachlorophenol (100)	ND	mg/L	0.5	EPA Method 8270C	06/04/1999 1519	KLB	87-86-5

ANA-LAB CORP.
THE COMPLETE SERVICE LAB

Central TX Region

8101 Cameron Rd #306 -- Austin, TX 78754
512/821-0045 FAX 512/821-0237

Project Report: 102380
Client: EET1

Results for Project 102380

109349 Purge/Decon Water Former Laredo AFB Liquid Aqueous Taken: 05/20/1999 By: Client Rec:05/26/1999

Parameter	Result	Unit	MAL	Method	Analyzed	By	CAS
TCLP Pyridine (Reg. Limit 5)	ND	mg/L	0.1	EPA Method 8270C	06/04/1999 1519	KLB	110-86-1
TCLP Total Cresols (Reg Lim	ND	mg/L	0.1	EPA Method 8270C	06/04/1999 1519	KLB	1319-77-3
TCLP 2,4,6-Trichlorophenol (2)	ND	mg/L	0.1	EPA Method 8270C	06/04/1999 1519	KLB	88-06-2
TCLP 2,4,5-Trichlorophenol (400)	ND	mg/L	0.1	EPA Method 8270C	06/04/1999 1519	KLB	95-95-4
aboratory pH	7.4	SU		EPA Method 9040A	05/28/1999 1630	PRE	
Reactivity Sulfide (RL 500)	ND	mg/kg	10	SW-846 7.3.4	05/28/1999 1000	RSV	

109350 Soil Cuttings Former Laredo AFB Solid Taken: 05/20/1999 By: Client Rec:05/26/1999

Parameter	Result	Unit	MAL	Method	Analyzed	By	CAS
Total Petroleum Hydrocarbon	58	mg/kg	10	EPA Method 418.1	06/03/1999 1130	GDG	
TCLP Arsenic (Reg. Limit 5.0)	ND	mg/L	0.500	EPA Method 6020	06/02/1999 1300	WOB	7440-38-2
TCLP Barium (Reg. Limit 100.0)	0.264	mg/L	0.0500	EPA Method 6020	06/02/1999 1300	WOB	7440-39-3
TCLP Cadmium (Reg. Limit 1.0)	ND	mg/L	0.0500	EPA Method 6020	06/02/1999 1300	WOB	7440-43-9
TCLP Chromium (Reg. Limit 5.0)	ND	mg/L	0.100	EPA Method 6020	06/02/1999 1300	WOB	7440-47-3
TCLP Lead (Reg. Limit 5.0)	ND	mg/L	0.250	EPA Method 6020	06/02/1999 1300	WOB	7439-92-1
TCLP Selenium (Reg. Limit 1.0)	ND	mg/L	0.250	EPA Method 6020	06/02/1999 1300	WOB	7782-49-2
TCLP Silver (Reg. Limit 5.0)	ND	mg/L	0.0500	EPA Method 6020	06/02/1999 1300	WOB	7440-22-4
TCLP Mercury (Reg. Limit 0.2)	ND	mg/L	0.0015	EPA Method 7470A	06/01/1999 1431	WOB	7439-97-6
TCLP Gamma-BHC (Lindane) RL	ND	mg/L	0.001	EPA Method 8081A	06/03/1999 0449	KLB	58-89-9
TCLP Chlordane (Reg. Limit 0.03)	ND	mg/L	0.005	EPA Method 8081A	06/03/1999 0449	KLB	57-74-9
TCLP Endrin (Reg. Limit 0.02)	ND	mg/L	0.001	EPA Method 8081A	06/03/1999 0449	KLB	72-20-8
TCLP Heptachlor (Limit .008)	ND	mg/L	0.001	EPA Method 8081A	06/03/1999 0449	KLB	76-44-8
TCLP Heptachlor Epoxide (.008)	ND	mg/L	0.001	EPA Method 8081A	06/03/1999 0449	KLB	1024-57-3
TCLP Methoxychlor (RL 10)	ND	mg/L	0.001	EPA Method 8081A	06/03/1999 0449	KLB	72-43-5
TCLP Toxaphene (Reg. Limit 0.5)	ND	mg/L	0.05	EPA Method 8081A	06/03/1999 0449	KLB	8001-35-2
TCLP 2,4 D (Reg. Limit 10)	ND	mg/L	2.5	EPA Method 8150-TCLP	06/02/1999 1716	KLB	94-75-7
TCLP 2,4,5-TP (Silvex) (RL 1)	ND	mg/L	0.25	EPA Method 8150-TCLP	06/02/1999 1716	KLB	93-72-1
TCLP 1,2-Dichloroethane (RL .5)	ND	mg/L	0.1	EPA Method 8260B	06/03/1999 0105	KLB	107-06-2
TCLP 1,1-Dichloroethene (.7)	ND	mg/L	0.1	EPA Method 8260B	06/03/1999 0105	KLB	75-34-3
TCLP Benzene (Reg. Limit 0.5)	ND	mg/L	0.1	EPA Method 8260B	06/03/1999 0105	KLB	71-43-2
TCLP Carbon Tetrachloride (.5)	ND	mg/L	0.1	EPA Method 8260B	06/03/1999 0105	KLB	56-23-5
TCLP Chlorobenzene (Limit 100)	ND	mg/L	0.1	EPA Method 8260B	06/03/1999 0105	KLB	108-90-7
TCLP Chloroform (Reg. Limit 6.0)	ND	mg/L	0.1	EPA Method 8260B	06/03/1999 0105	KLB	67-66-3
TCLP MEK (Reg. Limit 200)	ND	mg/L	2.00	EPA Method 8260B	06/03/1999 0105	KLB	78-93-3
TCLP Tetrachloroethylene (.7)	ND	mg/L	0.1	EPA Method 8260B	06/03/1999 0105	KLB	127-18-4
TCLP Trichloroethylene (.5)	ND	mg/L	0.1	EPA Method 8260B	06/03/1999 0105	KLB	79-01-6
TCLP Vinyl Chloride (.4)	ND	mg/L	0.2	EPA Method 8260B	06/03/1999 0105	KLB	75-01-4
TCLP 1,4-Dichlorobenzene	ND	mg/L	0.1	EPA Method 8270C	06/04/1999 1641	KLB	106-46-7
TCLP 2,4-Dinitrotoluene (.13)	ND	mg/L	0.1	EPA Method 8270C	06/04/1999 1641	KLB	121-14-2
TCLP Hexachlorethane (Limit 3)	ND	mg/L	0.1	EPA Method 8270C	06/04/1999 1641	KLB	67-72-1

ANA-LAB CORP.
COMPLETE SERVICE LAB

Central TX Region

8101 Cameron Rd #306 -- Austin, TX 78754
512/821-0045 FAX 512/821-0237

Project Report: 102380
Client: EET1

Results for Project 102380

409350 Soil Cuttings Former Laredo AFB

Solid Taken: 05/20/1999 By: Client Rec:05/26/1999

Parameter	Result	Unit	MAL	Method	Analyzed	By	CAS
TCLP Hexachlorobenzene (.13)	ND	mg/L	0.1	EPA Method 8270C	06/04/1999 1641	KLB	118-74-1
TCLP Hexachlorobutadiene (.5)	ND	mg/L	0.1	EPA Method 8270C	06/04/1999 1641	KLB	87-68-3
TCLP Nitrobenzene (Limit 2)	ND	mg/L	0.1	EPA Method 8270C	06/04/1999 1641	KLB	98-95-3
TCLP Pentachlorophenol (100)	ND	mg/L	0.5	EPA Method 8270C	06/04/1999 1641	KLB	87-86-5
TCLP Pyridine (Reg. Limit 5)	ND	mg/L	0.1	EPA Method 8270C	06/04/1999 1641	KLB	110-86-1
TCLP Total Cresols (Reg Lim	ND	mg/L	0.1	EPA Method 8270C	06/04/1999 1641	KLB	1319-77-3
TCLP 2,4,6-Trichlorophenol (2)	ND	mg/L	0.1	EPA Method 8270C	06/04/1999 1641	KLB	88-06-2
TCLP 2,4,5-Trichlorophenol (400)	ND	mg/L	0.1	EPA Method 8270C	06/04/1999 1641	KLB	95-95-4

Sample Preparation Steps for Project 102380

409349 Purge/Decon Water Former Laredo AFB

Liquid Aqueous Taken: 05/20/1999 By: Client Rec:05/26/1999

Parameter	Result	Unit	Method	Analyzed	By
Bottle Temperature on Receipt	4	Degrees C		05/26/1999 1318	AAJ
Bottle Temperature on Receipt	4	Degrees C		05/26/1999 1318	AAJ
TCL[illegible] Volatile Extraction	1.5% SOLID		EPA Method 1311	05/28/1999 1540	GPJ
TCLP Extraction: Non-Volatile	AQU/SOL EXT		EPA Method 1311	05/27/1999 1705	GPJ
Metals Digestion TCLP 3010	50/10 A/S/S	mL/mL	EPA Method 3010A	06/02/1999 0830	PJD
TCLP Liq-Liq Extr. W/Hex Exch.	10/200 S	mL/mL	EPA Method 3510	06/01/1999 0900	LMB
TCLP Liquid-Liquid Extraction	1/100 S	mL/mL	EPA Method 3510	06/03/1999 0700	LMB
Hydrocarbon Liquid Extraction	100/380	mL/mL	EPA Method 3510 *MOD	06/03/1999 1450	MAM
Metals Digestion - TCLP 7470	150/10 A/S	mL/mL	EPA Method 7470A	06/01/1999 0900	WBM
Metals Digestion - TCLP 7470	150/10 A/S	mL/mL	EPA Method 7470A	06/02/1999 0900	WBM
GC TCLP Pesticide	Verified		EPA Method 8081A	06/03/1999 0546	KLB
Estrification of TCLP Extract	10/1 S	mL/mL	EPA Method 8151A	05/29/1999 0900	LMB
GC TCLP Herbicide	Verified		EPA Method 8151A	06/02/1999 1642	KLB
MS TCLP Volatile Analysis	Verified		EPA Method 8260B	06/03/1999 0010	KLB
MS TCLP Semi-Volatile Analysis	Verified		EPA Method 8270C	06/04/1999 1519	KLB
Fax This Report AS Soon As	FAXED		FAX	06/10/1999 16:29	KEK
Reactivity Distillation	100/10 A/B	mL/g	SW 846 7.3.3	05/26/1999 1700	HAM

409350 Soil Cuttings Former Laredo AFB

Solid Taken: 05/20/1999 By: Client Rec:05/26/1999

Parameter	Result	Unit	Method	Analyzed	By
Bottle Temperature on Receipt	4	Degrees C		05/26/1999 1318	AAJ
TCLP ZHE Volatile Extraction	100.0% SOLID		EPA Method 1311	05/28/1999 1540	GPJ
TCLP Extraction: Non-Volatile	SOL EXT #1		EPA Method 1311	05/27/1999 1705	GPJ
Metals Digestion TCLP 3010	50/10 A/S/S	ml/ml	EPA Method 3010A	06/02/1999 0830	PJD
TCLP Liq-Liq Extr. W/Hex Exch.	10/200 S	mL/mL	EPA Method 3510	06/01/1999 0900	LMB
TCLP Liquid-Liquid Extraction	1/100 S	mL/mL	EPA Method 3510	06/03/1999 0700	LMB
Hydr[illegible]n Sonication Extract.	100/30	mL/g	EPA Method 3550B	06/02/1999 1130	LMB
Metals Digestion - TCLP 7470	150/10 A/S/S	ml/ml	EPA Method 7470A	06/01/1999 0900	WBM

ANA-CORP.
THE COMPLETE SERVICE LAB

Central TX Region · 8101 Cameron Rd #306 – Austin, TX 78754
512/821-0045 FAX 512/821-0237

Project Report: 102380
Client: EET1

Sample Preparation Steps for Project 102380

)9350 Soil Cuttings Former Laredo AFB Solid Taken: 05/20/1999 By: Client Rec:05/26/1999

ırameter	*Result*	*Unit*	*Method*	*Analyzed*	*By*
ː TCLP Pesticide	Verified		EPA Method 8081A	06/03/1999 0449	KLB
ːtrification of TCLP Extract	10/1 S	mL/mL	EPA Method 8151A	05/29/1999 0900	LMB
ː TCLP Herbicide	Verified		EPA Method 8151A	06/02/1999 1716	KLB
ȝ TCLP Volatile Analysis	Verified		EPA Method 8260B	06/03/1999 0105	KLB
ȝ TCLP Semi-Volatile Analysis	Verified		EPA Method 8270C	06/04/1999 1641	KLB
x This Report AS Soon As	FAXED		FAX	06/07/1999 16:53	KEK

Sample Specific Quality Control/Quality Assurance

)9349 Purge/Decon Water Former Laredo AFB Liquid Aqueous Taken: 05/20/1999 By: Client Rec:05/26/1999

'A Method 8260B Surrogate/Spike on Sample 409349 06/02/1999 2

mpound	Result	Concentration	%Recovery
bromofluoromethane	42.1	40.0	110
luene-d8	40.9	40.0	100
omofluorobenzene-SURR	41.3	40.0	100

'A Method 8260B Matrix Spike on Sample 409349 06/02/1999 2

mpound	Recovery (%)	Concentration
'LP Benzene (Reg. Limit 0.5)	110	50.0
'LP Carbon Tetrachloride (.5)	122	50.0
'LP Chlorobenzene (Limit 100)	111	50.0
'LP Chloroform (Reg. Limit 6.0)	112	50.0
'LP 1,2-Dichloroethane (RL .5)	121	50.0
'LP 1,1-Dichloroethene (.7)	106	50.0
'LP Tetrachloroethylene (.7)	111	50.0
LP Trichloroethylene (.5)	115	50.0
LP Vinyl Chloride (.4)	96.0	50.0
'LP MEK (Reg. Limit 200)	85.8	50.0

'A Method 8260B Internal Standard Areas on Sample 409349 06/02/1999 2

mpound	IS Area	CCC IS Area	Status
ntafluorobenzene-ISTD	168800	174400	
4-Difluorobenzene-ISTD	244800	252800	
orobenzene-d5-ISTD	204300	214400	
4-Dichlorobenzene-d4-ISTD	91360	96680	

'A Method 8270C Surrogate/Spike on Sample 409349 06/04/1999 1

mpound	Result	Concentration	%Recovery
4,6-Tribromophenol	91.4	100	91
·Fluorophenol-SURR	50.4	100	50
ıenol-d6-SURR	34.1	100	34
.trobenzene-d5-SURR	35.1	50.0	70
·Fluorobiphenyl-SURR	35.7	50.0	71

Sample Specific Quality Control/Quality Assurance

409349 Purge/Decon Water Former Laredo AFB Liquid Aqueous Taken: 05/20/1999 By: Client Rec:05/26/1999

4-Terphenyl-d14-SURR	57.2	50.0	110

EPA Method 8260B Matrix Spike on Sample 409349 06/04/1999 1

Compound	Recovery (%)	Concentration
TCLP Bis(2-chloroethyl) ether	84.5	100
TCLP 1,4-Dichlorobenzene	68.4	100
TCLP 2,4-Dinitrotoluene (.13)	83.7	100
TCLP Hexachlorobenzene (.13)	88.8	100
TCLP Hexachlorobutadiene (.5)	71.6	100
TCLP Hexachlorethane (Limit 3)	73.2	100
TCLP Nitrobenzene (Limit 2)	86.4	100
TCLP Pentachlorophenol (100)	63.7	100
TCLP 2,4,6-Trichlorophenol (2)	69.7	100
TCLP 2,4,5-Trichlorophenol (400)	71.0	100
TCLP Total Cresols (Reg Lim 200)	58.3	300
TC' yridine (Reg. Limit 5)	68.1	100

EPA Method 8270C Internal Standard Areas on Sample 409349 06/04/1999 1

Compound	IS Area	CCC IS Area	Status
1,4-Dichlorobenzene-d4-ISTD	232000	238300	
Naphthalene-d8-ISTD	885700	880200	
Acenaphthene-d10-ISTD	478400	473900	
Phenanthrene-d10-ISTD	682300	683700	
Chrysene-d12-ISTD	371300	447900	
Perylene-d12-ISTD	277400	331000	

(GC Surr.) Surrogate/Spike on Sample 409349 06/02/1999 1

Compound	Result	Concentration	%Recovery
2,4-Dichlorophenylacetic Acid	122	100	120

(GC Surr.) Matrix Spike on Sample 409349 06/02/1999 1

Compound	Recovery (%)	Concentration
2,4,5-TP (Silvex)	102	100
2,4 Dichlorophenoxyacetic acid	119	100

GC Surrogate/Spike on Sample 409349 06/02/1999 1

Compound	Result	Concentration	%Recovery
Dibutylchlorendate (GC Surr)	56.2	100	56
Tetrachloro-m-Xylene (GC Surr.)	54.8	100	55

GC Matrix Spike on Sample 409349 06/02/1999 1

Compound	Recovery (%)	Concentration
Gar BHC (Lindane)	67.2	100
En	89.5	100
Heptachlor	61.9	100

Continued

Sample Specific Quality Control/Quality Assurance

409349 Purge/Decon Water Former Laredo AFB Liquid Aqueous Taken: 05/20/1999 By: Client Rec:05/26/1999

Heptachlor epoxide	72.9	100
Methoxychlor	75.0	100

409350 Soil Cuttings Former Laredo AFB Solid Taken: 05/20/1999 By: Client Rec:05/26/1999

EPA Method 8260B Surrogate/Spike on Sample 409350 06/02/1999 2

Compound	Result	Concentration	%Recovery
Dibromofluoromethane	42.6	40.0	110
Toluene-d8	41.0	40.0	100
Bromofluorobenzene-SURR	42.4	40.0	110

EPA Method 8260B Matrix Spike on Sample 409350 06/02/1999 2

Compound	Recovery (%)	Concentration
TCLP Benzene (Reg. Limit 0.5)	112	50.0
TCLP Carbon Tetrachloride (.5)	123	50.0
TCLP Chlorobenzene (Limit 100)	113	50.0
TCLP Chloroform (Reg. Limit 6.0)	116	50.0
TCLP 1,2-Dichloroethane (RL .5)	124	50.0
TCLP 1,1-Dichloroethene (.7)	110	50.0
TCLP Tetrachloroethylene (.7)	109	50.0
TCLP Trichloroethylene (.5)	113	50.0
TCLP Vinyl Chloride (.4)	97.8	50.0
TCLP MEK (Reg. Limit 200)	94.8	50.0

EPA Method 8260B Internal Standard Areas on Sample 409350 06/02/1999 2

Compound	IS Area	CCC IS Area	Status
Pentafluorobenzene-ISTD	166500	174400	
1,4-Difluorobenzene-ISTD	239000	252800	
Chlorobenzene-d5-ISTD	203600	214400	
1,4-Dichlorobenzene-d4-ISTD	89460	96680	

EPA Method 8270C Surrogate/Spike on Sample 409350 06/04/1999 1

Compound	Result	Concentration	%Recovery
2,4,6-Tribromophenol	80.8	100	81
2-Fluorophenol-SURR	49.7	100	50
Phenol-d6-SURR	33.4	100	33
Nitrobenzene-d5-SURR	33.3	50.0	67
2-Fluorobiphenyl-SURR	31.5	50.0	63
p-Terphenyl-d14-SURR	57.9	50.0	120

EPA Method 8260B Matrix Spike on Sample 409350 06/04/1999 1

Compound	Recovery (%)	Concentration
TCLP Bis(2-chloroethyl) ether	82.5	100
TCLP 1,4-Dichlorobenzene	60.2	100
TCLP 2,4-Dinitrotoluene (.13)	81.7	100

Continued

Sample Specific Quality Control/Quality Assurance

409350 Soil Cuttings Former Laredo AFB Solid Taken: 05/20/1999 By: Client Rec:05/26/1999

TCLP Hexachlorobenzene (.13)	88.1	100
TCLP Hexachlorobutadiene (.5)	59.1	100
TCLP Hexachloroethane (Limit 3)	64.2	100
TCLP Nitrobenzene (Limit 2)	83.8	100
TCLP Pentachlorophenol (100)	63.4	100
TCLP 2,4,6-Trichlorophenol (2)	67.5	100
TCLP 2,4,5-Trichlorophenol (400)	69.8	100
TCLP Total Cresols (Reg Lim 200)	62.0	300
TCLP Pyridine (Reg. Limit 5)	50.0	100

EPA Method 8270C Internal Standard Areas on Sample 409350 06/04/1999 1

Compound	IS Area	CCC IS Area	Status
1,4-Dichlorobenzene-d4-ISTD	235900	238300	
Naphthalene-d8-ISTD	903500	880200	
Acenaphthene-d10-ISTD	473200	473900	
Ph[illegible]threne-d10-ISTD	666200	683700	
Ch[illegible]ne-d12-ISTD	352300	447900	
Perylene-d12-ISTD	261200	331000	

(GC Surr.) Surrogate/Spike on Sample 409350 06/02/1999 1

Compound	Result	Concentration	%Recovery
2,4-Dichlorophenylacetic Acid	117	100	120

(GC Surr.) Matrix Spike on Sample 409350 06/02/1999 1

Compound	Recovery (%)	Concentration
2,4,5-TP (Silvex)	94.4	100
2,4 Dichlorophenoxyacetic acid	109	100

GC Surrogate/Spike on Sample 409350 06/02/1999 1

Compound	Result	Concentration	%Recovery
Dibutylchlorendate (GC Surr)	81.2	100	81
Tetrachloro-m-Xylene (GC Surr.)	81.3	100	81

GC Matrix Spike on Sample 409350 06/02/1999 1

Compound	Recovery (%)	Concentration
Gamma-BHC (Lindane)	97.5	100
Endrin	125	100
Heptachlor	93.1	100
Heptachlor epoxide	100	100
Methoxychlor	138	100

Organic Quality Control/Quality Assurance for Project 102380

Continued

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Central TX Region

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512/821-0045 FAX 512/821-0237

Project Report: 102380
Client:

Organic Quality Control/Quality Assurance for Project 102380

EPA Method 8260B Blank 06/02/1999 2

Compound	Result
Benzene	ND
Chlorobenzene	ND
1,1-Dichloroethylene	ND
Methylene Chloride	ND
Toluene	ND
Trichloroethylene	ND

EPA Method 8260B Instrument Tune 06/02/1999 2

Mass	Reference Mass	Min Abundance	Max Abundance	Result	Status
BFB Mass 50	95	15.0	40.0	20.2	PASS
BFB Mass 75	95	30.0	60.0	47.8	PASS
BFB Mass 95	95	100	100	100.0	PASS
BFB Mass 96	95	5.00	9.00	6.3	PASS
BFB Mass 173	174	0	2.00	0.0	PASS
BFB Mass 174	95	50.0	100	70.9	PASS
BFB Mass 175	174	5.00	9.00	8.6	PASS
BFB Mass 176	174	95.0	101	97.9	PASS
BFB Mass 177	176	5.00	9.00	6.6	PASS

Instrument Calibration Check 06/02/1999 2

Compound	Max %Rel. Std.	%Deviation	Status
Chloroform	20.0	-9.8	PASS
1,1-Dichloroethylene	20.0	-4.7	PASS
1,2-Dichloropropane	20.0	-9.5	PASS
Ethyl benzene	20.0	-12.5	PASS
Toluene	20.0	-7.5	PASS
Vinyl Chloride	20.0	9.8	PASS

EPA Method 8260B Instrument System Performance Check 06/02/1999 2

Compound	Min Response Factor	Response Factor	Status
Bromoform	.1010	0.279	PASS
Chlorobenzene	.3000	1.217	PASS
Chloromethane (Methyl Chloride)	.1000	0.555	PASS
1,1-Dichloroethane	.1000	1.105	PASS
1,1,2,2-Tetrachloroethane	.3000	1.596	PASS

EPA Method 8260B Matrix Spike/Duplicate on Sample 409602 06/02/1999 2

Compound	First (%)	Second (%)	%Difference
Benzene	109	111	1.8
Chlorobenzene	113	115	1.8
1,1-Dichloroethylene	107	109	1.9
Toluene	110	112	1.8
Trichloroethylene	110	113	2.7

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Project Report: 102380
Client:

Organic Quality Control/Quality Assurance for Project 102380

EPA Method 8270C Instrument Tune 06/04/1999 1

Mass	Reference Mass	Min Abundance	Max Abundance	Result	Status
DFTPP Mass 51	198	30.0	60.0	59.1	PASS
DFTPP Mass 68	69	0	2.00	0.0	PASS
DFTPP Mass 69	198	0	100	62.8	PASS
DFTPP Mass 70	69	0	2.00	0.0	PASS
DFTPP Mass 127	198	40.0	60.0	51.2	PASS
DFTPP Mass 197	198	0	1.00	0.0	PASS
DFTPP Mass 198	198	100	100	100.0	PASS
DFTPP Mass 199	198	5.00	9.00	6.9	PASS
DFTPP Mass 275	198	10.0	30.0	21.3	PASS
DFTPP Mass 365	198	1.00	100	2.9	PASS
DFTPP Mass 441	443	0	100	81.5	PASS
DFTPP Mass 442	198	40.0	100	59.7	PASS
DFTPP Mass 443	442	17.0	23.0	19.2	PASS

Instrument Calibration Check 06/04/1999 1

Compound	Max %Rel. Std.	%Deviation	Status
Acenaphthene	30.0	-4.2	PASS
Benzo(a)pyrene	30.0	-3.0	PASS
4-Chloro-3-methylphenol	30.0	-8.0	PASS
1,4-Dichlorobenzene	30.0	-2.7	PASS
2,4-Dichlorophenol	30.0	-3.9	PASS
Di-n-octylphthalate	30.0	-17.0	PASS
Fluoranthene	30.0	3.6	PASS
Hexachlorobutadiene	30.0	-21.0	PASS
2-Nitrophenol	30.0	-0.8	PASS
N-Nitrosodiphenylamine (as DPA)	30.0	-7.7	PASS
Pentachlorophenol	30.0	0.2	PASS
Phenol	30.0	0.4	PASS
2,4,6-Trichlorophenol	30.0	-2.4	PASS

EPA Method 8270C Instrument System Performance Check 06/04/1999 1

Compound	Min Response Factor	Response Factor	Status
2,4-Dinitrophenol	.0500	0.114	PASS
Hexachlorocyclopentadiene	.0500	0.269	PASS
4-Nitrophenol	.0500	0.282	PASS
N-Nitrosodi-n-propylamine	.0500	0.907	PASS

EPA Method 8151A Blank 06/02/1999 1

Compound	Result
2,4,5-TP (Silvex)	ND
2,4 Dichlorophenoxyacetic acid	ND

EPA Method 8151A Standard 06/02/1999 1

Compound	Concentration	Result	%Difference

Continued

Organic Quality Control/Quality Assurance for Project 102380

',4,5-TP (Silvex)	150	157	4.7
',4 Dichlorophenoxyacetic acid	150	147	-2.0

EPA Method 8081A Blank 06/02/1999 1

Compound	Result
ldrin	ND
lpha-BHC(hexachlorocyclohexane)	ND
eta-BHC(hexachlorocyclohexane)	ND
elta-BHC(hexachlorocyclohexane)	ND
amma-BHC (Lindane)	ND
hlordane	ND
,4-DDD	ND
,4-DDE	ND
,4-DDT	ND
ieldrin	ND
ndosulfan I (alpha)	ND
ndosulfan II (beta)	ND
ndosulfan sulfate	ND
ndrin	ND
ndrin aldehyde	ND
eptachlor	ND
eptachlor epoxide	ND
oxaphene	ND
ethoxychlor	ND

EPA Method 8081A Standard 06/02/1999 1

Compound	Concentration	Result	%Difference
ldrin	100	98.5	-1.5
lpha-BHC(hexachlorocyclohexane)	100	99.6	-0.40
eta-BHC(hexachlorocyclohexane)	100	91.1	-8.9
elta-BHC(hexachlorocyclohexane)	100	99.4	-0.60
amma-BHC (Lindane)	100	97.5	-2.5
,4-DDD	100	97.1	-2.9
,4-DDE	100	99.6	-0.40
,4-DDT	100	96.7	-3.3
ieldrin	100	99.7	-0.30
ndosulfan I (alpha)	100	98.6	-1.4
ndosulfan II (beta)	100	95.9	-4.1
ndosulfan sulfate	100	96.5	-3.5
ndrin	100	99.3	-0.70
ndrin aldehyde	100	94.4	-5.6
eptachlor	100	98.2	-1.8
eptachlor epoxide	100	98.7	-1.3
ethoxychlor	100	91.5	-8.5

SET Quality Control/Quality Assurance for Project 102380

Flash Point (Reg. Limit 140.0 F)

(Analyzed: 05/28/1999 1515 PRE Verified: 06/02/1999 09:03 NGT)

Sample	Type	Result	Value	Unit	Percent
	Standard	84	80	Degrees F	5.0
409123	Duplicate	132	129	Degrees F	1.5

TCLP Silver (Reg. Limit 5.0)

(Analyzed: 06/08/1999 1139 WOB Verified: 06/08/1999 12:17 WJP)

Sample	Type	Result	Value	Unit	Percent
	Standard	1.91	2.00	ppm	-4.5
	Standard	0.962	1.00	ppm	-3.8
	Standard	0.946	1.00	ppm	-5.4
409349	Direct SPK		101	ppm	101
409349	Direct SPK		98	ppm	98

TCLP Silver (Reg. Limit 5.0)

(Analyzed: 06/02/1999 1300 WOB Verified: 06/03/1999 14:50 SAH)

Sample	Type	Result	Value	Unit	Percent
	Standard	0.0993	0.100	ppm	-0.7
	Standard	0.310	0.300	ppm	3.3
	Standard	0.308	0.300	ppm	2.7
	Standard	0.304	0.300	ppm	1.3
	Standard	0.301	0.300	ppm	0.3
	Standard	0.306	0.300	ppm	2.0
	Standard	0.297	0.300	ppm	-1.0
	Standard	0.300	0.300	ppm	0.0
	Standard	0.102	0.100	ppm	2.0
	Standard	0.321	0.300	ppm	7.0
	Standard	0.321	0.300	ppm	7.0
	Standard	0.319	0.300	ppm	6.3
	Standard	0.319	0.300	ppm	6.3
	Standard	0.318	0.300	ppm	6.0
	Standard	0.321	0.300	ppm	7.0
	LCS	0.0616	0.100	ppm	-38.4
	LCS	0.0155	0.0200	ppm	-22.5
	LCS	0.0150	0.0200	ppm	-25.0
	Blank	<0.0100		ppm	
	Blank	<0.0500		ppm	
	Blank	<0.0500		ppm	
409316	Spike		0.100	ppm	71
409333	Spike		0.100	ppm	66
409334	Spike		0.100	ppm	64
409335	Spike		0.100	ppm	66
409[illegible]	Spike		0.100	ppm	67
40[illegible]	Spike		0.100	ppm	67
409350	Spike		0.100	ppm	67

SET Quality Control/Quality Assurance for Project 102380

TCLP Silver (Reg. Limit 5.0)

(Analyzed: 06/02/1999 1300 WOB Verified: 06/03/1999 14:50 SAH)

Sample	Type	Result	Value	Unit	Percent
09350	Spike		0.100	ppm	61
09374	Spike		0.0200	ppm	64
09374	Spike		0.0200	ppm	62
09375	Spike		0.100	ppm	61
09376	Spike		0.100	ppm	62
09377	Spike		0.100	ppm	63
09378	Spike		0.100	ppm	63
09420	Spike		0.100	ppm	46
09422	Spike		0.100	ppm	57
09561	Spike		0.100	ppm	59

TCLP Arsenic (Reg. Limit 5.0)

(Analyzed: 06/02/1999 1300 WOB Verified: 06/03/1999 14:50 SAH)

Sample	Type	Result	Value	Unit	Percent
	Standard	0.0995	0.100	ppm	-0.5
	Standard	0.309	0.300	ppm	3.0
	Standard	0.310	0.300	ppm	3.3
	Standard	0.308	0.300	ppm	2.7
	Standard	0.295	0.300	ppm	-1.7
	Standard	0.321	0.300	ppm	7.0
	Standard	0.320	0.300	ppm	6.7
	Standard	0.314	0.300	ppm	4.7
	Standard	0.316	0.300	ppm	5.3
	Standard	0.317	0.300	ppm	5.7
	Standard	0.310	0.300	ppm	3.3
	Standard	0.306	0.300	ppm	2.0
	Standard	0.315	0.300	ppm	5.0
	LCS	0.482	0.500	ppm	-3.6
	LCS	0.0941	0.100	ppm	-5.9
	Blank	<0.100		ppm	
	Blank	<0.500		ppm	
)9316	Spike		0.500	ppm	102
)9333	Spike		0.500	ppm	100
)9334	Spike		0.500	ppm	100
)9335	Spike		0.500	ppm	104
)9349	Spike		0.500	ppm	99
)9349	Spike		0.500	ppm	99
)9350	Spike		0.500	ppm	99
)9350	Spike		0.500	ppm	95
)9374	Spike		0.100	ppm	91
)9374	Spike		0.100	ppm	88

Continued

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SET Quality Control/Quality Assurance for Project 102380

TCLP Arsenic (Reg. Limit 5.0)

(Analyzed: 06/02/1999 1300 WOB Verified: 06/03/1999 14:50 SAH)

Sample	Type	Result	Value	Unit	Percent
409375	Spike		0.500	ppm	102
409376	Spike		0.500	ppm	102
409377	Spike		0.500	ppm	101
409378	Spike		0.500	ppm	103

TCLP Barium (Reg. Limit 100.0)

(Analyzed: 06/02/1999 1300 WOB Verified: 06/03/1999 14:50 SAH)

Sample	Type	Result	Value	Unit	Percent
	Standard	0.0993	0.100	ppm	-0.7
	Standard	0.309	0.300	ppm	3.0
	Standard	0.310	0.300	ppm	3.3
	Standard	0.304	0.300	ppm	1.3
	Standard	0.296	0.300	ppm	-1.3
	Standard	0.312	0.300	ppm	4.0
	Standard	0.304	0.300	ppm	1.3
	Standard	0.311	0.300	ppm	3.7
	Standard	0.103	0.100	ppm	3.0
	Standard	0.320	0.300	ppm	6.7
	Standard	0.318	0.300	ppm	6.0
	Standard	0.318	0.300	ppm	6.0
	Standard	0.317	0.300	ppm	5.7
	Standard	0.315	0.300	ppm	5.0
	Standard	0.318	0.300	ppm	6.0
	LCS	0.433	0.500	ppm	-13.4
	LCS	0.106	0.100	ppm	6.0
	LCS	0.105	0.100	ppm	5.0
	Blank	<0.0100		ppm	
	Blank	<0.0500		ppm	
	Blank	0.086		ppm	
409316	Spike		0.500	ppm	101
409333	Spike		0.500	ppm	94
409334	Spike		0.500	ppm	97
409335	Spike		0.500	ppm	96
409349	Spike		0.500	ppm	95
409349	Spike		0.500	ppm	96
409350	Spike		0.500	ppm	97
409350	Spike		0.500	ppm	92
409374	Spike		0.100	ppm	80
409374	Spike		0.100	ppm	58
409	Spike		0.500	ppm	95
409	Spike		0.500	ppm	95

SET Quality Control/Quality Assurance for Project 102380

TCLP Barium (Reg. Limit 100.0)

(Analyzed: 06/02/1999 1300 WOB Verified: 06/03/1999 14:50 SAH)

Sample	Type	Result	Value	Unit	Percent
409377	Spike		0.500	ppm	95
409378	Spike		0.500	ppm	96
409420	Spike		0.500	ppm	98
409422	Spike		0.500	ppm	96
409561	Spike		0.500	ppm	99

TCLP Cadmium (Reg. Limit 1.0)

(Analyzed: 06/02/1999 1300 WOB Verified: 06/03/1999 14:50 SAH)

Sample	Type	Result	Value	Unit	Percent
	Standard	0.102	0.100	ppm	2.0
	Standard	0.312	0.300	ppm	4.0
	Standard	0.307	0.300	ppm	2.3
	Standard	0.305	0.300	ppm	1.7
	Standard	0.303	0.300	ppm	1.0
	Standard	0.310	0.300	ppm	3.3
	Standard	0.302	0.300	ppm	0.7
	Standard	0.305	0.300	ppm	1.7
	Standard	0.104	0.100	ppm	4.0
	Standard	0.320	0.300	ppm	6.7
	Standard	0.317	0.300	ppm	5.7
	Standard	0.311	0.300	ppm	3.7
	Standard	0.315	0.300	ppm	5.0
	Standard	0.313	0.300	ppm	4.3
	Standard	0.317	0.300	ppm	5.7
	LCS	0.223	0.250	ppm	-10.8
	LCS	0.0499	0.0500	ppm	-0.2
	LCS	0.0495	0.0500	ppm	-1.0
	Blank	<0.0100		ppm	
	Blank	<0.0500		ppm	
	Blank	<0.0500		ppm	
09316	Spike		0.250	ppm	101
09333	Spike		0.250	ppm	96
09334	Spike		0.250	ppm	95
09335	Spike		0.250	ppm	97
09349	Spike		0.250	ppm	96
09349	Spike		0.250	ppm	98
09350	Spike		0.250	ppm	98
09350	Spike		0.250	ppm	92
09374	Spike		0.0500	ppm	114
09374	Spike		0.0500	ppm	110
09375	Spike		0.250	ppm	95

Continued

SET Quality Control/Quality Assurance for Project 102380

TCLP Cadmium (Reg. Limit 1.0)

(Analyzed: 06/02/1999 1300 WOB Verified: 06/03/1999 14:50 SAH)

Sample	Type	Result	Value	Unit	Percent
409376	Spike		0.250	ppm	80
409377	Spike		0.250	ppm	94
409378	Spike		0.250	ppm	96
409420	Spike		0.250	ppm	93
409422	Spike		0.250	ppm	95
409561	Spike		0.250	ppm	97

TCLP Chromium (Reg. Limit 5.0)

(Analyzed: 06/02/1999 1300 WOB Verified: 06/03/1999 14:50 SAH)

Sample	Type	Result	Value	Unit	Percent
	Standard	0.0998	0.100	ppm	-0.2
	Standard	0.309	0.300	ppm	3.0
	Standard	0.313	0.300	ppm	4.3
	Standard	0.310	0.300	ppm	3.3
	Standard	0.300	0.300	ppm	0.0
	Standard	0.321	0.300	ppm	7.0
	Standard	0.318	0.300	ppm	6.0
	Standard	0.318	0.300	ppm	6.0
	Standard	0.317	0.300	ppm	5.7
	Standard	0.314	0.300	ppm	4.7
	Standard	0.313	0.300	ppm	4.3
	Standard	0.309	0.300	ppm	3.0
	Standard	0.318	0.300	ppm	6.0
	LCS	0.485	0.500	ppm	-3.0
	LCS	0.0980	0.100	ppm	-2.0
	Blank	<0.0200		ppm	
	Blank	<0.100		ppm	
409316	Spike		0.500	ppm	103
409333	Spike		0.500	ppm	98
409334	Spike		0.500	ppm	98
409335	Spike		0.500	ppm	102
409349	Spike		0.500	ppm	98
409349	Spike		0.500	ppm	98
409350	Spike		0.500	ppm	98
409350	Spike		0.500	ppm	92
409374	Spike		0.100	ppm	100
409374	Spike		0.100	ppm	86
409375	Spike		0.500	ppm	103
409376	Spike		0.500	ppm	98
40	Spike		0.500	ppm	97
40	Spike		0.500	ppm	100

TCLP Mercury (Reg. Limit 0.2)

(Analyzed: 06/02/1999 1412 WOB Verified: 06/03/1999 12:14 NGT)

mple	Type	Result	Value	Unit	Percent
	Standard	23.7	25.0	ppb	-5.2
	Standard	4.87	5.00	ppb	-2.6
	Standard	4.80	5.00	ppb	-4.0
	Standard	4.83	5.00	ppb	-3.4
	Standard	4.75	5.00	ppb	-5.0
	LCS	9.05	10.0	ppb	-9.5
	LCS	10.5	10.0	ppb	5.0
	Blank	<0.10		ppb	
	Blank	<0.15		ppb	
)349	Spike		10.0	ppb	97
)378	Spike		10.0	ppb	101
)378	Spike		10.0	ppb	93
)420	Spike		10.0	ppb	94
)422	Spike		10.0	ppb	100
)561	Spike		10.0	ppb	91
)752	Spike		10.0	ppb	76
)752	Spike		10.0	ppb	80
	Standard	24.7	25.0	ppb	-1.2
	Standard	5.13	5.00	ppb	2.6
	Standard	5.28	5.00	ppb	5.6
	Standard	5.23	5.00	ppb	4.6
	Standard	5.08	5.00	ppb	1.6
	LCS	9.38	10.0	ppb	-6.2
	Blank	<0.15		ppb	
334	Spike		10.0	ppb	96
349	Spike		10.0	ppb	100
350	Spike		10.0	ppb	102
350	Spike		10.0	ppb	101
374	Spike		10.0	ppb	52
377	Spike		10.0	ppb	95
552	Spike		10.0	ppb	95
552	Spike		10.0	ppb	93
642	Spike		10.0	ppb	102
642	Spike		10.0	ppb	97

TCLP Lead (Reg. Limit 5.0)

(Analyzed: 06/02/1999 1300 WOB Verified: 06/03/1999 14:50 SAH)

nple	Type	Result	Value	Unit	Percent
	Standard	0.0986	0.100	ppm	-1.4
	Standard	0.310	0.300	ppm	3.3
	Standard	0.310	0.300	ppm	3.3
	Standard	0.309	0.300	ppm	3.0
	Standard	0.304	0.300	ppm	1.3

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Central TX Region

8101 Cameron Rd #306 -- Austin, TX 78754
512/821-0045 FAX 512/821-0237

Project Report: 102380
Client:

SET Quality Control/Quality Assurance for Project 102380

TCLP Lead (Reg. Limit 5.0)

(Analyzed: 06/02/1999 1300 WOB Verified: 06/03/1999 14:50 SAH)

Sample	Type	Result	Value	Unit	Percent
	Standard	0.317	0.300	ppm	5.7
	Standard	0.309	0.300	ppm	3.0
	Standard	0.315	0.300	ppm	5.0
	Standard	0.103	0.100	ppm	3.0
	Standard	0.322	0.300	ppm	7.3
	Standard	0.321	0.300	ppm	7.0
	Standard	0.318	0.300	ppm	6.0
	Standard	0.323	0.300	ppm	7.7
	Standard	0.322	0.300	ppm	7.3
	Standard	0.323	0.300	ppm	7.7
	LCS	0.449	0.500	ppm	-10.2
	LCS	0.102	0.100	ppm	2.0
	LCS	0.101	0.100	ppm	1.0
	Blank	<0.0500		ppm	
	Blank	<0.250		ppm	
	Blank	<0.250		ppm	
409316	Spike		0.500	ppm	105
409333	Spike		0.500	ppm	102
409334	Spike		0.500	ppm	103
409335	Spike		0.500	ppm	105
409349	Spike		0.500	ppm	103
409349	Spike		0.500	ppm	104
409350	Spike		0.500	ppm	104
409350	Spike		0.500	ppm	99
409374	Spike		0.100	ppm	134
409374	Spike		0.100	ppm	84
409375	Spike		0.500	ppm	106
409376	Spike		0.500	ppm	102
409377	Spike		0.500	ppm	103
409378	Spike		0.500	ppm	103
409420	Spike		0.500	ppm	104
409422	Spike		0.500	ppm	102
409561	Spike		0.500	ppm	104

TCLP Selenium (Reg. Limit 1.0)

(Analyzed: 06/02/1999 1300 WOB Verified: 06/03/1999 14:50 SAH)

Sample	Type	Result	Value	Unit	Percent
	Standard	0.0980	0.100	ppm	-2.0
	Standard	0.302	0.300	ppm	0.7
	Standard	0.311	0.300	ppm	3.7
	Standard	0.303	0.300	ppm	1.0

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SET Quality Control/Quality Assurance for Project 102380

TCLP Selenium (Reg. Limit 1.0)

(Analyzed: 06/02/1999 1300 WOB Verified: 06/03/1999 14:50 SAH)

ample	Type	Result	Value	Unit	Percent
	Standard	0.285	0.300	ppm	-5.0
	Standard	0.307	0.300	ppm	2.3
	Standard	0.308	0.300	ppm	2.7
	Standard	0.323	0.300	ppm	7.7
	Standard	0.101	0.100	ppm	1.0
	Standard	0.319	0.300	ppm	6.3
	Standard	0.322	0.300	ppm	7.3
	Standard	0.324	0.300	ppm	8.0
	Standard	0.312	0.300	ppm	4.0
	Standard	0.306	0.300	ppm	2.0
	Standard	0.319	0.300	ppm	6.3
	LCS	0.487	0.500	ppm	-2.6
	LCS	0.108	0.100	ppm	8.0
	LCS	0.100	0.100	ppm	0.0
	Blank	<0.0500		ppm	
	Blank	<0.250		ppm	
	Blank	<0.250		ppm	
9316	Spike		0.500	ppm	102
9333	Spike		0.500	ppm	98
9334	Spike		0.500	ppm	100
9335	Spike		0.500	ppm	104
9349	Spike		0.500	ppm	98
9349	Spike		0.500	ppm	100
9350	Spike		0.500	ppm	98
9350	Spike		0.500	ppm	96
9374	Spike		0.100	ppm	92
9374	Spike		0.100	ppm	92
9375	Spike		0.500	ppm	102
9376	Spike		0.500	ppm	99
9377	Spike		0.500	ppm	99
9378	Spike		0.500	ppm	102
9422	Spike		0.500	ppm	103
9561	Spike		0.500	ppm	107

Reactivity Cyanide (RL 250)

(Analyzed: 05/28/1999 1500 RSV Verified: 06/02/1999 11:28 SAH)

mple	Type	Result	Value	Unit	Percent
	Standard	0.196	0.20	ppm	-2.0
	Standard	0.100	0.10	ppm	0.0
	Standard	0.401	0.40	ppm	0.3
	Standard	0.401	0.40	ppm	0.3

Continued

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Project Report: 102380
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SET Quality Control/Quality Assurance for Project 102380

Reactivity Cyanide (RL 250)

(Analyzed: 05/28/1999 1500 RSV Verified: 06/02/1999 11:28 SAH)

Sample	Type	Result	Value	Unit	Percent
	Blank	<0.005		ppm	
409349	Duplicate	ND	ND	mg/kg	0.0

Reactivity Sulfide (RL 500)

(Analyzed: 05/28/1999 1000 RSV Verified: 05/28/1999 1654 SAH)

Sample	Type	Result	Value	Unit	Percent
	Standard	2.01	2.0	ppm	0.5
	Standard	4.99	5.0	ppm	-0.2
	Blank	<0.05		ppm	
409349	Duplicate	ND	ND	mg/kg	0.0

Total Petroleum Hydrocarbon

(Analyzed: 06/09/1999 1730 GDG Verified: 06/10/1999 16:25 SAH)

Sample	Type	Result	Value	Unit	Percent
409734	Standard	214	200	mg/L	7.0
409734	Standard	214	200	mg/L	7.0
	Blank	1.8		mg/L	
	Blank	<10		mg/L	
	Blank	<10		mg/L	
410255	Duplicate	3400	4200	mg/kg	14.5
408702	Standard	211	200	mg/L	5.5
408702	Standard	204	200	mg/L	2.0
	Blank	3.4		mg/L	
	Blank	<10		mg/L	
	Blank	<10		mg/L	
408702	Duplicate	1200	1100	mg/L	5.7
409380	Duplicate	15000	18000	mg/kg	12.5

Laboratory pH

(Analyzed: 05/28/1999 1630 PRE Verified: 06/01/1999 17:27 NGT)

Sample	Type	Result	Value	Unit	Percent
	Standard	7.98	8.00	SU	-0.3
	Standard	7.96	8.00	SU	-0.5
	Standard	10.04	10.00	SU	0.4
	Standard	6.95	7.00	SU	-0.7
409349	Duplicate	7.4	7.4	SU	0.0

MAL is the Minimum Analytical Level or Minimum Quantitation level (MQL). The MAL takes into account the Instrument Detection Limit (IDL), Method Detection Limit (MDL), and Practical Quantitation Limit (PQL) as well as any dilutions or concentrations associated with this sample. Our analytical result must be above this MAL before we report a value for any parameter. Otherwise, we report ND (Not Detected above MAL) or "<" (less than) the quantitation limit listed in the MAL column. CAS is Chemical Abstract Service Registry Number.

The analytical results relate to the sample tested. This report may NOT be reproduced EXCEPT in FULL without written approval of Ana-Lab Corp.

Continued

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Project Report: 102380
Client:

certify that the results were generated using the above specified methods.

. H. Whiteside, Ph.D., President

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02189

CHAIN OF CUSTODY

EnClean
Environmental Services Group
ANALYTICAL AND WASTE MANAGEMENT SERVICES
8403 Cross Park Drive, Suite 3D
Austin, Texas 78754
Phone: (512) 972-8293 Fax: (512) 834-2261
(800) 834-9114

REPORT TO:		INVOICE TO:		CLIENT #
COMPANY	EET Environmental Srvs	COMPANY	game	
ADDRESS	PO Box 1890	ADDRESS		CATEGORY # 2100001
CITY	Mayhaca STATE TX ZIP 78652	CITY	STATE ZIP	P.O. #
ATT.	A. Harasimowitz PHONE # 512-291-1100	ATT.	PHONE #	PROJECT #
CLIENT COMMENTS	FAX # 512-292-8704	COMMENTS & SAMPLE #'S		☐ ADDENDUM

PROJECT NAME/SITE NAME: Former Laredo AFB

TURN AROUND TIME (WORKING DAYS): ☐ ONE ☐ THREE ☒ FIVE ☐ OTHER

SALESMAN:

DATE	TIME	COMPOSITE	GRAB	SAMPLE SOURCE & DESCRIPTION	MATRIX	NUMBER CONTAINERS	TCLP VOA	TCLP Semi	TCLP 8 PCBA	TCLP Pest	TCLP Herb	TPH (418.1)	flashpoint	R-CN	R-S	pH	REMARKS	ENCLEAN LAB SAMPLE NUMBER	COSTS
5-20-99			X	purge/decon water	W	2	X	X	X	X	X	X	X	X	X	X	409349		
5-20-99			X	soil cuttings	S	1	X	X	X	X	X	X					409350		

		CATEGORY CODE	ANALYTICAL COST
Sampling (Minimum 2 hours @ $40.00/hour)	____ hours @ $40.00/hour (estimated)	4700001	
Mileage: ____ Miles @ $0.45/ Mile or TRIP FEE ZONE ____ x $25/ZONE		4600002	
Sampling Personnel Protective Equipment ($25.00/Technician)		6700002	
Wastewater Sampler Rental fee $65/day x ____ days		6900005	

RELINQUISHED BY: SIGN	DATE/TIME	RECEIVED BY: SIGN	DATE/TIME	SAMPLE CONDITION	DATE/TIME	TOTAL COST
James Yeule	5/25/99 1600	[signature]	05/25/99 1500			
RELINQUISHED BY: SIGN	DATE/TIME	RECEIVED BY: SIGN	DATE/TIME	CARRIER COMPANY		AIR BILL NO.
[signature]	05/25/99 1700	[signature]	5-26-99 1824			
RELINQUISHED BY: SIGN	DATE/TIME	RECEIVED BY: SIGN	DATE/TIME	CARRIER PHONE #		DATE RESULTS REPORTED BY: SIGN DATE/TIME

WHITE COPY-SAMPLE YELLOW COPY-FILE PINK COPY-RELINQUISHER

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Appendix G
Data Validation Report

Appendix G
Data Validation Report, USACE Comparability Document, and Laboratory Analytical Results

Data Validation Report

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1. Introduction

CH2M HILL was retained by the United States Army Corps of Engineers (USACE), Tulsa District, to perform a Site Investigation (SI) of the Industrial Waste Treatment Plant (IWTP) Site at the former Laredo Air Force Base (LAFB) located in Laredo, Texas.

Samples were collected by CH2M HILL personnel and shipped to Southwest Laboratory of Oklahoma, located in Broken Arrow, Oklahoma, for analysis. The requested analyses are listed in Section 4, Chain of Custody Synopsis.

This report covers the samples received as Laboratory Sample Delivery Groups (SDG): 38676 and 38706.

2. Data Validation/Data Quality Review Process

The purpose of the data quality evaluation process is to assess the effect of the overall analytical process on the usability of the data. The two major categories of data evaluation are laboratory performance and matrix interferences. Evaluation of laboratory performance is a check for compliance with the method requirements; either the laboratory did, or did not, analyze the samples within the limits of the analytical method. Evaluation of matrix interferences is more subtle and involves the analysis of several areas of results including surrogate spike recoveries, matrix spike (MS) recoveries, and duplicate sample results.

Before the analytical results were released by the laboratory, both the sample and Quality Control (QC) data were carefully reviewed to verify sample identity, instrument calibration, detection limits, dilution factors, numerical computations, accuracy of transcriptions, and chemical interpretations. Additionally, the QC data were reduced and the resulting data were reviewed to ascertain whether they were within the laboratory-defined limits for accuracy and precision. Any non-conforming data were discussed in the data package cover letter and case narrative.

All of the data packages were reviewed by the project chemists using the process outlined in such guidance documents as the Environmental Protection Agency (EPA) *National Functional Guidelines for Evaluating Inorganic Analyses (July 1994) and National Functional Guidelines for Organic Data Review (July 1994).* Engineering Manual 200-1-6 (EM 200-1-6) U.S. Army Corps of Engineers *Chemical Quality Assurance for Hazardous, Toxic and Radioactive Waste (HTRW) Projects (October 1997)* was consulted as well.

The data validation and review process is independent of the laboratory's checks and focuses on the usability of the data to support the project data interpretation and decision making processes. "Did it meet the Data Quality Objectives (DQO) as defined in the workplan?" Areas of review included holding time compliance, surrogate recoveries, MS sample results, method blank results, initial and continuing calibrations, laboratory control samples, internal standard (IS) response and retention times, instrument tuning criteria,

laboratory duplicate sample results and field sample duplicate results. A data review worksheet was completed for each of these data packages.

Sample results that were not within the acceptance limits were appended with a qualifying flag, which consists of a single- or double-letter abbreviation that indicated a potential problem with the data. Although the qualifying flags originate during the data review and validation processes, they are included in the data summary tables deliverable so that the data will not be used indiscriminately. The following flags were used in this text:

- **U** Undetected. Samples were analyzed for this analyte, but it was not detected above the method detection limit (MDL) or instrument detection limit (IDL).
- **UJ** Detection limit estimated. Samples were analyzed for this analyte, but the results were qualified as not detected. The result is estimated.
- **J** Estimated. The analyte was present, but the reported value may not be accurate or precise.
- **R** Rejected. The data are unusable. (Note: Analyte/compound may or may not be present.)
- = Detected. Target parameter detected at the concentration reported.

Numerical sample results that were greater than the MDL but less than the Reporting Limit (RL) were qualified with a "J" for estimated.

Additionally, flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from specified EPA protocols or is of a technical advisory nature per sample matrix or method limitation.

Once the data validation review and processes were completed, the entire data set was reviewed for chemical compound frequencies of detection, dilution factors that might affect data usability, and patterns of target compounds distribution. The data set was also evaluated to identify potential data limitations, uncertainties, or both in the analytical results.

The remaining sections detail any noted deviations. Tables summarizing data qualification flags, if any, are provided at the end of this report.

3. List of Common Acronyms and Abbreviations and Data Validation Qualifiers

3.1 Common Acronyms and Abbreviations

COC	Chain-of-Custody
DoD	Department of Defense
DQO	Data Quality Objective
DRO	Diesel Range Organics
EM	Engineering Manual
EPA	Environmental Protection Agency
GRO	Gasoline Range Organics
HTRW	Hazardous, Toxic, Radioactive Waste
ICP	Inductively Coupled Plasma
IDL	Instrument Detection Limit
IWTP	Industrial Waste Treatment Plant
LAFB	Laredo Air Force Base
LB	Laboratory Blank
LCS/LCSD	Laboratory Control Sample/Laboratory Control Sample Duplicate
MDL	Method Detection Limit
MS/MSD	Matrix Spike/Matrix Spike Duplicate
PCBs	Polychlorinated Biphenyls
QA/QC	Quality Assurance/Quality Control
RL	Reporting Limit
RPD	Relative Percent Difference
SVOC	Semivolatile Organic Compounds
TEPH	Total Extractable Petroleum Hydrocarbons
VOC	Volatile Organic Compounds
USACE	United States Army Corps of Engineers

3.2 Data Validation Qualifiers

Code	Definition
2S	Second Source
BL	Blank
BS	Blank Spike/LCS
CC	Continuing Calibration
DL	Dilution
FD	Field Duplicate
HT	Holding Time
IB	In-Between (metals - Bs → Js)
IC	Initial Calibration
IS	Internal Standard
LD	Lab Duplicate
MD	Matrix Spike Duplicate
MS	Matrix Spike
OT	Other (see DV worksheet)
PD	Pesticide Degradation
PS	Post Spike
RE	Re-extraction
SD	Serial Dilution
SS	Spiked Surrogate
TN	Tune

4. Chain of Custody Synopsis

				Chemical Analytical Methods								
				Volatile Organics	Semivolatile Organics	Pesticides	PCBs	Herbicides	Gasoline Range Organics	Diesel Range Organics	TEPH	RCRA Metals
Sample ID: IWTP	Matrix	Time	Type	SW8260B	SW8270C	SW8081A	SW8082	SW8151	SW8015M	SW8015M	TN1005	SW6010B/ 7000 Series
Samples collected on May 18, 1999												
MWSO001000N1	Soil	0910	N	X	X	X	X	X	X	X	X	X
MWSO001005N1	Soil	1000	N	X	X	X	X	X	X	X	X	X
MWSO001007N1	Soil	1030	N	X	X	X	X	X	X	X	X	X
MWSO002000N1	Soil	1305	N	X	X	X	X	X	X	X	X	X
MWSO002004N1	Soil	1325	N	X	X	X	X	X	X	X	X	X
MWSO002007N1	Soil	1340	N	X	X	X	X	X	X	X	X	X
MWSO003000N1	Soil	1510	N	X	X	X	X	X	X	X	X	X
MWSO003006N1	Soil	1530	N	X	X	X	X	X	X	X	X	X
MWSO003012N1	Soil	1615	N	X	X	X	X	X	X	X	X	X
Samples collected on May 19, 1999												
SBSO001000N1	Soil	0745	N	X	X	X	X	X	X	X	X	X
SBSO001000FD1	Soil	0745	FD	X	X	X	X	X	X	X	X	X
SBSO001004N1	Soil	0810	N	X	X	X	X	X	X	X	X	X
SBSO001006N1	Soil	0850	N	X	X	X	X	X	X	X	X	X
SBSO002000N1	Soil	0925	N	X	X	X	X	X	X	X	X	X
SBSO002004N1	Soil	0945	N	X	X	X	X	X	X	X	X	X
SBSO002006N1	Soil	1010	N	X	X	X	X	X	X	X	X	X
SBSO003000N1	Soil	1055	N	X	X	X	X	X	X	X	X	X

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02200

				Chemical Analytical Methods								
				Volatile Organics	Semivolatile Organics	Pesticides	PCBs	Herbicides	Gasoline Range Organics	Diesel Range Organics	TEPH	RCRA Metals
Sample ID: IWTP	Matrix	Time	Type	SW8260B	SW8270C	SW8081A	SW8082	SW8151	SW8015M	SW8015M	TN1005	SW6010B/ 7000 Series
SBSO003004N1	Soil	1120	N	X	X	X	X	X	X	X	X	X
SBSO003006N1	Soil	1135	N	X	X	X	X	X	X	X	X	X
SBSO004000N1	Soil	1400	N	X	X	X	X	X	X	X	X	X
SBSO004004N1	Soil	1440	N	X	X	X	X	X	X	X	X	X
SBSO004008N1	Soil	1600	N	X	X	X	X	X	X	X	X	X
SBSO004008FD1	Soil	1600	FD	X	X	X	X	X	X	X	X	X
SBWQ004000EB1	Water	1340	EB	X	X	X	X	X	X	X	X	X
NQWQ001000TB1	Water	1500	TB	X	NR	NR	NR	NR	NR	NR	NR	NR
Samples collected on May 22, 1999												
MWWG001000N1	Water	1530	N	X	X	X	X	X	X	X	X	X
MWWG001000FD1	Water	1530	FD	X	X	X	X	X	X	X	X	X
MWWG003000N1	Water	1400	N	X	X	X	X	X	X	X	X	X
Samples collected on May 23, 1999												
MWWG002000N1	Water	1000	N	X	X	X	X	X	X	X	X	X
MWWQ002000EB1	Water	0830	EB	X	X	X	X	X	X	X	X	X
NQWQ002000TB1	Water	0800	TB	X	NR	NR	NR	NR	NR	NR	NR	NR

Notes: X – Southwest Laboratory of Oklahoma, Broken Arrow, OK
NR – Not Requested
FD Field Duplicate
EB Equipment Blank
TB Trip Blank

5. Sample Cross Reference Tables

5.1 Sample Cross Reference by Laboratory ID

Lab Sample ID	Sample ID	Sample Type
38676.01	IWTPMWSO001000N1	N
38676.02	IWTPMWSO001005N1	N
38676.03	IWTPMWSO001007N1	N
38676.04	IWTPMWSO002000N1	N
38676.05	IWTPMWSO002004N1	N
38676.06	IWTPMWSO002007N1	N
38676.07	IWTPMWSO003000N1	N
38676.08	IWTPMWSO003006N1	N
38676.09	IWTPMWSO003012N1	N
38676.10	IWTPSBSO001000N1	N
38676.11	IWTPSBSO001000FD1	FD
38676.12	IWTPSBSO001004N1	N
38676.13	IWTPSBSO001006N1	N
38676.14	IWTPSBSO002000N1	N
38676.15	IWTPSBSO002004N1	N
38676.16	IWTPSBSO002006N1	N
38676.17	IWTPSBSO003000N1	N
38676.18	IWTPSBSO003004N1	N
38676.19	IWTPSBSO003006N1	N
38676.20	IWTPSBSO004000N1	N
38676.21	MS from IWTPSBSO004000N1	MS
38676.22	MSD from IWTPSBSO004000N1	MSD
38676.23	IWTPSBSO004004N1	N
38676.24	IWTPSBSO004008N1	N
38676.25	IWTPSBSO004008FD1	FD
38676.26	IWTPSBWQ004000EB1	EB

Lab Sample ID	Sample ID	Sample Type
38676.27	IWTPNQWQ001000TB1	TB
38706.01	IWTPMWWG001000N1	N
38706.02	IWTPMWWG001000FD1	FD
38706.03	IWTPMWWG002000N1	N
38706.04	MS from IWTPMWWG002000N1	MS
38706.05	MSD from IWTPMWWG002000N1	MSD
38706.06	IWTPMWWG003000N1	N
38706.07	IWTPMWWQ002000EB1	EB
38706.08	IWTPNQWQ002000TB1	TB

5.2 Sample Cross Reference by Sample ID

Sample ID	Lab Sample ID	Sample Type
IWTPMWSO001000N1	38676.01	N
IWTPMWSO001005N1	38676.02	N
IWTPMWSO001007N1	38676.03	N
IWTPMWSO002000N1	38676.04	N
IWTPMWSO002004N1	38676.05	N
IWTPMWSO002007N1	38676.06	N
IWTPMWSO003000N1	38676.07	N
IWTPMWSO003006N1	38676.08	N
IWTPMWSO003012N1	38676.09	N
IWTPSBSO001000N1	38676.10	N
IWTPSBSO001000FD1	38676.11	FD
IWTPSBSO001004N1	38676.12	N
IWTPSBSO001006N1	38676.13	N
IWTPSBSO002000N1	38676.14	N
IWTPSBSO002004N1	38676.15	N
IWTPSBSO002006N1	38676.16	N
IWTPSBSO003000N1	38676.17	N
IWTPSBSO003004N1	38676.18	N

Sample ID	Lab Sample ID	Sample Type
IWTPSBSO003006N1	38676.19	N
IWTPSBSO004000N1	38676.20	N
MS from IWTPSBSO004000N1	38676.21	MS
MSD from IWTPSBSO004000N1	38676.22	MSD
IWTPSBSO004004N1	38676.23	N
IWTPSBSO004008N1	38676.24	N
IWTPSBSO004008FD1	38676.25	FD
IWTPSBWQ004000EB1	38676.26	EB
IWTPNQWQ001000TB1	38676.27	TB
IWTPMWWG001000N1	38706.01	N
IWTPMWWG001000FD1	38706.02	FD
IWTPMWWG002000N1	38706.03	N
MS from IWTPMWWG002000N1	38706.04	MS
MSD from IWTPMWWG002000N1	38706.05	MSD
IWTPMWWG003000N1	38706.06	N
IWTPMWWQ002000EB1	38706.07	EB
IWTPNQWQ002000TB1	38706.08	TB

6. Laredo Air Force Base Site Investigation IWTP Site

6.1 Volatile Organic Compounds

Soil and groundwater samples were collected and analyzed for volatile organic compounds (VOC) using SW-846 method 8260B. The total number of samples analyzed during this sampling event, are outlined in Section 4.0 of this report.

All instrument performance check (tuning) criteria were met.

All initial and continuing calibration criteria were met, except as listed below:

- The response factors for acetone and 2-butanone (0.0397 and 0.0464, respectively) in the initial calibration curve of 2/22/99, were below criteria limits of 0.050. The affected samples are listed in the table below. All detected acetone and 2-butanone data results were flagged "J", as estimated, and all non-detected results were flagged "UJ", as estimated.
- The RRF for acetone in the continuing calibration analyzed on 5/28/99 C1444, was 0.046, below the QC limits of 0.050. The affected samples are listed in the table below. Detected results were flagged "J", estimated and undetected results were flagged "UJ".
- The correlation coefficient for bromomethane was 0.754. All detected results were flagged "J", as estimated. No flags were applied to non-detected results.

Calibration Date	Analyte	RRF	Affected Samples	Flag	A/P
2/22/99 E0941	Acetone/	0.040		J/UJ	P
	2-butanone	0.046	IWTPMWWG001000N1	J/UJ	P
			IWTPMWWG001000FD1	J/UJ	P
			IWTPMWWG002000N1	J/UJ	P
			IWTPMWWG003000N1	J/UJ	P
				J/UJ	P

Calibration Date	Analyte	RRF	Affected Samples	Flag	A/P
5/28/99 C1444	Acetone	0.046	IWTPMWSO003012N1	J/UJ	P
			IWTPSBSO001000N1	J/UJ	P
			IWTPSBSO001006N1	J/UJ	P
			IWTPSBSO002004N1	J/UJ	P
			IWTPSBSO002006N1	J/UJ	P
			IWTPSBSO003004N1	J/UJ	P
			IWTPSBSO003006N1	J/UJ	P
			IWTPSBSO004008FD1	J/UJ	P

All IS retention times and area responses were within criteria, except as noted below.

Sample	Internal Standard Out	Flag (Analytes associated with specific internal standard)
IWTPMWSO001000N1	IS-4 = 47.4%	J/UJ
IWTPMWSO001000N1RE	IS-1, IS-2, IS-3, & IS-4 all Low	R
IWTPSBSO004008N1	All < 5% Recovery	R
IWTPSBSO001000FD1RE	IS-4 = 47.9%	J/UJ
IWTPSBSO004008N1RE	IS-3 = 205.3%; IS-4 = 222%	J detects

6.1.1 Accuracy

All surrogate, MS, matrix spike duplicate (MSD), and laboratory control spike (LCS) recoveries were within acceptable QC limits, except as noted below:

Sample ID	Surrogates Out	Flag	A/P
IWTPMWSO001007N1	BFB = 147%	J (detects)	A
IWTPSBSO001000FD1	TOL = 78%; BFB = 73%	R	A
IWTPSBSO001000FD1RE	DCA = 130%	J (detects)	A
IWTPSBSO003006N1	DCA = 127%; BFB = 127%	J (detects)	A
IWTPSBSO003006N1RE	DCA = 78%	R	A
IWTPSBSO004008N1	BFB = 47%; DCA = 151%	R	A
IWTPSBSO004008N1RE	BFB = 315%	J (detects)	A

02205

Sample ID	Surrogates Out	Flag	A/P
IWTPSBSO004008FD1	BFB = 840%	J (detects)	A
IWTPSBSO004008FD1RE	BFB = 454%	R	A
IWTPMWWG002000N1	DCA = 49%	J (detects)	A
IWTPMWWG002000N1MS	BFB = 82	J (detects)	A
IWTPMWWG002000N1MSD	DCA = 127%		A
IWTPMWWG003000N1	DCA = 130%	J (detects)	A

The above exceedances are expected to be due to sample matrix interferences.

The MS/MSD recoveries out of QC limits are listed in the table below.

Compound	MS Out	MSD Out
Cis -1, 3-Dichloropropene	70	62
Toluene	68	62
Styrene	78	72
Bromodichloromethane		71
trans-1, 3-Dichloropropene		68
Chlorobenzene		77
Ethylbenzene		73
m & p-Xylenes		70
o-Xylene		75
Acetone		

The LCS/LCSD recoveries out of QC limits are listed in the table below.

LCS/LCSD	Recoveries Outside QC Limits	Affected Samples
LCSD1	Chloromethane 146%R	38676.01-.06, & .08
LCS/LCSD4	Bromomethane RPD 53	38676.19RA & .23
LCS/LCSD4	Chloroethane RPD 52	38676.19RA & .23
LCS 5	Bromodichloromethane 129%R	38676.24RA & .25RA
LCS 5	Toluene 127%R	38676.24RA & .25RA
LCS 5	Dibromochloromethane 128%R	38676.24RA & .25RA
LCS 5	Bromoform 137%R	38676.24RA & .25RA

LCS/LCSD	Recoveries Outside QC Limits	Affected Samples
LCSD5	Bromodichloromethane 118%R	38676.24RA & .25RA
LCS2	Carbon Tetrachloride 131%R	All in 38706
LCS2	2-Butanone 164%R	All in 38706
LCS2	M,p-Xylenes 71%R	All in 38706
LCS3	Acetone 169%R	All in 38706
LCS3	Methylene Chloride 172%R	All in 38706
LCS3	Bromoform 136%R	All in 38706
LCSD3	Acetone 174%R	All in 38706
LCSD3	Methylene Chloride 172%R	All in 38706
LCSD3	Carbon Disulfide 130%R	All in 38706

- No flags were applied due to MS/MSD or LCS/LCSD recoveries outside of QC limits.

6.1.2 Precision

All MS/MSD and LCS/LCSD relative percent difference (RPD) values were within acceptable QC limits, except as noted below:

- The RPD for acetone in the IWTPSBSO004000N1 MS/MSD set was 32 percent. No flags were applied.
- The RPDs of 18 compounds out of 34 in the IWTPMWWG002000N1 MS/MSD set were greater than 20 percent. No flags were applied.

Comparison of the field and QC duplicate samples reflected no reportable differences.

6.1.3 Representativeness

All travel and method blanks were free of contamination, except as noted in the table below:

Blank ID	Analyte	Concentration	Associated Samples	Flag
VBLK	Methylene chloride	9 µg/Kg	IWTPMWSO003000N1 IWTPMWSO003006N1 IWTPMWSO003012N1 IWTPSBSO001000N1 IWTPSBSO001000FD1RE	if sample < 90 µg/Kg Flag U

02207

Blank ID	Analyte	Concentration	Associated Samples	Flag
			IWTPSBSO001006N1	
			IWTPSBSO002004N1	
			IWTPSBSO002006N1	
			IWTPSBSO003004N1	
			IWTPSBSO003006N1	
			IWTPSBSO004008FD1	
TB / EB SDG 38706	Methylene chloride	1 µg/L	IWTPMWWG001000N1	if sample < 10 µg/L Flag U
			IWTPMWWG001000FD1	
			IWTPMWWG002000N1	
			IWTPMWWG003000N1	

All samples were analyzed within the required 14-day (unpreserved water samples within 7 days) holding time.

- IWTPMWSO001007N1 diluted due to the high concentration of acetone.
- Sample IWTPMWSO001000N1 was reanalyzed due to IS area responses out of QC limits.
- Samples IWTPSBSO001000FD1, IWTPSBSO003006N1, IWTPSBSO004008N1, and IWTPSBSO004008FD1 were reanalyzed due to surrogate recoveries. The re-analyses confirmed the original results, suggesting a matrix effect.
- Sample IWTPMWWG003000N1 was analyzed at a dilution of 1:250 due to the high concentrations of trichloroethene and 1,2-Dichloroethene.

6.1.4 Comparability

QA samples were collected and the results provided to the USACE. The USACE will provide a supplemental review and comparison of the field and quality assurance results where applicable.

6.2 Volatile Organic Compounds Data Qualification Summary

SDG	Sample	Analyte	Reason	Flag	A/P
38706		Acetone	Calibration RRF low (0.04)	J/UJ	P
		2-butanone	Calibration RRF low (0.046)	J/UJ	P
	IWTPMWWG001000N1			J/UJ	P
	IWTPMWWG001000FD1			J/UJ	P
	IWTPMWWG002000N1			J/UJ	P
	IWTPMWWG003000N1			J/UJ	P
38676	IWTPMWSO003012N1	Acetone	Calibration RRF low (0.04)	J/UJ	P
	IWTPSBSO001000N1				
	IWTPSBSO001006N1				
	IWTPSBSO002004N1				
	IWTPSBSO002006N1				
	IWTPSBSO003004N1				
	IWTPSBSO003006N1				
	IWTPSBSO004008FD1				
38676	IWTPMWSO003000N1	Methylene-chloride	Blank contamination	U for all concentrations < 90 µg/kg	A
	IWTPMWSO003006N1				
	IWTPMWSO003012N1				
	IWTPSBSO001000N1				
	IWTPSBSO001000FD1RE				
	IWTPSBSO001006N1				
	IWTPSBSO002004N1				
	IWTPSBSO002006N1				
	IWTPSBSO003004N1				
	IWTPSBSO003006N1				
	IWTPSBSO004008FD1				
38706	All Samples	Methylene-chloride	Blank contamination	U for all concentrations < 10 µg/L	A

SDG	Sample	Analyte	Reason	Flag	A/P
38676	IWTPMWSO001007N1	All analytes	BFB = 147%	J (detects)	A
	IWTPSBSO001000FD1		TOL = 78%; BFB = 73%	R	
	IWTPSBSO001000FD1RE		DCA = 130%	J (detects)	
	IWTPSBSO003006N1		DCA = 127%; BFB = 127%	J (detects)	
	IWTPSBSO003006N1RE		DCA = 78%	R	
	IWTPSBSO004008N1		BFB = 47%; DCA = 151%	R	
	IWTPSBSO004008N1RE		BFB = 315%	J (detects)	
	IWTPSBSO004008FD1		BFB = 840%	J (detects)	
	IWTPSBSO004008FD1RE		BFB = 454%	R	
	IWTPMWSO001000N1	Analytes associated with specific internal standard	IS-4 = 47.4%	J/UJ	A
	IWTPMWSO001000N1RE		IS-1, IS-2, IS-3, & IS-4 all Low	R	
	IWTPSBSO004008N1		All ≤ 5% Rec.	R	
	IWTPSBSO001000FD1RE		IS-4 = 47.9%	J/UJ	
	IWTPSBSO0040008N1RE		IS-3 = 205.3%; IS-4 = 222%	J detects	

6.3 Semivolatile Organic Compounds

Soil and groundwater samples were collected and analyzed for semivolatile organic compounds (SVOC) using SW-846 method 8270C. The total number of samples analyzed during this sampling event are outlined in Section 4.0 of this report.

All instrument performance check (tuning) criteria were met.

All initial and continuing calibration criteria were met, except as listed in the table below:

Calibration Date	Analyte	Percent D	Flag	A/P
5/27 1454 6/4 1234	Carbazole	63.9 32.1	J detected compounds in associated samples	A
5/27 1454	3,3' Dichlorobenzidine	28.2		
5/27 1454 6/7 1453 6/8 1358 6/9 1234	N-Nitroso-di-n-propylamine	29.2 20.9 28.4 27.4		

Calibration Date	Analyte	Percent D	Flag	A/P
5/27 1454 6/11 1218	Hexachlorocyclopentadiene	27.5 22.6		
5/27 1454	4-Nitroanaline	48.9		
5/27 1454	Benzo(b)fluoranthene	21.9		
6/9 1234 6/10 1432 6/11 1218	2,4-Dinitrophenol	23.4 22.1 26.2		
6/9 1234 6/10 1432 6/11 1218	4,6-Dinitro-2-methylphenol	22.2 20.6 27.9		
6/11 1218	2,6-Dinitrotoluene	22.6		
6/11 1218	3-Nitroanaline	30.8		
6/11 1218	4-Nitrophenol	20.9		
6/11 1218	4-Bromopheryl phenyl ether	23.3		
6/11 1218	Phenanthrene	20.4		
6/11 1218	Anthracene	22.8		
6/11 1218	Carbazole	46.1		
6/11 1218	Pyrene	20.6		
6/11 1218	Benzo(a)anthracene	21.3		
6/11 1218	3,3'-Dichlorobenzidiene	24.3		
6/11 1218	Chrysene	21.0		
6/11 1218	Benzo(k)fluoranthene	22.7		
6/11 1218	Dibenz(a,h)anthracene	21.4		
6/11 1218	Benzo(g,h,i,)perylene	20.9		
6/15 1714	bis(2-Chloroethyl)ether	24.2		

All IS retention times and area responses were within criteria, except as noted below:

Internal Standard	Area Outside QC Limits (50-200%)	Flag	A/P
IWTPMWSO001000N1	IS-6 = 43.9%	J/UJ (aawss)	A
IWTPMWSO001000N1RE	IS-6 = 44.3%	R (all)	A
IWTPSBSO002000N1	IS-6 = 44.1%	R (SS recov)	A
IWTPSBSO002004N1	IS-6 = 48.6%	J/UJ (aawss)	A
IWTPSBSO002004N1RE	IS-2, IS-3, IS-4, IS-5, & IS-6 All Low	R (all)	A
IWTPMWSO003000N1	IS-5 = 39.6, IS-6 = 25.6	R (all)	A

Internal Standard	Area Outside QC Limits (50-200%)	Flag	A/P
IWTPMWSO003000N1RE	IS-6=43.5%	J/UJ (aawss)	A
IWTPSBSO003004N1	IS-6 = 48.8%	R (all)	A
IWTPSBSO003004N1RE	IS-5 = 49.6%	J/UJ (aawss)	A
IWTPSBSO004000N1	IS-6 = 45.0%	J/UJ (aawss)	A
IWTPMWWG001000FD1RE	IS-4, IS-5, Low	R (all)	A

aawss = analytes associated with specific standards

6.3.1 Accuracy

All surrogate, MS, MSD, and LCS recoveries were within acceptable QC limits, except as noted below:

Sample	Surrogate Out	Flag	A/P
IWTPSBSO004004N1	S1=^{BN}19, S5=^{A}14, S8=^{A}2	J/UJ	A
IWTPMWSO002007N1	6/8 surrogates out (0-2%)	R	A
IWTPSBSO002000N1	S1^{BN}=4, S4^{A}=23, S5^{A}=7, S7^{A}=13, S8^{BN}=2	R	A
IWTPMWWG001000N1 IWTPMWWG001000FD1 IWTPMWWG002000N1 IWTPMWWG003000N1	All Acid Extractable <3%	J (detects)/ R (non-detects)	A
38706 All Re-Extracts of above samples	All Acid Extractable <3%	R all re-extracted analyses	A

The exceedances for the acid compounds for samples in SDG 38706 are most likely due to matrix interferences.

- The recoveries for 4-chloro-3-methylphenol in IWTPSBSO004008FD1 (MS and MSD) were slightly above QC limits of 26 - 103, at 133 and 125 percent, respectively. Reported concentrations were flagged as "J", estimated.
- The recovery for pyrene in LCS4 in SDG 38676 was slightly above QC limits at 100 percent (limit 95 percent). No flags were applied.
- All acid extractable compound recoveries in the MS/MSD samples were less than 10 percent.

6.3.2 Precision

All MS/MSD and LCS/LCSD RPD values were within acceptable QC limits, except as noted below:

- The RPDs for 7 out of 11 compounds in IWTPSBSO004000N1 (MS and MSD) were above QC limits, ranging from 35 to 54 percent. No flags were applied.
- The RPD for 6 out of 11 compounds in LCS2 in SDG 38676 were above QC limits, at 15 or 16 percent. No flags were applied.
- The RPD for N-Nitroso-di-n-propylamine in LCS4 in SDG 38676 was above QC limits, at 17 percent. No flags were applied.
- The RPDs for three acid compounds in the MS/MSD in SDG 38706, 4-chloro-3-methylphenol (200 percent), 4-nitrophenol (127 percent) and pentachlorophenol (100 percent) were above the laboratory limits.

Comparison of the field and QC duplicate samples reflected no reportable differences.

6.3.3 Representativeness

The laboratory method blank and equipment blank samples contained selected target compounds as listed in the table below.

Blank ID	Analyte	Concentration	Associated Samples	Flag
Method blank (SBLK1) 38676	Bis (2-ethylhexyl) phthalate (BEHP)	0.90 µg/L	EB only	No flags applied to EB
EB (#26) 38676	Bis (2-ethylhexyl) phthalate (BEHP)	1.0 µg/L	All	Flag all results < 330 µg/Kg as U
Method blank (SBLK3) 38706	Bis (2-ethylhexyl) phthalate (BEHP)	2.0 µg/L	All	Flag all results < 20 µg/L as U
EB 38706	Bis (2-ethylhexyl) phthalate (BEHP)	10 µg/L	All	Flag all results < 100 µg/L as U
EB 38706	1,2-Dichlorobenzene	1 µg/L	All	Flag all results < 5 µg/L as U
EB 38706	1,4-Dichlorobenzene	0.70 µg/L	All	Flag all results < 3.5 µg/L as U
EB 38706	Diethyl phthalate	0.9	All	Flag all results < 9.0 µg/L as U

All soil samples were extracted within the 14-day holding time; water samples were extracted within the 7-day holding time; and all extracts analyzed within the subsequent 40-day holding time, except for the samples noted below:

- IWTPSBSO004000N1MS, IWTPMWSO002007N1, IWTPMWWG001000N1, IWTPMWWG001000FD1 and IWTPMWWG002000N1 were re-extracted outside holding times due to low surrogate recovery.
- Samples IWTPMWSO001000N1, IWTPMWSO003000N1, IWTPSBSO002000N1, and IWTPSBSO003004N1 were re-analyzed.
- IWTPMWSO001007N1 was diluted 1:5 due to high concentrations of acenaphthene, dibenzofuran, fluorene, phenanthrene, fluoranthene, and pyrene.
- Sample IWTPMWWG003000N1 was re-analyzed at a dilution of 1:50 due to the high concentration of 1,2-dichlorobenzene.

6.3.4 Comparability

QA samples were collected and the results provided to the USACE. The USACE will provide a supplemental review and comparison of the field and QA results where applicable.

6.4 Semivolatile Organic Compounds Data Qualification Summary

SDG	Calibration Date	Sample	Analyte	Reason	Flag	A/P
	5/27 1454 6/4 1234		Carbazole		J detected compounds in associated samples	
	5/27 1454		3,3' Dichlorobenzidine			
	6/18 1359		Pyridine			
	5/27 1454 6/7 1453 6/8 1358 6/9 1234		N-Nitroso-di-n-propylamine			
	5/27 1454 6/11 1218		Hexachlorocyclopentadiene			
	5/27 1454		4-Nitroanaline			
	5/27 1454		Benzo(b)fluoranthene			
	6/9 1234 6/10 1432 6/11 1218		2,4-Dinitrophenol			

SDG	Calibration Date	Sample	Analyte	Reason	Flag	A/P
	6/9 1234 6/10 1432 6/11 1218		4,6-Dinitro-2-methylphenol			
	6/11 1218		2,6-Dinitrotoluene			
	6/11 1218		3-Nitroanaline			
	6/11 1218		4-Nitrophenol			
	6/11 1218		4-Bromophenyl phenyl ether			
	6/11 1218		Phenanthrene			
	6/11 1218		Anthracene			
	6/11 1218		Carbazole			
	6/11 1218		Pyrene			
	6/11 1218		Benzo(a)anthracene			
	6/11 1218		3,3'-Dichlorobenzidiene			
	6/11 1218		Chrysene			
	6/11 1218		Benzo(k)fluoranthene			
	6/11 1218		Dibenz(a,h)anthracene			
	6/11 1218		Benzo(g,h,i,)perylene			
	6/11 1218		bis(2-Chloroethyl)ether			
		IWTPSBSO004004N1	Analytes associated with specific surrogate	Surrogates	J/UJ	A
		IWTPMWSO002007N1		Surrogates	R	
		IWTPSBSO002000N1		Surrogates	R	
		IWTPSBSO004008FD1	4-chloro-3-methyl phenol 133% (MS), 125% (MSD)	Matrix spikes and matrix spike duplicates	J detects	A
		IWTPSBSO004000N1	7 of 11 RPD high 35% to 54%		J detects	
		IWTPMWSO001000N1	Analyte associated with specific internal standard	IS-6 = 43.9%	J/UJ	A
		IWTPMWSO001000N1RE		IS-6 = 44.3%	R	A
		IWTPSBSO002000N1		IS-6 = 44.1%	R	A
		IWTPSBSO002004N1		IS-6 = 48.6%	J/UJ	A
		IWTPSBSO002004N1RE		IS-2, IS-3, IS-4, IS-5, & IS-6 All Low	R	A
		IWTPMWSO003000N1		IS-5 = 39.6, IS-6 = 25.6,	R	A
		IWTPMWSO003000N1RE		IS-6=43.5%	J/UJ	A
		IWTPSBSO003004N1		IS-6 = 48.8%	R	A

SDG	Calibration Date	Sample	Analyte	Reason	Flag	A/P
		IWTPSBSO004000N1		IS-6 = 45.0%	J/UJ	A
		IWTPSBSO003004N1RE		IS-5 = 49.6%	J/UJ	A
38676		ALL	BEHP results < 330 ug/Kg	EB-BEHP=1.0	U	A
38706		MWWG001000N1 MWWG001000FD1 MWWG002000N1 MWWG003000N1	All Acid Extractable	All Acid Extractable < 3%	J (detects)/ R (non-detects)	
38706		All Re-Extracts of above samples	All Acid Extractable	All Acid Extractable < 3%	R all re-extracted analyses	
38706		ALL	BEHP Detects <100 µg/L	Blank contamination	U	A
			1,2-Dichlorobenzene Detects <5 µg/L		U	A
			1,4-Dichlorobenzene Detects <3.5 µg/L		U	A
			Diethyl phthalate Detects <9 µg/L		U	A

6.5 Organochlorine Pesticides

Soil and groundwater samples were collected and analyzed for organochlorine pesticides using SW-846 method 8081A. The total number of samples analyzed during this sampling event are outlined in Section 4.0 of this report.

All initial and continuing calibration criteria were met.

Pesticide degradation evaluation results showed the following exceedances:

- 6/9/99 at 1937: DDT breakdown 32.4 percent, endrin breakdown 24.8 percent, on DB-17 MS column; on DB-XLB column DDT = 29.8 percent, endrin = 26.6 percent. All detected results for DDT and Endrin in samples 1- 13 were flagged "J', as estimated, and all non-detected results were flagged "UJ".
- 6/10/99 at 1552: DDT breakdown 39.2 percent, endrin breakdown 15.2 percent on DB-17 column; and on RTX-CLP column DDT breakdown = 42.3 percent and endrin breakdown = 19.5 percent. All detected results for DDT and endrin in samples 14 - 25 were flagged "J', as estimated, and all non-detected results were flagged "UJ".

6.5.1 Accuracy

All surrogate, MS, MSD, and LCS recoveries were within acceptable QClimits, except as noted below:

Sample	Surrogates Out	Flag	A/P
IWTPSBSO002004N1	TCX1 99%	No Flags	A
IWTPSBSO003004N1	DCB1 34%	No Flags	A
IWTPMWSO001000N1	TCX1 225%, DCB1 150%	J detects	A
IWTPMWSO001007N1	TCX1 284%	No Flags	A
IWTPMWSO002000N1	TCX1 118%	No Flags	A
IWTPMWSO002004N1	TCX1 204%	No Flags	A
IWTPMWSO003006N1	TCX1 121%	No Flags	A
IWTPMWSO003012N1	TCX1 455%	No Flags	A
IWTPSBSO001004N1	TCX1 120%	No Flags	A
IWTPMWWG001000FD1	TCX1 223%	No Flags	A
IWTPMWWG003000N1	TCX1 131%	No Flags	A

- The soil MS/MSD set in SDG 38676 showed 32 of 80 recoveries high or low.
- The LCS in SDG 38676 showed 45 out of 120 soil recoveries high (97-143 percent).
- The recovery for alpha-BHC was out of criteria for LCSD in SDG 38706 at 103 percent (limits = 27 - 102). No flags were applied.

6.5.2 Precision

All MS/MSD and LCS/LCSD RPD values were within acceptable QC limits, except as noted below:

- The soil MS/MSD set for SDG 38676 showed one RPD out of 40 high or low.

Comparison of the field and QC duplicate samples reflected no reportable differences.

6.5.3 Representativeness

The laboratory method blank and equipment blank samples were free of contamination.

All soil samples were extracted within the 14-day holding time; water samples were extracted within the 7-day holding time; and all extracts analyzed within the subsequent 40

day holding time. (Note: IWTPMWSO001000N1 and IWTPMWSO001005N1 were diluted due to high concentration of alpha chlordane; and IWTPSBSO004000N1 was diluted due to high concentration of 4,4'-DDT.)

6.5.4 Comparability

QA samples were collected and the results provided to the USACE. The USACE will provide a supplemental review and comparison of the field and QA results where applicable.

6.6 Organochlorine Pesticides Data Qualification Summary

SDG	Samples	Analytes	Reason	Flag	A/P
38676	All Samples	DDT	Degradation	J/UJ	A
	All Samples	Endrin	Degradation	J/UJ	A
	IWTPSBSO002004N1	All analytes	TCX1 99%	No Flags	A
	IWTPSBSO003004N1		DCB1 34%	No Flags	A
	IWTPMWSO001000N1		TCX1 225%, DCB1 150%	J detects	A
	IWTPMWSO001007N1		TCX1 284%	No Flags	A
	IWTPMWSO002000N1		TCX1 118%	No Flags	A
	IWTPMWSO002004N1		TCX1 204%	No Flags	A
	IWTPMWSO003006N1		TCX1 121%	No Flags	A
	IWTPMWSO003012N1		TCX1 455%	No Flags	A
	IWTPSBSO001004N1		TCX1 120%	No Flags	A
	IWTPMWWG001000FD1		TCX1 223%	No Flags	A
	IWTPMWWG003000N1		TCX1 131%	No Flags	A

6.7 Polychlorinated Biphenyls (PCBs)

Soil and groundwater samples were collected and analyzed for polychlorinated biphenyls (PCB) using SW-846 method 8082. The total number of samples analyzed during this sampling event is outlined in Section 4.0 of this report.

All initial and continuing calibration criteria were met.

6.7.1 Accuracy

All surrogate recoveries were within acceptable QC limits, except as listed in the table below:

Sample	Surrogates Out	Flag	A/P
IWTPMWSO001000N1	*DCB1 = 160% DCB 2 = 153%	J detects	A
IWTPMWSO001005N1	*DCB1 = 187%	J detects	A
IWTPMWSO001007N1	*DCB1 = 141% DCB 2 = 179%	J detects	A
IWTPMWSO002000N1	*DCB2 = 132%	J detects	A
IWTPMWSO002004N1	*DCB2 = 159%	J detects	A
IWTPMWSO003006N1	*DCB1 = 146%	J detects	A
IWTPMWSO003012N1	*DCB1 = 126% DCB2 = 155%	J detects	A
IWTPSBSO001000N1	*DCB2 = 126%	J detects	A
IWTPSBSO002000N1	*DCB2 = 127%	J detects	A
IWTPSBSO002004N1	*DCB1 = 126%	J detects	A
IWTPSBSO003004N1	*DCB1 = 138%	J detects	A

*DCB = decachlorobiphenyl
DCB1 = 1st column DCB2 = 2nd column.
As surrogate recoveries are high (above the upper control limits) detects if any, for the above samples are flagged 'J.' As results are reported from first column only exceedances for DCB1 are flagged.

All MS, MSD, and LCS recoveries were within acceptable QC limits.

6.7.2 Precision

All MS/MSD and LCS/LCSD RPD values were within acceptable QC limits.

Comparison of the field and QC duplicate samples reflected no reportable differences

6.7.3 Representativeness

The laboratory method blank and equipment blank samples were reported free of contamination.

All soil samples were extracted within the 14-day holding time; water samples were extracted within the 7-day holding time; and all extracts analyzed within the subsequent 40 day holding time.

No dilutions were required in the analyses of these samples.

6.7.4 Comparability

QA samples were collected and the results provided to the USACE. The USACE will provide a supplemental review and comparison of the field and QA results where applicable.

6.8 PCBs Data Qualification Summary

SDG	Sample	Analyte	Reason	Flag	A/P
38676	IWTPMWSO001000N1	All	Surrogate recoveries	J detects	A
	IWTPMWSO001005N1				
	IWTPMWSO001007N1				
	IWTPMWSO002000N1				
	IWTPMWSO002004N1				
	IWTPMWSO003006N1				
	IWTPMWSO003012N1				
	IWTPSBSO001000N1				
	IWTPSBSO002000N1				
	IWTPSBSO002004N1				
	IWTPSBSO003004N1				

6.9 Herbicides

Soil and groundwater samples were collected and analyzed for herbicides using SW-846 method 8151. The total number of samples analyzed during this sampling event are outlined in Section 4.0 of this report.

All initial and continuing calibration criteria were met, except as noted below:

- The percent difference was within ±15 percent for first column in the continuing calibration verification analyzed on 6/3/99 at 11:21 a.m. The percent difference on the second column was greater than 15 percent. As all associated results are non-detects, no flags have been added.

6.9.1 Accuracy

All surrogate, MS, MSD, and LCS recoveries were within acceptable QC limits, except as noted below:

- Surrogate recoveries for samples listed in the first column in the table below are zero percent except for IWTPSBO004000N1MS at 8 percent/MSD at 27 percent and IWTPSBSO0040008FD1 at 6 percent. These samples were re-extracted and the recoveries for these samples were within criteria except for the two listed in the second column in the table below with RE endings. The surrogate recoveries for all other samples were within limits except for the samples with high recoveries listed in the second column.

Samples With 0% Surrogate Recovery (unless otherwise noted)	Samples With High Surrogate Recovery (DCAA upper limit 133%)
IWTPSBSO001006N1	IWTPMWSO001000N1: 145%
IWTPSBSO002000N1	IWTPMWSO001000N1MS: 139%
IWTPSBSO002004N1	IWTPMWSO001007N1: 167%
IWTPSBSO002006N1	IWTPMWSO002007N1: 213%
IWTPSBSO003000N1	IWTPSBSO004008N1RE: 190%
IWTPSBSO003004N1	IWTPSBSO004008FD1RE: 166%
IWTPSBSO003006N1	
IWTPSBSO004000N1	
PSBSO004000N1MS (8%)	
PSBSO004000N1MSD (27%)	
IWTPSBSO004004N1	
IWTPSBSO004008N1	
IWTPSBSO004008FD1 (6%)	

For above samples, all results "non detect", therefore no flags applied

- MS/MSD results for the associated samples (listed in the first column in the table above) showed zero percent recovery. The recoveries for the re-extracted samples were within QC limits, however the re-extractions were performed outside of holding time.
- LCS/LDS results are very low on 6/7/99 and 6/8/99. Per these low recoveries and the associated zero percent spike recovery, all samples analyzed on 6/8/99 associated with

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these standards are rejected "R". The samples listed in the first column in the table above were rejected. These samples were re-extracted outside of holding time.

- The analytical results from the original analyses of the samples listed in the first column in the table above, were flagged "R", rejected. The samples were re-extracted and re-analyzed, with the acceptable recoveries. However, as the samples were re-extracted outside holding times, the re-extracts have been flagged as "J", estimated.
- The surrogate recoveries for (DCAA) in sample IWTPMWWG002000N1 were below the laboratory limits of 49 - 130 in both columns at 38 and 44 percent, respectively. All results for sample IWTPMWWG002000N1 were flagged "J/UJ", as estimated.
- The surrogate recoveries in IWTPMWWG002000N1 MS/MSD samples were below the laboratory limits on only one column at 41 and 46 percent, respectively. No flags were applied.
- The recoveries in samples IWTPMWWG003000N1 and IWTPMWW0002000EB1 were above limits at 142 and 162 percent, respectively. As all results were non-detects, no flags were applied.
- The recoveries for 2, 4, 5 – TP (Silvex) in SDG 38706 were below the laboratory limits of 28 - 157 at 24 and 15 percent, respectively. All Silvex results were flagged "J/UJ", as estimated.

6.9.2 Precision

All MS/MSD and LCS/LCSD RPD values were within acceptable QC limits, except as noted below:

- The RPD for Silvex in the MS/MSD samples in SDG 38706 was above the laboratory limit of 40 at 42 percent. All Silvex results were flagged "J/UJ", as estimated.

Comparison of the field and QC duplicate samples reflected no reportable differences.

6.9.3 Representativeness

The laboratory method blank was reported free of contamination.

All soil samples were extracted within the 14-day holding time; water samples were extracted within the 7-day holding time; and all extracts analyzed within the subsequent 40-day holding time, except for the re-extracted samples listed below:

IWTPSBSO001006N1RE; IWTPSBSO002000N1RE; IWTPSBSO002004N1RE; IWTPSBSO002006N1RE; IWTPSBSO003000N1RE; IWTPSBSO003004N1RE; IWTPSBSO003006N1RE; IWTPSBSO004000N1RE; IWTPSBSO004000N1MSRE; IWTPSBSO004000N1MSDRE; IWTPSBSO004004N1RE; IWTPSBSO004008N1RE; IWTPSBSO004008FD1RE.

- The samples were re-extracted and re-analyzed due to low recoveries. Since the samples were re-extracted outside holding times, the re-extracts have been flagged as "J", estimated.

No dilutions were required in the analyses of these samples.

6.9.4 Comparability

QA samples were collected and the results provided to the USACE. The USACE will provide a supplemental review and comparison of the field and QA results where applicable.

6.10 Herbicides Data Qualification Summary

SDG	Sample	Analyte	Reason	Flag	A/P
38676	IWTPSBSO001006N1RE	All	Holding time	J/UJ	P
	IWTPSBSO002000N1RE				
	IWTPSBSO002004N1RE				
	IWTPSBSO002006N1RE				
	IWTPSBSO003000N1RE				
	IWTPSBSO003004N1RE				
	IWTPSBSO003006N1RE				
	IWTPSBSO004000N1RE				
	IWTPSBSO004004N1RE				
	IWTPSBSO004008N1RE				

SDG	Sample	Analyte	Reason	Flag	A/P
	IWTPSBSO004008FD1RE				
	IWTPSBSO001006N1	All	Low MS/MSD, LCS/LCSD, & low surrogate recovery	R	A
	IWTPSBSO002000N1				
	IWTPSBSO002004N1				
	IWTPSBSO002006N1				
	IWTPSBSO003000N1				
	IWTPSBSO003004N1				
	IWTPSBSO003006N1				
	IWTPSBSO004000N1				
	IWTPSBSO004004N1				
	IWTPSBSO004008N1				
	IWTPSBSO004008FD1				
	IWTPMWSO001000N1	All	High surrogates	J detects	A
	IWTPMWSO001007N1				
	IWTPMWSO002007N1				
	IWTPSBSO004008N1RE				
	IWTPSBSO004008FD1RE				
38706	IWTPMWWG002000N1	ALL	Low Surrogate	J/UJ	P
	All	2,4,5 TP (silvex)	Low matrix spike recovery, high RPD	J/UJ	P

6.11 Gasoline Range Organics (GRO)

Soil and groundwater samples were collected and analyzed for gasoline range organics (GRO) using SW-846 method 8015. The total number of samples analyzed during this sampling event, are outlined in Section 4.0 of this report.

All initial and continuing calibration criteria were met.

6.11.1 Accuracy

All surrogate recoveries were within acceptable QC limits, except as noted below:

- The surrogate recoveries were outside laboratory control limits of 49 - 133 at 12 percent, for sample IWTPMWWG002000N1. This sample was re-analyzed and the recoveries were within limits, however, it was outside holding time. The results from the first analysis were rejected and the results from the second re-analysis were used, but flagged as "J", due to the holding time exceedance.

All MS, MSD, and LCS recoveries were within acceptable QC limits.

6.11.2 Precision

All MS/MSD and LCS/LCSD RPD values were within acceptable QC limits.

- Field duplicates IWTPSBSO0004008N1/IWTPSBSO0004008FD1 results show large RPD (190 percent); this is possibly due to non-homogeneity in the soil matrix. The results for these two samples have been flagged as "J", estimated.

6.11.3 Representativeness

The laboratory method blank and equipment blank samples were reported free of contamination, except as noted below:

- The equipment blank in SDG 38676 reported GRO at 30 µg/L. Therefore, all results below 150 µg/Kg were flagged as "U", not detected.
- The equipment blank in SDG 38706 reported GRO at 100 µg/L. Therefore, all results below 500 µg/Kg were flagged as "U", not detected

All samples were analyzed within 14 days from collection, except as noted below:

- The reanalysis for sample IWTPMWWG002000N1 and the dilution for sample IWTPMWWG003000N1 (1:20), were performed outside holding time. Therefore, the data is flagged "J/UJ", as estimated.

6.11.4 Comparability

QA samples were collected and the results provided to the USACE. The USACE will provide a supplemental review and comparison of the field and QA results where applicable.

6.12 Gasoline Range Organics (GRO) Data Qualification Summary

SDG	Sample	Analyte	Reason	Flag	A/P
38676B	All samples in this SDG	GRO	Equipment blank contamination	U for detects <150 µg/kg	A
	IWTPSBSO0004008N1 / IWTPSBSO0004008FD1	GRO	Field duplicate RPD	J detects	A
38706	IWTPMWWG002000N1RE	GRO	Holding time	J/UJ	A
	IWTPMWWG003000N1DL	GRO	Holding time	J/UJ	A
	All	GRO	Equipment Blank contamination	Detects <500 µg/L flag U	A
	IWTPMWWG002000N1	GRO	Surrogate recovery	R	A
	IWTPMWWG003000N1	GRO	Sample result outside calibration range	R	P
	IWTPMWWG003000N1DL	GRO	Holding time	J	P

6.13 Diesel Range Organics (DRO)

Soil and groundwater samples were collected and analyzed for diesel range organics (DRO) using SW-846 method 8015. The total number of samples analyzed during this sampling event, are outlined in Section 4.0 of this report.

All initial and continuing calibration criteria were met.

6.13.1 Accuracy

All surrogate recoveries were within acceptable QC limits.

All MS, MSD, and LCS recoveries were within acceptable QC limits.

6.13.2 Precision

All MS/MSD and LCS/LCSD RPD values were within acceptable QC limits, except as noted below:

- Three sets of MS/MSD samples were analyzed with two sets showing acceptable RPD. The RPD for IWTPSBSO004000N1 was 40 percent. No flags were applied.

- Field duplicate RPD is 124 percent for IWTPSBSO004008N1/FD1. Therefore the results for these two samples have been flagged as "J", estimated.

6.13.3 Representativeness

The laboratory method blank and equipment blank samples were reported free of contamination.

All water samples were extracted within the 14-day holding time and analyzed within the subsequent 40-day holding time.

No dilutions were required in the analyses of these samples.

6.13.4 Comparability

QA samples were collected and the results provided to the USACE. The USACE will provide a supplemental review and comparison of the field and QA results where applicable.

6.14 Diesel Range Organics (DRO) Data Qualification Summary

SDG	Sample	Analyte	Reason	Flag	A/P
38676B	IWTPSBS0004008N1 / IWTPSBS0004008FD1	Diesel range hydrocarbons	Field duplicate RPD	J	A

6.15 Total Extractable Petroleum Hydrocarbons (TEPH)

Soil and groundwater samples were collected and analyzed for total extractable petroleum hydrocarbons (TEPH) using method TNRCC 1005M. The total number of samples analyzed during this sampling event is outlined in Section 4.0 of this report.

All initial and continuing calibration criteria were met.

6.15.1 Accuracy

All MS, MSD, and LCS recoveries were within acceptable QC limits, except as noted below:

- All MS, MSD, LCS, and LCSD recoveries were outside acceptable QC limits for the initial analyses in SDG 38706 as noted below. The samples were re-extracted, and all recoveries were within acceptable QC limits. Therefore, the data is flagged "J", as estimated, due to the missed holding times.
- IWTPMWWG002000N1MS and IWTPMWWG002000N1MSD recoveries of C10 - C28 at 337 and 203 percent, respectively, were above QC limits of 30 - 150 percent.

6.15.2 Precision

All MS/MSD and LCS/LCSD RPD values were within acceptable QC limits.

- Field duplicates IWTPSBSO004008N1/FD1 showed RPDs for the various carbon ranges of 21.1 percent, 70.1 percent and 56.5 percent. Therefore the results for these two samples have been flagged as "J", estimated.
- The RPD of C10 - C28 in the IWTPMWWG002000N1MS and IWTPMWWG002000N1MSD samples was above laboratory limits of 32 at 50 percent.

6.15.3 Representativeness

The laboratory method blank was reported free of contamination.

All samples were analyzed within the 14-day holding time, except as noted below:

- The re-extractions of all samples in SDG 38706 were performed outside holding time. Therefore, the data is flagged "J", as estimated.

No dilutions were required in the analyses of these samples.

6.15.4 Comparability

QA samples were collected and the results provided to the USACE. The USACE will provide a supplemental review and comparison of the field and QA results where applicable.

6.16 Total Extractable Petroleum Hydrocarbons (TEPH) Data Qualification Summary

SDG	Sample	Analyte	Reason	Flag	A/P
38676	IWTPSBSO004008N1 / IWTPSBSO004008N1FD1	TEPH	Field duplicate	J	A
38706	All re-extracts	TEPH	Holding time	J/UJ	P
	All original analyses	TEPH	LCS recovery	R	A
	All original analyses	TEPH	MS recovery	R	A

6.17 Metals

Soil and groundwater samples were collected and analyzed for the RCRA metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver), following SW-846 methods 6010B/7000 series. The total number of samples analyzed during this sampling event are outlined in Section 4.0 of this report.

All calibration criteria were met, except as noted below:

- Initial calibration verification (ICV) was performed immediately after the initial calibration, as required. All percent recoveries (%R) were within the QC limits of ±10 percent for all metals and ±20 percent for mercury, with the exception of As for ICV1 = 52.8 percent recovery. As all other As ICV and CCV recoveries were in the 80 - 90 percentile range, this may have been a reporting error.
- Continuing calibration verification was performed at a frequency of 10 percent, as required. All percent recoveries (%R) were within the QC limits of ±10 percent for metals and ±20 percent for mercury, with the following exceptions: As CCV2 = 86.4 percent, CCV3 = 89.6 percent, CCV4 = 89.6 percent, Se CCV7 = 83.6 percent, CCV11 = 87.6 percent.

Inductively coupled plasma serial dilutions were carried out at the frequency of one per batch. All criteria were met.

6.17.1 Accuracy

All MS, MSD, and LCS and recoveries were within acceptable QC limits, except as noted below:

- The recoveries out of criteria in the first LCS/LCSD set in SDG 38676 are as follows: As = 48.0/ 50.1, Pb = 173.7/173.7 and Se = 59.0/53.5 percent recovery.
- Predigestion MS recoveries out of criteria are for sample IWTPSBSO004000N1 are as follows: Pb = 74.3/67.9, Hg = 43.1/ 34.3 and Se = 35.1/ 0.0 percent recovery.
- Predigestion MS recoveries out of criteria are for sample IWTPSBSO004004N1 are as follows: As = 25.4/63.5, Cd = 76.3/73.9, Pb = 281.6/270.7 and Se = 0.0/41.0 percent recoveries.
- Post-digestion spike recoveries in SDG 38676 were out of criteria for selenium and arsenic.
- Based upon spike recoveries, the following flags were applied to samples in SDG 38676: All detected results for cadmium, lead, and mercury were flagged "J", as estimated and all non-detected results were flagged "UJ", as estimated. All detected results for Arsenic and selenium were flagged "J", as estimated and all non-detected results were flagged "R", rejected.
- Low predigest spike recoveries in SDG 38706 were noted for As (18.5, 17.5 percent) and selenium (125 percent, 0 percent). GFAA post-digest recoveries were also low for As and Se. All As and Se detected results were flagged "J", as estimated, and all non-detected results were flagged "R", rejected.
- Low predigest spike recoveries in SDG 38706 were noted for Pb at 63.5 and 64 percent. and selenium (125 percent, 0 percent). GFAA post-digest recoveries were also low for Pb. Therefore, all Pb detected results were flagged "J", and all non-detected results were flagged "UJ", as estimated.
- High pre-digest spike recoveries in SDG 38706 were noted for Hg at 143 and 136 percent. All detected results were flagged "J", as estimated. No flags were applied to non-detected results.

6.17.2 Precision

All MS/MSD and LCS/LCSD RPD values were within acceptable QC limits, except as noted below:

- For the laboratory duplicate sample analysis, the As RPD was 33.1 percent in sample IWTPSBSO004004N1. A control limit of 35 percent RPD in soil samples was used therefore no flags were applied.

Comparison of the field and QC duplicate samples reflected no reportable differences.

6.17.3 Representativeness

The initial calibration blank, continuing calibration blank, and laboratory method blank samples were reported free of contamination, except as noted below:

- One initial calibration blank in SDG 38676 reported a detect for cadmium at 0.4 µg/L, therefore all cadmium detected results less than 0.2 mg/kg were flagged as "U", not detected.
- The equipment blank in SDG 38676 reported detects for barium at 2.6 µg/L and chromium at 0.73 µg/L. Therefore all detected results for barium less than 1.3 mg/kg and all detected results for chromium below 0.37 mg/kg were flagged as "U", not detected.
- One initial calibration blank sample in SDG 38706 reported a negative As value at -2.0 µg/L, and one continuing calibration blank reported negative As values of -2.0 and -2.3 µg/L. No flags were applied.

All samples were analyzed within the required 180-day holding time, except for the analysis of mercury, which was performed within 28 days of sample collection.

No dilutions were required in the analysis of these samples.

6.17.4 Comparability

QA samples were collected and the results provided to the USACE. The USACE will provide a supplemental review and comparison of the field and QA results where applicable.

6.18 Metals Data Qualification Summary

SDG	Sample	Analyte	Reason	Flag	A/P
38676	All	Ba	Blank contamination (ICB 2.6 ug/L)	U detects <1.3 mg/kg	A
	All	Cd	Blank contamination (ICB 0.4 ug/L)	U detects <0.2 mg/kg	A
	All	Cr	Blank contamination (EB 0.73 ug/L)	U detects <0.37 mg/kg	A
	All	As, Se	Low spike recovery	R non-detects	A
	All	Cd, Pb	Low spike recovery	UJ non-detects	A
	All	As, Cd, Pb, Hg, Se	Matrix spike recovery	J detects	A
38706	All	As, Se	Predigest and postdigest spike recovery	J detects, R non-detects	A
	All	Pb	Predigest and postdigest spike recovery	J/UJ	A
	All	Hg	Predigest spike recovery	J detects	A
	All	All	changed detected concentrations below the RL from "B" to "J"	J	P

6.19 Technical Summary

A complete review of the laboratory data collected during the investigation of the Laredo AFB SI sampling event was performed. Upon completion, the following items were noted:

The chain-of-custody and field data forms were completed and contained the required information without any noted exceptions.

6.20 Completeness

All of the data have been qualified according to the findings in the sections listed above. In addition, the laboratory qualified detected concentrations below the RL with "B" qualifiers. During data validation, the "B" qualifiers received from the laboratory were changed to "J" qualifiers. While some of the data validated for this sampling event were rejected (where no valid result for parameter remains) and additional results were qualified as estimated (J/UJ), the goal of 90 percent completeness has been met.

6.21 Conclusions

A review of the analytical data submitted regarding the May/June 1999 SI of the former Laredo AFB IWTP by CH2M HILL has been completed. An overall evaluation of the data indicates that the sample handling, shipment, and analytical procedures have been adequately completed, and that the analytical results should be considered accurate, except in those cases where they have been qualified as discussed in the previous sections.

6.22 Rejected Data

Listed in the table below are the samples and associated parameter results that were rejected. Only data for which there is no acceptable result is included.

Sample	Parameter	Reason for Rejection
Semivolatile - 38706		
IWTPMWWG001000N1	All Acid Compounds	Low Acid Surrogates
IWTPMWWG001000FD1		
IWTPMWWG002000N1		
IWTPMWWG003000N1		
Metals - 38676		
All field samples in SDG 38676, except IWTPMWSO003012N1	Selenium	Low Spike Recoveries
Metals - 38706		
IWTPMWWG001000N1	Arsenic and Selenium	Low Spike Recoveries
IWTPMWWG001000FD1		
IWTPMWWG002000N1		
IWTPMWWG003000N1		

7. Quality Assurance Summary Table

Quality Control/Quality Assurance
Results Outside of Quality Control Limits
Laredo Air Force Base Industrial Waste Treatment Plant (IWTP)
Soil and Groundwater Samples

Analysis/ Batch	Associated Samples	MS/MSD Recoveries/RPD/ Sample Duplicate RPD	LCS or LCS/LCSD Recoveries/RPD	Surrogate Recoveries/ Internal Standards/ Method Blanks	Holding Time/ Calibrations/ Sample Condition
VOC SDG 38676	IWTPMWSO001000N1, IWTPSBSO002004N1 IWTPMWSO001005N1, IWTPSBSO002006N1 IWTPMWSO001007N1, IWTPSBSO003000N1 IWTPMWSO002000N1, IWTPSBSO003004N1 IWTPMWSO002004N1, IWTPSBSO003006N1 IWTPMWSO002007N1, IWTPSBSO004000N1 IWTPMWSO003000N1, IWTPSBSO004000N1MS IWTPMWSO003006N1, IWTPSBSO004000N1MSD IWTPMWSO003012N1, IWTPSBSO004004N1 IWTPSBSO001000N1, IWTPSBSO004008N1 IWTPSBSO001000FD1, IWTPSBSO004008FD1 IWTPSBSO001004N1, IWTPSBWQ004000EB1 IWTPSBSO001006N1, IWTPNQWQ001000TB1 IWTPSBSO002000N1	MS/MSD Recoveries/RPD: MS - 3 of 34 out MSD - 9 of 34 out Sample Duplicate: OK	LCS/LCSD: LCSD1-CM=146%R LCS/LCSD4-BM RPD 53 LCS/LCSD4-ClEth RPD 52 LCS 5-BDCM 129%R LCS 5-TOL 127%R LCS 5-DBCM 128%R LCS 5-BRFORM 137%R LCSD5-BDCM 118%R	Surrogate Recoveries: BFB high in 3, 19, 24RE, 25, 25RE BFB low in 11,24 DCA high in 11RE, 19, 24 DCA low in 19RE Tol low in 11 Internal Standards: IS #4 low in 1, 11 IS #1, 2, 3, 4 low in 1RE All low in 24 IS #3, 4 low in 24RE Method Blank: CH2CL2 = 9 µg/kg	Samples received in good condition. Holding Times: OK Calibrations: IC Acetone-0.0397, IC 2-butanone-0.0464 Bromometh-0.754 CC Acetone-0.046
VOC SDG 38706	IWTPMWWG001000N1 IWTPMWWG001000FD1 IWTPMWWG002000N1MS IWTPMWWG002000N1MSD IWTPMWWG002000N1 IWTPMWWG003000N1 IWTPMWWG003000N1DL IWTPMWWQ002000EB1 IWTPMWWQ002000TB1	MS/MSD Recoveries/RPD: MS - 4 of 34 out MSD - 5 of 34 out Sample Duplicate: All not detected - OK	LCS/LCSD: CCL4 in LCS2= 131% (limits = 61 - 129). 2-Butanone in LSC2 = 164% (limits = 44 - 152) m,p-Xylenes in LCS2 = 71% (limits = 72 - 126) Acetone in LCSD3 = 174 % CH2CL2 in LCSD3 = 172% CCL4 in LCSD3 = 130 %	Surrogate Recoveries: (DCA) in IWTPMWWG002000N1 = 49 (limits = 86 - 118). DCA in IWTPMWWG002000N1MSD = 127%. BFB in IWTPMWWG002000N1MS = 82. DCA in IWTPMWWG003000N1 = 130% Internal Standards: IS #2,4 low in MS Method Blank: TB / EB - CH2CL2 = 1 µg/L	Samples received in good condition. Holding Times: OK Calibrations: IC Acetone-0.0397, IC 2-butanone-0.0464 Bromometh-0.754 CC Acetone-0.031, IC 2-butanone-0.043

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Quality Control/Quality Assurance
Results Outside of Quality Control Limits
Laredo Air Force Base Industrial Waste Treatment Plant (IWTP)
Soil and Groundwater Samples

Analysis/ Batch	Associated Samples	MS/MSD Recoveries/RPD/ Sample Duplicate RPD	LCS or LCS/LCSD Recoveries/RPD	Surrogate Recoveries/ Internal Standards/ Method Blanks	Holding Time/ Calibrations/ Sample Condition
SVOC SDG 38676	IWTPMWSO001000N1, IWTPSBSO002004N1 IWTPMWSO001005N1, IWTPSBSO002006N1 IWTPMWSO001007N1, IWTPSBSO003000N1 IWTPMWSO002000N1, IWTPSBSO003004N1 IWTPMWSO002004N1, IWTPSBSO003006N1 IWTPMWSO002007N1, IWTPSBSO004000N1 IWTPMWSO003000N1, IWTPSBSO004000N1MS IWTPMWSO003006N1, IWTPSBSO004000N1MSD IWTPMWSO003012N1, IWTPSBSO004004N1 IWTPSBSO001000N1, IWTPSBSO004008N1 IWTPSBSO001000FD1, IWTPSBSO004008FD1 IWTPSBSO001004N1, IWTPSBWQ004000EB1 IWTPSBSO001006N1, IWTPSBSO002000N1	MS/MSD Recoveries/RPD: #25 MS/MSD - 4-cl-3-methphnl=133/125 21/22-7/11 RPD out high Sample Duplicate: OK	LCS/LSCD: LCS4-Pyr=100 LCS2 - 6/11 RPD out high LCS4 - n-nitro-di-n-prop - 17% high	Surrogate Recoveries: 23 - S1(bn), S5(a), S(a) all low 6 - 6/8 out low 14 - S1(bn), S4(a), S5(a), S7(a), S8(bn) - all out low Internal Standards: IS#6 low in 1, 1RE, 14, 157RE, 18, 20 IS#2,3,4,5,6 low in 15RE IS#5,6 low in 7, IS#5 low in18RE Method Blank: SBLK1 - BEHP=0,9 Equipment Blank: BEHP=1.0 µg/L	Samples received in good condition. Holding Times: original OK, 6 and 21ms re-extracts out Calibrations: Several CC out - see text
SVOC SDG 38706	IWTPMWWG001000N1 IWTPMWWG001000FD1 IWTPMWWG002000N1MS IWTPMWWG002000N1MSD IWTPMWWG002000N1 IWTPMWWG003000N1 IWTPMWWQ002000EB1 IWTPMWWG001000N1RE IWTPMWWG001000FD1RE IWTPMWWG002000N1RE IWTPMWWG003000N1RE IWTPMWWQ002000EB1RE	MS/MSD Recoveries/RPD: All acids out low in both original and re-extracts 3 acid RPD out Sample Duplicate: OK	LCS/LSCD: OK	Surrogate Recoveries: All acids out low in both original and re-extracts Internal Standards: all criteria met Method Blank: original -OK, re-ext - BEHP=2 Equipment Blank: BEHP=10, 1,2-DCB=1, 1,4-DCB=0.7, Diethylphth.=0.9	Samples received in good condition. Holding Times: original OK, all re-extracts out Calibrations: OK

Quality Control/Quality Assurance
Results Outside of Quality Control Limits
Laredo Air Force Base Industrial Waste Treatment Plant (IWTP)
Soil and Groundwater Samples

Analysis/ Batch	Associated Samples	MS/MSD Recoveries/RPD/ Sample Duplicate RPD	LCS or LCS/LCSD Recoveries/RPD	Surrogate Recoveries/ Internal Standards/ Method Blanks	Holding Time/ Calibrations/ Sample Condition
Pesticide SDG 38676	IWTPMWSO001000N1, IWTPSBSO002004N1 IWTPMWSO001005N1, IWTPSBSO002006N1 IWTPMWSO001007N1, IWTPSBSO003000N1 IWTPMWSO002000N1, IWTPSBSO003004N1 IWTPMWSO002004N1, IWTPSBSO003006N1 IWTPMWSO002007N1, IWTPSBSO004000N1 IWTPMWSO003000N1, IWTPSBSO004000N1MS IWTPMWSO003006N1, IWTPSBSO004000N1MSD IWTPMWSO003012N1, IWTPSBSO004004N1 IWTPSBSO001000N1, IWTPSBSO004008N1 IWTPSBSO001000FD1, IWTPSBSO004008FD1 IWTPSBSO001004N1, IWTPSBWQ004000EB1 IWTPSBSO001006N1, IWTPSBSO002000N1	MS/MSD Recoveries/RPD: soil MS/MSD - 32/80 recoveries out, 1 RPD out Sample Duplicate: OK	LCS/LSCD: 45 of 120 high (97-143)	Surrogate Recoveries: 15-TCX1=99%, 18-DCB1=34% 1-TCX1=225%, DCB1=150% 3-TCX1=284%, 4-TCX1=118% 5-TCX1=204%, 8-TCX1=121% 9-TCX1=455%, 12-TCX1=120% Internal Standards: NA Method Blank: all not detected -OK	Samples received in good condition. Holding Times: OK Calibrations: OK Degradation: DDT and Endrin out - flag all results J/UJ
Pesticide SDG 38706	IWTPMWWG001000N1 IWTPMWWG001000FD1 IWTPMWWG002000N1MS IWTPMWWG002000N1MSD IWTPMWWG002000N1 IWTPMWWG003000N1 IWTPMWWQ002000EB1	MS/MSD Recoveries/RPD: OK Sample Duplicate: OK	LCS/LSCD: alpha-BHC=103 (limit 27-102)	Surrogate Recoveries: TCMX IWTPMWWG001000FD1 = 223/82 (limits 26-104) TCMX IN MS=163/119 TCMX IN IWTPMWWG003000N1 108/131 Internal Standards: NA Method Blank: all not detected -OK	Samples received in good condition. Holding Times: OK Calibrations: OK Degradation: OK
PCB SDG 38676	IWTPMWSO001000N1, IWTPSBSO002004N1 IWTPMWSO001005N1, IWTPSBSO002006N1 IWTPMWSO001007N1, IWTPSBSO003000N1 IWTPMWSO002000N1, IWTPSBSO003004N1 IWTPMWSO002004N1, IWTPSBSO003006N1 IWTPMWSO002007N1, IWTPSBSO004000N1 IWTPMWSO003000N1, IWTPSBSO004000N1MS IWTPMWSO003006N1, IWTPSBSO004000N1MSD IWTPMWSO003012N1, IWTPSBSO004004N1 IWTPSBSO001000N1, IWTPSBSO004008N1 IWTPSBSO001000FD1, IWTPSBSO004008FD1 IWTPSBSO001004N1, IWTPSBWQ004000EB1 IWTPSBSO001006N1, IWTPSBSO002000N1	MS/MSD Recoveries/RPD: OK Sample Duplicate: OK	LCS/LSCD: OK	Surrogate Recoveries: 1-DCB1 = 160% DCB 2 = 153% 2-DCB1 = 187% 3-DCB1 = 141% DCB 2 = 179% 4-DCB2 = 132% 5-DCB2 = 159% 8-DCB1 = 146% 9-DCB1 = 126% DCB2 = 155% 10-DCB2 = 126% 14-DCB2 = 127% 15-DCB1 = 126% 18-DCB1 = 138% Method Blank: OK no targets detected	Samples received in good condition. Holding Times: OK Calibrations: OK

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Quality Control/Quality Assurance
Results Outside of Quality Control Limits
Laredo Air Force Base Industrial Waste Treatment Plant (IWTP)
Soil and Groundwater Samples

Analysis/ Batch	Associated Samples	MS/MSD Recoveries/RPD/ Sample Duplicate RPD	LCS or LCS/LCSD Recoveries/RPD	Surrogate Recoveries/ Internal Standards/ Method Blanks	Holding Time/ Calibrations/ Sample Condition
PCB SDG 38706	IWTPMWWG001000N1 IWTPMWWG001000FD1 IWTPMWWG002000N1MS IWTPMWWG002000N1MSD IWTPMWWG002000N1 IWTPMWWG003000N1 IWTPMWWQ002000EB1	MS/MSD Recoveries/RPD: Silvex 24/15 (limits 28-157) RPD=42 (limit 40) Sample Duplicate: All not detected - OK	LCS/LCSD: OK	Surrogate Recoveries: IWTPMWWG002000N1 38/44 (limit 49-130) MS = 41/63, MSD=46/69 IWTPMWWG003000N1=93/142 IWTPMWWQ002000EB1=98/162 Method Blank: OK no targets detected	Samples received in good condition. Holding Times: OK Calibrations: OK
Herbicides SDG 38676	IWTPMWSO001000N1, IWTPSBSO002004N1 IWTPMWSO001005N1, IWTPSBSO002006N1 IWTPMWSO001007N1, IWTPSBSO003000N1 IWTPMWSO002000N1, IWTPSBSO003004N1 IWTPMWSO002004N1, IWTPSBSO003006N1 IWTPMWSO002007N1, IWTPSBSO004000N1 IWTPMWSO003000N1, IWTPSBSO004000N1MS IWTPMWSO003006N1, IWTPSBSO004000N1MSD IWTPMWSO003012N1, IWTPSBSO004004N1 IWTPSBSO001000N1, IWTPSBSO004008N1 IWTPSBSO001000FD1, IWTPSBSO004008FD1 IWTPSBSO001004N1, IWTPSBWQ004000EB1 IWTPSBSO001006N1, IWTPSBSO002000N1	MS/MSD Recoveries/RPD: All out in original extraction, OK in re-extracts Sample Duplicate: All not detected - OK	LCS/LCSD: All out in original extraction, OK in re-extracts	Surrogate Recoveries: DCAA recoveries 0% in samples 13-25, except 21(8%), 22 (27%), 25(6%) DCAA high in 1, 1MS, 3, 6, 24RE, 25RE Method Blank: OK no targets detected	Samples received in good condition. Holding Times: original OK, all re-extracts out Calibrations: OK
Herbicides SDG 38706	IWTPMWWG001000N1 IWTPMWWG001000FD1 IWTPMWWG002000N1MS IWTPMWWG002000N1MSD IWTPMWWG002000N1 IWTPMWWG003000N1 IWTPMWWQ002000EB1	MS/MSD Recoveries/RPD: All OK Sample Duplicate: All not detected - OK	LCS/LCSD: OK	Surrogate Recoveries: OK Method Blank: OK no targets detected	Samples received in good condition. Holding Times: OK Calibrations: OK

Quality Control/Quality Assurance
Results Outside of Quality Control Limits
Laredo Air Force Base Industrial Waste Treatment Plant (IWTP)
Soil and Groundwater Samples

Analysis/ Batch	Associated Samples	MS/MSD Recoveries/RPD/ Sample Duplicate RPD	LCS or LCS/LCSD Recoveries/RPD	Surrogate Recoveries/ Internal Standards/ Method Blanks	Holding Time/ Calibrations/ Sample Condition
GRO SDG 38676	IWTPMWSO001000N1, IWTPSBSO002004N1 IWTPMWSO001005N1, IWTPSBSO002006N1 IWTPMWSO001007N1, IWTPSBSO003000N1 IWTPMWSO002000N1, IWTPSBSO003004N1 IWTPMWSO002004N1, IWTPSBSO003006N1 IWTPMWSO002007N1, IWTPSBSO004000N1 IWTPMWSO003000N1, IWTPSBSO004000N1MS IWTPMWSO003006N1, IWTPSBSO004000N1MSD IWTPMWSO003012N1, IWTPSBSO004004N1 IWTPSBSO001000N1, IWTPSBSO004008N1 IWTPSBSO001000FD1, IWTPSBSO004008FD1 IWTPSBSO001004N1, IWTPSBWQ004000EB1 IWTPSBSO001006N1, IWTPSBSO002000N1	MS/MSD Recoveries/RPD: All OK Sample Duplicate: 24/25 RPD=190	LCS/LCSD: OK	Surrogate Recoveries: OK Method Blank: OK - no targets detected Equipment Blank: GRO = 30 ug/L	Samples received in good condition. Holding Times: OK Calibrations: OK
GRO SDG 38706	IWTPMWWG001000N1 IWTPMWWG001000FD1 IWTPMWWG002000N1MS IWTPMWWG002000N1MSD IWTPMWWG002000N1 IWTPMWWG002000N1RE IWTPMWWG003000N1 IWTPMWWG003000N1DL IWTPMWWQ002000EB1	MS/MSD Recoveries/RPD: All OK Sample Duplicate: All not detected - OK	LCS/LCSD: OK	Surrogate Recoveries: IWTPMWWG002000N1 - 12% (limit 49-133) Re-extraction - OK Method Blank: OK - no targets detected Equipment Blank: GRO = 100 ug/L	Samples received in good condition. Holding Times: original OK, RE and DL out Calibrations: OK
DRO SDG 38676	IWTPMWSO001000N1, IWTPSBSO002004N1 IWTPMWSO001005N1, IWTPSBSO002006N1 IWTPMWSO001007N1, IWTPSBSO003000N1 IWTPMWSO002000N1, IWTPSBSO003004N1 IWTPMWSO002004N1, IWTPSBSO003006N1 IWTPMWSO002007N1, IWTPSBSO004000N1 IWTPMWSO003000N1, IWTPSBSO004000N1MS IWTPMWSO003006N1, IWTPSBSO004000N1MSD IWTPMWSO003012N1, IWTPSBSO004004N1 IWTPSBSO001000N1, IWTPSBSO004008N1 IWTPSBSO001000FD1, IWTPSBSO004008FD1 IWTPSBSO001004N1, IWTPSBWQ004000EB1 IWTPSBSO001006N1, IWTPSBSO002000N1	MS/MSD Recoveries/RPD: All recoveries OK, 3 sets, 2 RPD OK and 1 RPD at 40% Sample Duplicate: 24/25 RPD = 124%	LCS/LCSD: OK	Surrogate Recoveries: OK Method Blank: OK - no targets detected Equipment Blank: OK - no targets detected	Samples received in good condition. Holding Times: OK Calibrations: OK

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Quality Control/Quality Assurance
Results Outside of Quality Control Limits
Laredo Air Force Base Industrial Waste Treatment Plant (IWTP)
Soil and Groundwater Samples

Analysis/ Batch	Associated Samples	MS/MSD Recoveries/RPD/ Sample Duplicate RPD	LCS or LCS/LCSD Recoveries/RPD	Surrogate Recoveries/ Internal Standards/ Method Blanks	Holding Time/ Calibrations/ Sample Condition
DRO SDG 38706	IWTPMWWG001000N1 IWTPMWWG001000FD1 IWTPMWWG002000N1MS IWTPMWWG002000N1MSD IWTPMWWG002000N1 IWTPMWWG003000N1 IWTPMWWQ002000EB1	MS/MSD Recoveries/RPD: All OK Sample Duplicate: All not detected - OK	LCS/LCSD: OK	Surrogate Recoveries: OK Method Blank: OK - no targets detected Equipment Blank: OK - no targets detected	Samples received in good condition. Holding Times: OK Calibrations: OK
TEPH SDG 38676	IWTPMWSO001000N1, IWTPSBSO002004N1 IWTPMWSO001005N1, IWTPSBSO002006N1 IWTPMWSO001007N1, IWTPSBSO003000N1 IWTPMWSO002000N1, IWTPSBSO003004N1 IWTPMWSO002004N1, IWTPSBSO003006N1 IWTPMWSO002007N1, IWTPSBSO004000N1 IWTPMWSO003000N1, IWTPSBSO004000N1MS IWTPMWSO003006N1, IWTPSBSO004000N1MSD IWTPMWSO003012N1, IWTPSBSO004004N1 IWTPSBSO001000N1, IWTPSBSO004008N1 IWTPSBSO001000FD1, IWTPSBSO004008FD1 IWTPSBSO001004N1, IWTPSBWQ004000EB1 IWTPSBSO001006N1, IWTPSBSO002000N1	MS/MSD Recoveries/RPD: OK Sample Duplicate: 24/25 RPDs out C6-10 RPD = 21.1 C10-28 RPD = 70.1 C6-28 RPD = 56.5	LCS/LCSD: OK	Surrogate Recoveries: NA Method Blank: OK - no targets detected Equipment Blank: OK - no targets detected	Samples received in good condition. Holding Times: original OK, 26(EB) re-extract out-(not used) Calibrations: OK
TEPH SDG 38706	IWTPMWWG001000N1 IWTPMWWG001000FD1 IWTPMWWG002000N1MS IWTPMWWG002000N1MSD IWTPMWWG002000N1 IWTPMWWG003000N1 IWTPMWWQ002000EB1 IWTPMWWG001000N1RE IWTPMWWG001000FD1RE IWTPMWWG002000N1MSRE IWTPMWWG002000N1MSDRE IWTPMWWG002000N1RE IWTPMWWG003000N1RE IWTPMWWQ002000EB1RE	MS/MSD Recoveries/RPD: All out of criteria-high, re-extracted Sample Duplicate: All not detected - OK	LCS/LCSD: All out of criteria-high, re-extracted	Surrogate Recoveries: NA Method Blank: OK - no targets detected Equipment Blank: OK - no targets detected	Samples received in good condition. Holding Times: original OK, all re-extracts out Calibrations: OK

Quality Control/Quality Assurance
Results Outside of Quality Control Limits
Laredo Air Force Base Industrial Waste Treatment Plant (IWTP)
Soil and Groundwater Samples

Analysis/ Batch	Associated Samples	MS/MSD Recoveries/RPD/ Sample Duplicate RPD	LCS or LCS/LCSD Recoveries/RPD	Surrogate Recoveries/ Internal Standards/ Method Blanks	Holding Time/ Calibrations/ Sample Condition
Metals SDG 38676	IWTPMWSO001000N1, IWTPSBSO002004N1 IWTPMWSO001005N1, IWTPSBSO002006N1 IWTPMWSO001007N1, IWTPSBSO003000N1 IWTPMWSO002000N1, IWTPSBSO003004N1 IWTPMWSO002004N1, IWTPSBSO003006N1 IWTPMWSO002007N1, IWTPSBSO004000N1 IWTPMWSO003000N1, IWTPSBSO004000N1MS IWTPMWSO003006N1, IWTPSBSO004000N1MSD IWTPMWSO003012N1, IWTPSBSO004004N1 IWTPSBSO001000N1, IWTPSBSO004008N1 IWTPSBSO001000FD1, IWTPSBSO004008FD1 IWTPSBSO001004N1, IWTPSBWQ004000EB1 IWTPSBSO001006N1, IWTPSBSO002000N1	MS/MSD Recoveries/RPD: 4000N1 PB=74.3/67.9, Hg=43.1/34.3, Se=35.1/0 4004N1 As=25.4/63.5, Cd=76.3/73.9, PB=281.6/270.7, Se=0/41 Post Spikes: out low for As, Se Sample Duplicate: OK	LCS/LCSD: As=48/50.1, Pb=173.7/173.7, Se=59/53.5	Method Blank: OK, no targets detected ICB-Cd = 0.4 ug/L EB-Ba=1.3mg/kg, Cr=0.73 mg/kg	Samples received in good condition. Holding Times: OK Calibrations: ICV As=52.8(reporting error?) As CCV2=86.4, CCV3=89.6, CCV4=89.6 Se CCV7=83.6, CCV11=87.6
Metals SDG 38706	IWTPMWWG001000N1 IWTPMWWG001000FD1 IWTPMWWG002000N1MS IWTPMWWG002000N1MSD IWTPMWWG002000N1 IWTPMWWG003000N1 IWTPMWWQ002000EB1	MS/MSD Recoveries/RPD: As - 18.5/17.5 Se - 0/125 Pb - 64/63.5 Hg - 136/143 Post Spikes: out low for As, Se, Pb Sample Duplicate: OK	LCS/LCSD: OK	Method Blank: OK, no targets detected ICB-As = -2.0 ug/L CCB = -2.0, -2.3 ug/L	Samples received in good condition. Holding Times: OK Calibrations: OK

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USACE Comparability Document

9 September 2000

Memorandum For Greg Williams, CESWT-EC-EF
Carol Wies, CESWT-EC-EF

SUBJECT: Site Inspection Report, Industrial Waste Treatment Plant Site, Former Laredo Air Force Base; Data Validation Review (April 2000).

1. A review of the CH2MHILL's Data Validation Report for the Industrial Waste Treatment Plant Site located at the Former Laredo Air Force Base, Laredo, Texas has been completed.

2. Between 17–24 May 1999, seven soil borings were drilled. Soil samples were collected from each boring location from 0-2 ft., 4-6 ft., and one at or near groundwater. Soil cores were collected continuously and logged. From these locations approximately twenty-one soil samples were collected in addition to two field duplicate samples and an equipment blank. Three of the soil boring locations were completed as monitoring wells. Two soil samples were collected during 17-24 May for quality assurance requirements.

   Groundwater grab samples were also collected from each of the three monitoring wells. In addition, one field duplicate, one quality assurance duplicate and an equipment blank were collected.

3. All field and field duplicate samples were to be analyzed for volatile organics (SW846 method 8260), semivolatile organics (SW846 method 8270), pesticides (SW846 method 8081), herbicides (SW846 method 8151), polychlorinated biphenyls (SW846 method 8082), total metals (SW846 methods 6010, 7060, 7421, 7471/7470, and 7740), and total petroleum hydrocarbons (SW846 method 8015 modified and TNRCC method 1005). Metal analytes include arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver.

4. The majority of soil and field duplicate samples were shipped to Southwest Laboratory of Oklahoma (SWLO) located in Broken Arrow, Oklahoma. The three quality assurance samples were shipped to Environmental Testing and Consulting Inc (ETC), located in Memphis, Tenessesse.

5. A comparison of the field and field duplicate results has been tabulated and attached. A review of the data indicates that the field and field duplicate results are generally consistent. In general, the primary laboratory's reporting limits are slightly lower than the limits reported by the quality assurance laboratory.

6. A review of the primary laboratory and its data indicate no significant problems regarding matrix spike recoveries, laboratory spike recoveries, and laboratory blank

contamination. CH2MHILL's data review noted low spike recoveries associated with the herbicide analyses and rejected the data. Reanalysis of the samples outside of the holding times was performed and the results were qualified as estimated. A review of the quality assurance data noted some problems with the results reported by ETC. TPH results (TNRCC 1005) were analyzed outside the proper holding times due to analyst error. This data should be considered estimated. Additionally, it was noted that both lead and selenium samples were analyzed by the method of standard additions.

7. A review of the analytical data submittal and data validation report regarding the May 1999 Site Investigation of the Industrial Waste Treatment Plant at the Former Laredo AFB has been completed. An evaluation of the data indicates that the sample handling, shipment, and analytical procedures appear to have been adequately completed and that the analytical results should be considered accurate except in those cases where they have been qualified as estimated within this report.

Christopher Kennedy,
Senior Chemist

Former Laredo Air Force Base
Industrial Waste Treatment Plant (IWTP) Site Investigation

Sample ID	IWTPSBSO004008N1 (Field)	IWTPSBSO004008FD1 (QC Duplicate)	IWTPSBSO004008FD2 (QA Duplicate)
Lab ID	38676.24	38676.25	9905603-02
Sample Date	05/19/1999	05/19/1999	05/19/1999

Parameter	Method	Analyte	Units			
Total Metals	7060A	Arsenic	mg/kg	**3.4 J**	**3.0 J**	**3.52**
	6010B	Barium	mg/kg	**9.5**	**12.6**	**5.09**
	6010B	Cadmium	mg/kg	< 0.04 UJ	< 0.04 UJ	< 2.50
	6010B	Chromium	mg/kg	**6.8**	**5.3**	**6.06**
	7421	Lead	mg/kg	**5.6 J**	**5.5 J**	**6.02**
	7471A	Mercury	mg/kg	< 0.02 UJ	< 0.02 UJ	< 0.02
	7740	Selenium	mg/kg	< 0.37 R	< 0.36 R	< 0.2
	6010B	Silver	mg/kg	< 0.25	< 0.24	< 1.00
Volatile Organics	8260B	tert-butyl benzene	ug/kg	not reported	not reported	**318**
	8260B	acetone	ug/kg	**12 J**	**82 J**	not reported
	8260B	carbon disulfide	ug/kg	< 6.0	**10 J**	not reported
Semivolatile Organics	8270C	anthracene	ug/kg	< 420	< 380	< 67
	8270C	acenaphthene	ug/kg	**76 J**	< 380	< 67
	8270C	dibenzofuran	ug/kg	**150 J**	**120 J**	< 170
	8270C	fluoranthene	ug/kg	< 420	**140 J**	**205**
	8270C	phenanthrene	ug/kg	**73 J**	**47 J**	**100**
	8270C	pyrene	ug/kg	<420	**100 J**	**209**
	8270C	chrysene	ug/kg	**53 J**	< 380	< 67
	8270C	benzo(k) fluoranthene	ug/kg	<420	**27 J**	< 67
Organochlorine Pesticides	8081A	general	ug/kg	non-detect	non-detect	non-detect
Chlorinated Herbicides	8151A	general	ug/kg	non-detect	non-detect	non-detect
Polychlorinated biphenyls	8082A	general	ug/kg	non-detect	non-detect	non-detect
Total Petroleum Hydrocarbon	8015B	Purgeable (GRO)	ug/kg	**190,000 J**	**7,600,000 J**	**306,000 E**
	8015B	Extractable (DRO)	mg/kg	**220 J**	**950 J**	**1,680**
Petroleum Hydrocarbon	TX 1005	C6 to C10	mg/kg	**84**	**68**	**841**
	TX 1005	C10 to C28	mg/kg	**250 J**	**520 J**	**654**
	TX 1005	C6 to C28	mg/kg	**330 J**	**590 J**	**1,500**

Notes

Former Laredo Air Force Base
Industrial Waste Treatment Plant (IWTP) Site Investigation

Sample ID	IWTPSBSO001000N1 (Field)	IWTPSBSO001000FD1 (QC Duplicate)	IWTPSBS0001000FD2 (QA Duplicate)
Lab ID	38676.10	38676.11	9905603-01
Sample Date	05/19/1999	05/19/1999	05/19/1999

Parameter	Method	Analyte	Units			
Total Metals	7060A	Arsenic	mg/kg	**3.3 J**	**3.4 J**	**4.99**
	6010B	Barium	mg/kg	**99.5**	**78.0**	**108**
	6010B	Cadmium	mg/kg	< 0.13 UJ	< 0.17 UJ	< 2.50
	6010B	Chromium	mg/kg	**9.0**	**10.0**	**14.6**
	7421	Lead	mg/kg	**7.0 J**	**8.1 J**	**6.79**
	7471A	Mercury	mg/kg	**0.03 J**	**0.04 J**	< 0.02
	7740	Selenium	mg/kg	< 0.33 R	< 0.33 R	< 0.2
	6010B	Silver	mg/kg	< 0.22	< 0.22	< 1.00
Volatile Organics	8260B	toluene	ug/kg	< 6	< 6	**3.83**
	8260B	acetone	ug/kg	**15 J**	**13 J**	< 40
	8260B	carbon disulfide	ug/kg	**8**	**8J**	< 2.00
Semivolatile Organics	8270C	bis (2-ethyl hexyl) pthalate	ug/kg	< 370	< 350	**213**
	8270C	di-n-butyl phthalate	ug/kg	**76 J**	< 350	< 170
Organochlorine Pesticides	8081A	general	ug/kg	non-detect	non-detect	non-detect
Chlorinated Herbicides	8151A	general	ug/kg	non-detect	non-detect	non-detect
Polychlorinated biphenyls	8082A	general	ug/kg	non-detect	non-detect	non-detect
Total Petroleum Hydrocarbon	8015B	Purgeable (GRO)	ug/kg	< 110	< 110	**665**
	8015B	Extractable (DRO)	mg/kg	< 11	< 11	< 10
Petroleum Hydrocarbon	TX 1005	C6 to C10	mg/kg	< 56	< 56	< 10
	TX 1005	C10 to C28	mg/kg	< 56	< 56	< 10
	TX 1005	C6 to C28	mg/kg	< 110	< 110	< 10

Notes

Former Laredo Air Force Base
Industrial Waste Treatment Plant (IWTP) Site Investigation

	Sample ID	IWTPMWWG001000N1 (Field)	IWTPMWWG001000FD1 (QC Duplicate)	IWTPMWWG001000FD2 (QA Duplicate)		
	Lab ID	38706.01	38706.02	9905627-01		
	Sample Date	05/22/1999	05/22/1999	05/22/1999		
Parameter	**Method**	**Analyte**	**Units**			
Total Metals	7060A	Arsenic	ug/L	< 9 R	< 9 R	< 6
	6010B	Barium	ug/L	**36.2**	**35.6**	**40**
	6010B	Cadmium	ug/L	**0.31 J**	**0.33 J**	< 32
	6010B	Chromium	ug/L	**1.8 J**	**2.0 J**	< 13
	7421	Lead	ug/L	**1.6 J**	**1.5 J**	< 4
	7470A	Mercury	ug/L	< 0.10	**0.14 J**	< 0.2
	7740	Selenium	ug/L	< 11 R	< 11 R	< 6
	6010B	Silver	ug/L	< 2	< 2	< 13
Volatile Organics	8260B	tert-butyl benzene	ug/L	not reported	not reported	**2.58**
Semivolatile Organics	8270C	acenaphthene	ug/L	**2 J**[1]	**2 J**[1]	**3.50**
	8270C	1,2-dichlorobenzene	ug/L	< 10[1]	< 10[1]	< 1.00
	8270C	bis (2-ethyl hexy) phthalate	ug/L	< 10[1]	< 10[1]	**14.8 B**
	8270C	dibenzofuran	ug/L	**2 J**[1]	**2 J**[1]	**2.4 J**
	8270C	fluoranthene	ug/L	**0.80 J**[1]	**0.90 J**[1]	**1.3 J**
	8270C	pyrene	ug/L	< 10[1]	**0.50 J**[1]	**2.08**
Organochlorine Pesticides	8081A	general	ug/L	non-detect	non-detect	non-detect
Chlorinated Herbicides	8151A	general	ug/L	non-detect	non-detect	non-detect
Polychlorinated biphenyls	8082A	general	ug/L	non-detect	non-detect	non-detect
Total Petroleum Hydrocarbon	8015B	Purgeable (GRO)	ug/L	< 84	< 100	<1,000
	8015B	Extractable (DRO)	ug/L	< 50	< 50	**146 B**
Petroleum Hydrocarbon	TX 1005	C6 to C10	ug/L	< 5,000 UJ	< 5,000 UJ	<857
	TX 1005	C10 to C28	ug/L	< 5,000 UJ	< 5,000 UJ	<857
	TX 1005	C6 to C28	ug/L	< 10,000 UJ	< 10,000 UJ	non-detect

Notes

1 phenol, 2-chlorophenol, 2-methylphenol, 4-methylphenol, 2-nitrophenol, 2,4-dimethylphenol, benzoic acid, 2,4-dichlorophenol, 4-chloro-3-methylphenol, 2,4,6-trichlorophenol, 2,4,5-trichlorophenol, 2,4-dinitrophenol, 4-nitrophenol, 4,6-dinitro-2-methylphenol, and pentachlorophenol were qualified "R".

Laboratory Analytical Results

CHAIN OF CUSTODY RECORD

SOUTHWEST LABORATORY OF OKLAHOMA, INC.
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SAMPLING FIRM	CLIENT CONTACT	PHONE NUMBER
CH2M Hill	Chuck Dougherty	918-583-3057

P.O. or PROPOSAL NUMBER	PROJECT NAME
147436T9.FW	Laredo AFB Site Investigation, IWTPMSGR

SAMPLER: (Signature) [signature]

ANALYTICAL TESTS REQUESTED

SAMPLE NO.	DATE	TIME	COMP.	GRAB	LOCATION	MATRIX	NUMBER OF CONTAINERS	VOC 8260	SVOC 8270	Pesticide	Herbicides	PCBs	TPH 8015 DRO	TPH 8015 GEO	TPH 1005	Total Metals	TDS	Conductivity	pH	REMARKS
IWTPMWWG001000N1																				
	5/22/99	1530		✓	IWTPMW001	WG	18	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
IWTPMWWG001000FD1																				
	5/22/99	1530		✓	IWTPMW001	WG	17	✓	✓	✓	✓	✓	✓	✓	✓	✓				
IWTPMWWG002000N1																				
	5/23/99	1000		✓	IWTPMW002	WG	17	✓	✓	✓	✓	✓	✓	✓	✓	✓				combine these for MS/MSD
IWTPMWWG002000MS1																				
	5/23/99	1000		✓	IWTPMW002	WG	16	✓	✓	✓	✓	✓	✓	✓	✓	✓				
IWTPMWWG003000N1																				
	5/22/99	1400		✓	IWTPMW003	WG	18	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
IWTPMWWQ002000EB1																				
	5/23/99	0830		✓	IWTPMW002	WQ	17	✓	✓	✓	✓	✓	✓	✓	✓	✓				
IWTPNQWQ002000TB1																				
	5/23/99	0800			n/a	WQ	2	✓												

RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED BY: (Signature)	RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED BY: (Signature)
[signature]	5/24/99	1900					
RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED BY: (Signature)	RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED FOR LABORATORY BY: (Signature)
							E. Mainbaug 5/25/99 1015
RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED BY: (Signature)	REMARKS: 5.0, 5.0, 4.0, 6.0, 4.0, 3.0, 3.0 C			

2-1192-03

02248

02249

CHAIN OF CUSTODY RECORD

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TM

SAMPLING FIRM	CLIENT CONTACT	PHONE NUMBER
CH2M Hill	Chuck Dougherty	918-583-3057

P.O. or PROPOSAL NUMBER	PROJECT NAME
147436.T9.FW	Site Investigation IWTP & SGR, Laredo AFB

SAMPLER: (Signature) Charles A. Dougherty

Sheet # 1 of 4

SAMPLE NO.	DATE	TIME	COMP.	GRAB	LOCATION	MATRIX	NUMBER OF CONTAINERS	VOC 8260	SVOC 8270	Pesticides 8081	Herbicides 8151	PCBs 8082	TPH 8015 DRO	TPH 8015 GRO	TPH 1005	Total RCRA metals *	pH 9045	% moisture	REMARKS
IWTPMW50001000	N1																		
	5-18-99	0910		✓	I		1	✓	✓	✓	✓	✓	✓	✓	✓	✓			
IWTPMW50001005	N																		38674
	5-18-99	1000		✓	I		1	✓	✓	✓	✓	✓	✓	✓	✓	✓			IWTP Soil
IWTPMW50001007	1																		
	5-18-99	1030		✓	1		1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
IWTPMW50002000	N1																		
	5-18-99	~~0925~~ 1305		✓	IWTPMW002	SO	4	✓	✓	✓	✓	✓	✓	✓	✓	✓			
IWTPMW50002004	N1																		
	5-18-99	~~0945~~ 1325		✓	IWTPMW002	SO	4	✓	✓	✓	✓	✓	✓	✓	✓	✓			
IWTPMW50002006	N1																		
	5-18-99	~~1010~~ 1340		✓	IWTPMW002	SO	4	✓	✓	✓	✓	✓	✓	✓	✓	✓			
IWTPMW50003000	N1																		
	5-18-99	1510		✓	IWTPMW003	SO	4	✓	✓	✓	✓	✓	✓	✓	✓	✓			
IWTPMW50003006	N1																		
	5-18-99	1530		✓	IWTPMW003	SO	4	✓	✓	✓	✓	✓	✓	✓	✓	✓	XX	XX	

RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED BY: (Signature)
Charles A. Dougherty	5/20/99	1930	

RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED BY (Signature)
RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED FOR LABORATORY BY: (Signature)
	5-21-99	9:15	

REMARKS:
*Arsenic 7060, Lead 7421, Mercury 7471, selenium 7740, and barium, chromium, cadmium & silver 6010 1 C

[SR012-1192-03]

CHAIN OF CUSTODY RECORD

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SAMPLING FIRM	CLIENT CONTACT	PHONE NUMBER
CH2M Hill	Chuck Dougherty	918-583-3057

P.O. or PROPOSAL NUMBER	PROJECT NAME
147436.T9.FW	Laredo AFB Site Investigation, IWTP & SGR

SAMPLER: (Signature) [signature]

Sheet #2 of 4

ANALYTICAL TESTS REQUESTED

SAMPLE NO.	DATE	TIME	COMP.	GRAB	LOCATION	MATRIX	NUMBER OF CONTAINERS	VOC 8260	SVOC 8270	Pesticide 8081	Herbicide 8151	PCBs 8082	TPH 8015 DRO	TPH 8015 GRO	TPH 1005	Total RCRA Metals*	pH 9045	% moisture	REMARKS
IWTPMWS0003012N1																			
	5-18-99	1615		✓	IWTPMW003	S0	4	✓	✓	✓	✓	✓	✓	✓	✓	✓			
IWTP~~MW~~SBS0001000N1																			
	5-19-99	0745		✓	IWTPSB001	S0	4	✓	✓	✓	✓	✓	✓	✓	✓	✓			
IWTPSBS0001000FD1																			
	5-19-99	0745		✓	IWTPSB001	S0	4	✓	✓	✓	✓	✓	✓	✓	✓	✓			
IWTPSBS0001004N1																			
	5-19-99	0810		✓	IWTPSB001	S0	4	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
IWTPSBS0001006N1																			
	5-19-99	0850		✓	IWTPSB001	S0	4	✓	✓	✓	✓	✓	✓	✓	✓	✓			
IWTPSBS0002000N1																			
	5-19-99	0925		✓	IWTPSB002	S0	4	✓	✓	✓	✓	✓	✓	✓	✓	✓			
IWTPSBS0002004N1																			
	5-19-99	0945		✓	IWTPSB002	S0	4	✓	✓	✓	✓	✓	✓	✓	✓	✓			
IWTPSBS0002006N1																			
	5-19-99	1010		✓	IWTPSB002	S0	4	✓	✓	✓	✓	✓	✓	✓	✓	✓			

RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED BY: (Signature)
[signature]	5/20/99	1930	

RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED BY: (Signature)

RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED FOR LABORATORY BY: (Signature)
	5-21-99	9:15	[signature]

RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED BY: (Signature)

REMARKS: * AS 7060, Pb 7421, Hg 7471, Se 7740, and Ba, Cr, Cd, + Ag 6010 1°C

[SR012-1192-03]

02250

CHAIN OF CUSTODY RECORD

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TM

022251

SAMPLING FIRM	CLIENT CONTACT	PHONE NUMBER
CH2M Hill	Chuck Daugherty	918-583-3057

P.O. or PROPOSAL NUMBER	PROJECT NAME
147436.T9.FIN	Laredo AFB Site Investigation, IWTP & SGR

SAMPLER: (Signature) Charles A. Daugherty

ANALYTICAL TESTS REQUESTED

Sheet #3 of 4

SAMPLE NO.	DATE	TIME	COMP.	GRAB	LOCATION	MATRIX	NUMBER OF CONTAINERS	VOC 8260	SVOC 8270	Pesticides 8081	Herbicides 8151	PCB's 8082	TPH 8015 DRO	TPH 8015 GRO	TPH 1005	Total RCRA Metals *	pH 9045	% moisture	REMARKS
IWTPSBS	0003	0000			N1														
	5-19-99	1055		✓	IWTPSB0003	SO	4	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
IWTPSBS	0003	0004			N1														
	5-19-99	1120		✓	IWTPSB0003	SO	4	✓	✓	✓	✓	✓	✓	✓	✓	✓			
IWTPSBS	0003	0006			N1														
	5-19-99	1135		✓	IWTPSB0003	SO	4	✓	✓	✓	✓	✓	✓	✓	✓	✓			
IWTPSBS	0004	0000			N1														Extra jar included for MS/MSD
	5-19-99	1400		✓	IWTPSB0004	SO	5	✓	✓	✓	✓	✓	✓	✓	✓	✓			
IWTPSBS	0004	0004			N1														
	5-19-99	1440		✓	IWTPSB0004	SO	4	✓	✓	✓	✓	✓	✓	✓	✓	✓			
IWTPSBS	0004	0008			N1	~~S~~													
	5-19-99	1600		✓	IWTPSB0004	SO	4	✓	✓	✓	✓	✓	✓	✓	✓	✓			
IWTPSBS	0004	0008			FD1	~~SO~~													
	5-19-99	1600		✓	IWTPSB0004	SO	4	✓	✓	✓	✓	✓	✓	✓	✓	✓			
IWTPSB	WQ04	0000			EB1	~~WQ~~													
	5-19-99	1340		✓	IWTPSB0004	WQ	18	✓	✓	✓	✓	✓	✓	✓	✓	✓			Note: VOC & TPH GRO not preserved

RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED BY: (Signature)
Charles A. Daugherty	5/20/99	1930	

RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED BY (Signature)
RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED FOR LABORATORY BY: (Signature)
	5-21-99	9:15	Dan Willis

REMARKS: * As 7060, Pb 7421, Hg 7471, Se 7740, and Ba, Cr, Cd, & Ag 6010

10c

[SR012-1192-03]

CHAIN OF CUSTODY RECORD

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TM

'LING FIRM	CLIENT CONTACT	PHONE NUMBER
CH2M Hill	Chuck Dougherty	918-583-3057

P.O. or PROPOSAL NUMBER	PROJECT NAME
	Laredo AFB Site Investigation, IWTP+SGR

SAMPLER: (Signature) Charles A. Daugherty

Sheet #4 of 4

SAMPLE NO.	DATE	TIME	COMP.	GRAB	LOCATION	MATRIX	NUMBER OF CONTAINERS	ANALYTICAL TESTS REQUESTED: VOC 8260	SVOC 8270	Pesticides 8081	Herbicides 8151	PCBs 8082	TPH 8015 DRO	TPH 8015 GRO	TPH 1005	Total RCRA Metals	pH 9045	% Moisture	REMARKS
IWTPNQWQ0001000					TB1														
	5-19-99	1500			n/a	WQ	2	✓											

RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED BY: (Signature)
Charles A. Daugherty	5/20/99	1930	

RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED BY (Signature)
RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED FOR LABORATORY BY: (Signature)
	5-21-99	9115	Don Wallis

RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED BY: (Signature)

REMARKS: 1c

02252

[SR012-1192-03]

Volatiles

Data Review and Validation for: GC/MS Volatiles

Project Name & Task:	LAREDO AFB	IWTP	
Project # & Case/SDG:	147436.DV.ZZ	38706	
Methods:	☐ OLM03.2 ☑ SW-846 8260B ☐ EPA 624 ☐ Other:		
Program:	☐ AFCEE ☐ NFESC ☐ Other	**Number of Samples:** 6 total	
Field QC Samples:	1/2 - PDUP, 3/4/5 - MS/MSD, 7 - EB, 8 - TB		+MS/MSD
Reviewed by & Date:	H. Kelly	4/12/2000	
Matrix:	☑ Water ☐ Soil ☐ Other		

Quality Control	Form #	Requirements	Check (If No* checked, see comments)	Flags Applied (see comments)
Data Pkg Complete (DP)	Pkg	All required deliverables in pkg.	☑ OK ☐ No* ☐ Not provided	☐ Flags Applied
	COC	All samples on COC reported	☑ OK ☐ No*	☐ Flags Applied
Holding Times (HT)	1	Water 7/14d (unpres/pres)	☑ OK ☐ No*	☐ Flags Applied
	COC	Soil 14d (low)	☐ OK ☐ No*	☐ Flags Applied
		Soil (med/high)	☐ OK ☐ No*	☐ Flags Applied
Surrogates (SS)	2	Method surrogates used	☑ OK ☐ No* ☐ Not provided	☐ Flags Applied
		Recovery Limits: ☑ Lab ☐ Meth	☐ OK ☑ No* ☐ Diluted out	
MS/MSD or MS/LD	3	Matrix Spikes Provided	☑ MS/MSD ☐ MS/LD ☐ None*	☐ Flags Applied
		Correct Spike Used	☑ OK ☐ No*	
		Acceptance Limits: ☑ Lab ☐ Meth	☐ OK ☑ No* ☐ Diluted out	
LCS (BS) ☐ LCS only ☑ LCS/LCSD	3	LCS per prep. batch	☑ OK ☐ No*	☐ Flags Applied
		Acceptance criteria met	☐ OK ☑ No*	
Blanks (MB,TB,EB, FB/AB)	1	Detects (> MDL or RL/CRQL)	☐ All ND ☐ see ~~blnk wksht~~	☐ Flags Applied
Method/Lab Blank (MB)	5	Meth Blnk per 12 hr shift	☑ OK ☐ No* below	
Tune - BFB (TN) prior to sample analysis	5	Initial & Begin of 12-hr shift	☑ OK ☐ No*	☐ Flags Applied
		Mass Assignment Correct	☑ OK ☐ No*	
		Ion Abundance Criteria met	☑ OK ☐ No*	
Initial Calibration (IC)	6	Minimum of 5 levels	☑ OK ☐ No*	☑ Flags Applied
		Linearity criteria met	☐ OK ☑ No* ☐ see cal wksht	
		Minimum RRF criteria met	☐ OK ☑ No* ☐ see cal wksht	
Continuing Calib. Verif. (CC) prior to sample analysis	7	Analyzed at begin of 12-hr shift	☑ OK ☐ No*	☑ Flags Applied
		%diff or %drift criteria met	☐ OK ☑ No* ☐ see cal wksht	
		Minimum RRF criteria met	☐ OK ☑ No* ☐ see cal wksht	
	8	Int. Std. RT/Area criteria met	☐ OK ☐ No*	
Internal Standards (IS)	8	Sample IS area criteria met	☐ OK ☑ No*	☐ Flags Applied
Sample Evaluation	1	All hits within cal. Range	☑ OK ☐ No* ☐ All ND	☐ Flags Applied
	5	Samples w/in 12-hr clock	☑ OK ☐ No*	
	raw	Manual Integration performed	☐ No ☐ see comments	
Field Duplicate (FD)	1	Precision of native vs Field Dup	☑ OK ☐ No* ☐ N/A	☐ Flags Applied

This sheet is applicable to multiple methods. All requirement items may not apply to every analytical method

Case Narrative Comments: SURROGATES, LCS, IS, MS

QC Item	Comments
SS	#3 - DCA low
	#4 - BFB low
	#5 - DCA High
	#6 - DCA High

Data Review and Validation for: GC/MS Volatiles

Project Name & Task:	LAREDO AFB		IWTP
Project # & Case/SDG:	147436.DV.ZZ		38706
Methods:	☐ OLM03.2 ☑ SW-846 8260B ☐ EPA 624 ☐ Other:		
Program:	☐ AFCEE ☐ NFESC ☐ Other	**Number of Samples:**	8 total
Field QC Samples:	1/2 - Equip, 3/4/5 - MS/MSD, 7-EB, 8-TB		
Reviewed by & Date:	A. Kelly		4/12/2000
Matrix:	☐ Water ☐ Soil ☐ Other		

MS/MSD — Selected recoveries + RPDs out.

MS - 4 out — 18 RPDs out
MSD - 5 out

LCS — Selected compound Recoveries out
LCS1 - CCl_4 131
LCS2 - 2-Butanone - 164
- m+p Xylenes - 71 percent

LCS3 - Acetone - 169
- CH_2Cl_2 - 166
- Bromoform - 136

LCS03 - Acetone - 174
- CH_2Cl_2 - 172
- CCl_4 - 130

EB/TB — Both EB/TB - CH_2Cl_2 = 1 ug/L
All MB - not detected

IC — Acetone 12-Butanone RRF 20.050
Flag detects "J". Non-detects "UJ"
Bromomethane - linear = 0.254 Flag detects
J - non-detects R.

CC 5/26-0803 Bromomethane = 21.3
~~o-xylene = 21.3~~ total - OK
Acetone - 21.2 0.031
1,2,3,4MS,5MSD 2-Butanone - 0.043
6

(3)

Data Review and Validation for: GC/MS Volatiles

Project Name & Task:	
Project # & Case/SDG:	
Methods:	☐ OLM03.2 ☐ SW-846 8260B ☐ EPA 624 ☐ Other:
Program:	☐ AFCEE ☐ NFESC ☐ Other **Number of Samples:**
Field QC Samples:	
Reviewed by & Date:	
Matrix:	☐ Water ☐ Soil ☐ Other

QC 5/28 1125 Xylenes total = 32.6
#8-TB Acetone = 0.037

6/4 0933 Bromoxylene - 27.5
Methylene chloride - 66.9
#7-EB Carbon tetrachloride - 21.6
#6-DL Di Bromo chloromethane - 21.3
Acetone - 24.0 - 0.049
2-Butanone - 0.045

IS MS - IS #2 & #4 slightly low.
Native + MSD OK - no flags

02255

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

G001000N1

Lab Name: SWL-TULSA Contract: LORADO AFB

Lab Code: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38706A

Matrix: (soil/water) WATER Lab Sample ID: 38706.01

Sample wt/vol: 25.0 (g/mL) ML Lab File ID: K27881.D

Level: (low/med) LOW Date Received: 05/25/99

% Moisture: not dec. _____ Date Analyzed: 05/26/99

Column: (pack/cap) CAP Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	CHLOROMETHANE	1	U
74-83-9	BROMOMETHANE	1	U
75-01-4	VINYL CHLORIDE	1	U
75-00-3	CHLOROETHANE	1	U
75-09-2	METHYLENE CHLORIDE	1	U
67-64-1	ACETONE	5	U
75-15-0	CARBON DISULFIDE	1	U
75-35-4	1 1-DICHLOROETHENE	1	U
75-34-3	1 1-DICHLOROETHANE	1	U
540-59-0	1,2-DICHLOROETHENE(total)	1	U
67-66-3	CHLOROFORM	1	U
107-06-2	1 2-DICHLOROETHANE	1	U
78-93-3	2-BUTANONE	5	U
71-55-6	1 1 1-TRICHLOROETHANE	1	U
56-23-5	CARBON TETRACHLORIDE	1	U
75-27-4	BROMODICHLOROMETHANE	1	U
78-87-5	1 2-DICHLOROPROPANE	1	U
10061-01-5	cis-1,3-Dichloropropene	1	U
79-01-6	TRICHLOROETHENE	1	U
124-48-1	DIBROMOCHLOROMETHANE	1	U
79-00-5	1 1 2-TRICHLOROETHANE	1	U
71-43-2	BENZENE	1	U
10061-02-6	trans-1,3-Dichloropropene	1	U
75-25-2	BROMOFORM	1	U
108-10-1	4-METHYL-2-PENTANONE	5	U
591-78-6	2-HEXANONE	5	U
127-18-4	TETRACHLOROETHENE	1	U
108-88-3	TOLUENE	1	U
79-34-5	1 1 2 2-TETRACHLOROETHANE	1	U
108-90-7	CHLOROBENZENE	1	U
100-41-4	ETHYL BENZENE	1	U
100-42-5	STYRENE	1	U
1330-20-7	XYLENES(total)	1	U

4/12/2000

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

G001000FD1

Lab Name: SWL-TULSA Contract: LORADO AFB

Lab Code: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38706A

Matrix: (soil/water) WATER Lab Sample ID: 38706.02

Sample wt/vol: 25.0 (g/mL) ML Lab File ID: K27882.D

Level: (low/med) LOW Date Received: 05/25/99

% Moisture: not dec. _____ Date Analyzed: 05/26/99

Column: (pack/cap) CAP Dilution Factor: 1.0

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND		Q
74-87-3	CHLOROMETHANE	1	U
74-83-9	BROMOMETHANE	1	U
75-01-4	VINYL CHLORIDE	1	U
75-00-3	CHLOROETHANE	1	U
75-09-2	METHYLENE CHLORIDE	1	U
67-64-1	ACETONE	5	~~U~~ UJ TC
75-15-0	CARBON DISULFIDE	1	U
75-35-4	1 1-DICHLOROETHENE	1	U
75-34-3	1 1-DICHLOROETHANE	1	U
540-59-0	1,2-DICHLOROETHENE(total)	1	U
67-66-3	CHLOROFORM	1	U
107-06-2	1 2-DICHLOROETHANE	1	U
78-93-3	2-BUTANONE	5	~~U~~ UJ TC
71-55-6	1 1 1-TRICHLOROETHANE	1	U
56-23-5	CARBON TETRACHLORIDE	1	U
75-27-4	BROMODICHLOROMETHANE	1	U
78-87-5	1 2-DICHLOROPROPANE	1	U
10061-01-5	cis-1,3-Dichloropropene	1	U
79-01-6	TRICHLOROETHENE	1	U
124-48-1	DIBROMOCHLOROMETHANE	1	U
79-00-5	1 1 2-TRICHLOROETHANE	1	U
71-43-2	BENZENE	1	U
10061-02-6	trans-1,3-Dichloropropene	1	U
75-25-2	BROMOFORM	1	U
108-10-1	4-METHYL-2-PENTANONE	5	U
591-78-6	2-HEXANONE	5	U
127-18-4	TETRACHLOROETHENE	1	U
108-88-3	TOLUENE	1	U
79-34-5	1 1 2 2-TETRACHLOROETHANE	1	U
108-90-7	CHLOROBENZENE	1	U
100-41-4	ETHYL BENZENE	1	U
100-42-5	STYRENE	1	U
1330-20-7	XYLENES(total)	1	U

4/1/2

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

G002000N1

Lab Name: SWL-TULSA Contract: LORADO AFB

Lab Code: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38706A

Matrix: (soil/water) WATER Lab Sample ID: 38706.03

Sample wt/vol: 25.0 (g/mL) ML Lab File ID: K27873.D

Level: (low/med) LOW Date Received: 05/25/99

% Moisture: not dec. _____ Date Analyzed: 05/26/99

Column: (pack/cap) CAP Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	CHLOROMETHANE	1	U
74-83-9	BROMOMETHANE	1	U
75-01-4	VINYL CHLORIDE	1	U
75-00-3	CHLOROETHANE	1	U
75-09-2	METHYLENE CHLORIDE	1	U
67-64-1	ACETONE	5	~~U~~ UJ JC
75-15-0	CARBON DISULFIDE	1	U
75-35-4	1 1-DICHLOROETHENE	1	U
75-34-3	1 1-DICHLOROETHANE	1	U
540-59-0	1,2-DICHLOROETHENE(total)	1	U
67-66-3	CHLOROFORM	1	U
107-06-2	1 2-DICHLOROETHANE	1	U
78-93-3	2-BUTANONE	5	~~U~~ UJ JC
71-55-6	1 1 1-TRICHLOROETHANE	1	U
56-23-5	CARBON TETRACHLORIDE	1	U
75-27-4	BROMODICHLOROMETHANE	1	U
78-87-5	1 2-DICHLOROPROPANE	1	U
10061-01-5	cis-1,3-Dichloropropene	1	U
79-01-6	TRICHLOROETHENE	1	U
124-48-1	DIBROMOCHLOROMETHANE	1	U
79-00-5	1 1 2-TRICHLOROETHANE	1	U
71-43-2	BENZENE	1	U
10061-02-6	trans-1,3-Dichloropropene	1	U
75-25-2	BROMOFORM	1	U
108-10-1	4-METHYL-2-PENTANONE	5	U
591-78-6	2-HEXANONE	5	U
127-18-4	TETRACHLOROETHENE	1	U
108-88-3	TOLUENE	1	U
79-34-5	1 1 2 2-TETRACHLOROETHANE	1	U
108-90-7	CHLOROBENZENE	1	U
100-41-4	ETHYL BENZENE	1	U
100-42-5	STYRENE	1	U
1330-20-7	XYLENES(total)	1	U

AA 4/12

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

G003000N1

Lab Name: SWL-TULSA Contract: LORADO AFB

Lab Code: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38706A

Matrix: (soil/water) WATER Lab Sample ID: 38706.06

Sample wt/vol: 25.0 (g/mL) ML Lab File ID: K27883.D

Level: (low/med) LOW Date Received: 05/25/99

% Moisture: not dec. _____ Date Analyzed: 05/26/99

Column: (pack/cap) CAP Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q	
74-87-3	CHLOROMETHANE	1	U	
74-83-9	BROMOMETHANE	1	U	
75-01-4	VINYL CHLORIDE	1		J SS
75-00-3	CHLOROETHANE	1	U	
75-09-2	METHYLENE CHLORIDE	1	U	
67-64-1	ACETONE	5	U	UJ JC
75-15-0	CARBON DISULFIDE	1	U	
75-35-4	1 1-DICHLOROETHENE	32		J LR
75-34-3	1 1-DICHLOROETHANE	52	E	
540-59-0	1,2-DICHLOROETHENE(total)	820	E	R LR
67-66-3	CHLOROFORM	1	U	
107-06-2	1 2-DICHLOROETHANE	1	U	
78-93-3	2-BUTANONE	5	U	UJ JC
71-55-6	1 1 1-TRICHLOROETHANE	1	U	
56-23-5	CARBON TETRACHLORIDE	1	U	
75-27-4	BROMODICHLOROMETHANE	1	U	
78-87-5	1 2-DICHLOROPROPANE	2		J SS
10061-01-5	cis-1,3-Dichloropropene	1	U	
79-01-6	TRICHLOROETHENE	380	E	K LR
124-48-1	DIBROMOCHLOROMETHANE	1	U	
79-00-5	1 1 2-TRICHLOROETHANE	1	U	
71-43-2	BENZENE	12		J SS
10061-02-6	trans-1,3-Dichloropropene	1	U	
75-25-2	BROMOFORM	1	U	
108-10-1	4-METHYL-2-PENTANONE	5	U	
591-78-6	2-HEXANONE	5	U	
127-18-4	TETRACHLOROETHENE	1	U	
108-88-3	TOLUENE	1	U	
79-34-5	1 1 2 2-TETRACHLOROETHANE	1	U	
108-90-7	CHLOROBENZENE	10		T SS
100-41-4	ETHYL BENZENE	1	U	
100-42-5	STYRENE	1	U	
1330-20-7	XYLENES(total)	1	U	

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1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

G003000N1DL

Lab Name: SWL-TULSA Contract: LORADO AFB

Lab Code: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38706A

Matrix: (soil/water) WATER Lab Sample ID: 38706.06DL

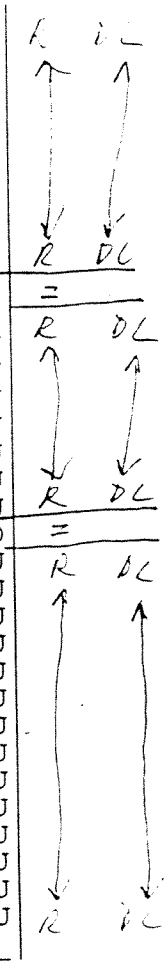
Sample wt/vol: 25.0 (g/mL) ML Lab File ID: K27975.D

Level: (low/med) LOW Date Received: 05/25/99

% Moisture: not dec. _____ Date Analyzed: 06/04/99

Column: (pack/cap) CAP Dilution Factor: 250.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	CHLOROMETHANE	250	U
74-83-9	BROMOMETHANE	250	U
75-01-4	VINYL CHLORIDE	250	U
75-00-3	CHLOROETHANE	250	U
75-09-2	METHYLENE CHLORIDE	340	D
67-64-1	ACETONE	1200	U
75-15-0	CARBON DISULFIDE	250	U
75-35-4	1 1-DICHLOROETHENE	250	U
75-34-3	1 1-DICHLOROETHANE	250	U
540-59-0	1,2-DICHLOROETHENE(total)	1900	D
67-66-3	CHLOROFORM	250	U
107-06-2	1 2-DICHLOROETHANE	250	U
78-93-3	2-BUTANONE	1200	U
71-55-6	1 1 1-TRICHLOROETHANE	250	U
56-23-5	CARBON TETRACHLORIDE	250	U
75-27-4	BROMODICHLOROMETHANE	250	U
78-87-5	1 2-DICHLOROPROPANE	250	U
10061-01-5	cis-1,3-Dichloropropene	250	U
79-01-6	TRICHLOROETHENE	700	D
124-48-1	DIBROMOCHLOROMETHANE	250	U
79-00-5	1 1 2-TRICHLOROETHANE	250	U
71-43-2	BENZENE	250	U
10061-02-6	trans-1,3-Dichloropropene	250	U
75-25-2	BROMOFORM	250	U
108-10-1	4-METHYL-2-PENTANONE	1200	U
591-78-6	2-HEXANONE	1200	U
127-18-4	TETRACHLOROETHENE	250	U
108-88-3	TOLUENE	250	U
79-34-5	1 1 2 2-TETRACHLOROETHANE	250	U
108-90-7	CHLOROBENZENE	250	U
100-41-4	ETHYL BENZENE	250	U
100-42-5	STYRENE	250	U
1330-20-7	XYLENES(total)	250	U



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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
Q002000EB1

Lab Name: SWL-TULSA Contract: LORADO AFB

Lab Code: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38706A

Matrix: (soil/water) WATER Lab Sample ID: 38706.07

Sample wt/vol: 25.0 (g/mL) ML Lab File ID: K27974.D

Level: (low/med) LOW Date Received: 05/25/99

% Moisture: not dec. _____ Date Analyzed: 06/04/99

Column: (pack/cap) CAP Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	CHLOROMETHANE	1	U
74-83-9	BROMOMETHANE	1	U
75-01-4	VINYL CHLORIDE	1	U
75-00-3	CHLOROETHANE	1	U
75-09-2	METHYLENE CHLORIDE	1	
67-64-1	ACETONE	5	U
75-15-0	CARBON DISULFIDE	1	U
75-35-4	1 1-DICHLOROETHENE	1	U
75-34-3	1 1-DICHLOROETHANE	1	U
540-59-0	1,2-DICHLOROETHENE(total)	1	U
67-66-3	CHLOROFORM	1	U
107-06-2	1 2-DICHLOROETHANE	1	U
78-93-3	2-BUTANONE	5	U
71-55-6	1 1 1-TRICHLOROETHANE	1	U
56-23-5	CARBON TETRACHLORIDE	1	U
75-27-4	BROMODICHLOROMETHANE	1	U
78-87-5	1 2-DICHLOROPROPANE	1	U
10061-01-5	cis-1,3-Dichloropropene	1	U
79-01-6	TRICHLOROETHENE	1	U
124-48-1	DIBROMOCHLOROMETHANE	1	U
79-00-5	1 1 2-TRICHLOROETHANE	1	U
71-43-2	BENZENE	1	U
10061-02-6	trans-1,3-Dichloropropene	1	U
75-25-2	BROMOFORM	1	U
108-10-1	4-METHYL-2-PENTANONE	5	U
591-78-6	2-HEXANONE	5	U
127-18-4	TETRACHLOROETHENE	1	U
108-88-3	TOLUENE	1	U
79-34-5	1 1 2 2-TETRACHLOROETHANE	1	U
108-90-7	CHLOROBENZENE	1	U
100-41-4	ETHYL BENZENE	1	U
100-42-5	STYRENE	1	U
1330-20-7	XYLENES(total)	1	U

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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Q002000TB1

Lab Name: SWL-TULSA Contract: LORADO AFB

Lab Code: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38706A

Matrix: (soil/water) WATER Lab Sample ID: 38706.08

Sample wt/vol: 25.0 (g/mL) ML Lab File ID: K27909.D

Level: (low/med) LOW Date Received: 05/25/99

% Moisture: not dec. _____ Date Analyzed: 05/28/99

Column: (pack/cap) CAP Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	CHLOROMETHANE	1	U
74-83-9	BROMOMETHANE	1	U
75-01-4	VINYL CHLORIDE	1	U
75-00-3	CHLOROETHANE	1	U
75-09-2	METHYLENE CHLORIDE	1	
67-64-1	ACETONE	5	U
75-15-0	CARBON DISULFIDE	1	U
75-35-4	1 1-DICHLOROETHENE	1	U
75-34-3	1 1-DICHLOROETHANE	1	U
540-59-0	1,2-DICHLOROETHENE(total)	1	U
67-66-3	CHLOROFORM	1	U
107-06-2	1 2-DICHLOROETHANE	1	U
78-93-3	2-BUTANONE	5	U
71-55-6	1 1 1-TRICHLOROETHANE	1	U
56-23-5	CARBON TETRACHLORIDE	1	U
75-27-4	BROMODICHLOROMETHANE	1	U
78-87-5	1 2-DICHLOROPROPANE	1	U
10061-01-5	cis-1,3-Dichloropropene	1	U
79-01-6	TRICHLOROETHENE	1	U
124-48-1	DIBROMOCHLOROMETHANE	1	U
79-00-5	1 1 2-TRICHLOROETHANE	1	U
71-43-2	BENZENE	1	U
10061-02-6	trans-1,3-Dichloropropene	1	U
75-25-2	BROMOFORM	1	U
108-10-1	4-METHYL-2-PENTANONE	5	U
591-78-6	2-HEXANONE	5	U
127-18-4	TETRACHLOROETHENE	1	U
108-88-3	TOLUENE	1	U
79-34-5	1 1 2 2-TETRACHLOROETHANE	1	U
108-90-7	CHLOROBENZENE	1	U
100-41-4	ETHYL BENZENE	1	U
100-42-5	STYRENE	1	U
1330-20-7	XYLENES(total)	1	U

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Volatiles

Data Review and Validation for: GC/MS Volatiles

Project Name & Task:	LAREDO AFB	IWTP	
Project # & Case/SDG:	147436.DV.ZZ	38676	
Methods:	☐ OLM03.2 ☑ SW-846 8260B ☐ EPA 624 ☐ Other:		
Program:	☐ AFCEE ☐ NFESC ☐ Other	**Number of Samples:** 23 TOTAL	
Field QC Samples:	10/11 & 24/25 - FDUP, 20/21/22 - NAT/MS/MSD, 26 - EB, 27 - TB		
Reviewed by & Date:	N. Kelly	4/8/2000	
Matrix:	☑ Water ☑ Soil ☐ Other		

Quality Control	Form #	Requirements	Check (If No* checked, see comments)	Flags Applied (see comments)
Data Pkg Complete (DP)	Pkg	All required deliverables in pkg.	☑ OK ☐ No* ☐ Not provided	☐ Flags Applied
	COC	All samples on COC reported	☑ OK ☐ No*	☐ Flags Applied
Holding Times (HT)	1	Water 7/14d (unpres/pres)	☑ OK ☐ No*	☐ Flags Applied
	COC	Soil 14d (low)	☑ OK ☐ No*	☐ Flags Applied
		Soil (med/high)	☐ OK ☐ No*	☐ Flags Applied
Surrogates (SS)	2	Method surrogates used	☑ OK ☐ No* ☐ Not provided	☑ Flags Applied
		Recovery Limits: ☑ Lab ☐ Meth	☐ OK ☑ No* ☐ Diluted out	
MS/MSD or MS/LD	3	Matrix Spikes Provided	☑ MS/MSD ☐ MS/LD ☐ None*	☐ Flags Applied
		Correct Spike Used	☑ OK ☐ No*	
		Acceptance Limits: ☑ Lab ☐ Meth	☐ OK ☑ No* ☐ Diluted out	
LCS (BS) BOTH ☑ LCS ~~only~~ ☑ LCS/LCSD	3	LCS per prep. batch	☑ OK ☐ No*	☐ Flags Applied
		Acceptance criteria met	☐ OK ☑ No*	
Blanks (MB,TB,EB, FB/AB)	1	Detects (> MDL or RL/CRQL)	☐ All ND ☑ see ~~blnk wksht~~	☐ Flags Applied
Method/Lab Blank (MB)	5	Meth Blnk per 12 hr shift	☑ OK ☐ No* NOTES	
Tune - BFB (TN) prior to sample analysis	5	Initial & Begin of 12-hr shift	☑ OK ☐ No*	☐ Flags Applied
		Mass Assignment Correct	☑ OK ☐ No*	
		Ion Abundance Criteria met	☑ OK ☐ No*	
Initial Calibration (IC)	6	Minimum of 5 levels	☑ OK ☐ No*	☐ Flags Applied
		Linearity criteria met	☑ OK ☐ No* ☐ see cal wksht	
		Minimum RRF criteria met	☑ OK ☐ No* ☐ see cal wksht	
Continuing Calib. Verif. (CC) prior to sample analysis	7	Analyzed at begin of 12-hr shift	☑ OK ☐ No*	☑ Flags Applied
		%diff or %drift criteria met	☑ OK ☐ No* ☐ see cal wksht	
		Minimum RRF criteria met	☑ OK ☑ No* ☐ see cal wksht	
	8	Int. Std. RT/Area criteria met	☑ OK ☐ No*	
Internal Standards (IS)	8	Sample IS area criteria met	☐ OK ☑ No*	☑ Flags Applied
Sample Evaluation	1	All hits within cal. Range	☑ OK ☐ No* ☐ All ND	☐ Flags Applied
	5	Samples w/in 12-hr clock	☑ OK ☐ No*	
	raw	Manual Integration performed	☐ No ☐ see comments	
Field Duplicate (FD)	1	Precision of native vs Field Dup	☑ OK ☐ No* ☐ N/A	☐ Flags Applied

This sheet is applicable to multiple methods. All requirement items may not apply to every analytical method.

Case Narrative Comments: Sample #3 - Diluted, BLANKS, SURROGATES LCS, MS/MSD, INTERNAL STD.

QC Item	Comments		
SS	BFB Limits	(74-121)	SEE report -
	Tol-d8	(81-117)	sample and specific
	1,2-DCA	(80-120)	SURROGATES out of QC
	DBFM	(80-120)	Limits ARE Listed.

Data Review and Validation for: GC/MS Volatiles

Project Name & Task:	LAREDO AFB	IWTP
Project # & Case/SDG:	147436.DV.ZZ	38676
Methods:	☐ OLM03.2 ☑ SW-846 8260B ☐ EPA 624 ☐ Other:	
Program:	☐ AFCEE ☐ NFESC ☐ Other	**Number of Samples:** 23 total
Field QC Samples:	10/11 + 24/25 - FDUP, 20/21/22 - VAT/MS/MSD, 26-EB, 27-TB	
Reviewed by & Date:	H. Kelly	4/8/2000
Matrix:	☑ Water ☑ Soil ☐ Other	

LCS — Selected compounds out of QC Limits - Listed in Report.

Chloromethane	Limits -	38-130	RPD Limit - 20%
Bromomethane	" -	16-188	" - 32
Chloroethane	" -	28-181	" - 40
Bromodichloromethane	" -	78-116	" - 20
Toluene	" -	71-119	" - 20
Dibromochloromethane	" -	85-121	" - 20
Bromoform	-	77-125	" 20

MS/MSD — Cis-1,3-dichloropropene 73-125
Toluene 71-119
Styrene 81-118

Acetone RPD = 32 (LIMIT = 20%)

Chlorobenzene - (81-114)
Ethyl Benzene - (74-115)
m+p-Xylene - (71-128)
o-Xylene - (76-120)

MB — VBLK 3 - CH_2Cl_2 = 9 ug/kg
- samples affected - Listed in Report

IC — - Acetone low 2/22/99 ICAL curve

CC — - Acetone low @ 0.046 5/28/99 0.046

Flag J/UJ

IS out in samples Listed in Report

F.Dup - 24/25 - CS_2 in 24 @ 11 in original run - Rejected
ND in RE, CS2 in 25 @ 10 - Kept 25 Re - Rejected

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MWS1000N1

Name: SWL-TULSA Contract: LORADO AFB

(e: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38676A

ix: (soil/water) SOIL Lab Sample ID: 38676.01

le wt/vol: 5.0 (g/mL) G Lab File ID: I41487.D

l: (low/med) LOW Date Received: 05/22/99

isture: not dec. 13 Date Analyzed: 05/26/99

mn: (pack/cap) CAP Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q	
74-87-3	CHLOROMETHANE	6	U	
74-83-9	BROMOMETHANE	6	U	
75-01-4	VINYL CHLORIDE	6	U	
75-00-3	CHLOROETHANE	6	U	
75-09-2	METHYLENE CHLORIDE	3	J	
67-64-1	ACETONE	19		
75-15-0	CARBON DISULFIDE	6	U	
75-35-4	1 1-DICHLOROETHENE	6	U	
75-34-3	1 1-DICHLOROETHANE	6	U	
540-59-0	1,2-DICHLOROETHENE(total)	6	U	
67-66-3	CHLOROFORM	6	U	
107-06-2	1 2-DICHLOROETHANE	6	U	
78-93-3	2-BUTANONE	6	U	
71-55-6	1 1 1-TRICHLOROETHANE	6	U	
56-23-5	CARBON TETRACHLORIDE	6	U	
75-27-4	BROMODICHLOROMETHANE	6	U	
78-87-5	1 2-DICHLOROPROPANE	6	U	
10061-01-5	cis-1,3-Dichloropropene	6	U	
79-01-6	TRICHLOROETHENE	6	U	
124-48-1	DIBROMOCHLOROMETHANE	6	U	
79-00-5	1 1 2-TRICHLOROETHANE	6	U	
71-43-2	BENZENE	6	U	
10061-02-6	trans-1,3-Dichloropropene	6	U	
75-25-2	BROMOFORM	6	U	
108-10-1	4-METHYL-2-PENTANONE	6	U	
591-78-6	2-HEXANONE	6	U	
127-18-4	TETRACHLOROETHENE	6	U	
108-88-3	TOLUENE	6	U	
79-34-5	1 1 2 2-TETRACHLOROETHANE	6	U	
108-90-7	CHLOROBENZENE	6	U	IS
100-41-4	ETHYL BENZENE	6	U	IS
100-42-5	STYRENE	6	U	IS
1330-20-7	XYLENES(total)	6	U	IS

NM 4/6/2000

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MWS1000N1RE

Name: SWL-TULSA Contract: LORADO AFB

: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38676A

ix: (soil/water) SOIL Lab Sample ID: 38676.01RA

le wt/vol: 5.0 (g/mL) G Lab File ID: I51554.D

l: (low/med) LOW Date Received: 05/22/99

isture: not dec. 13 Date Analyzed: 05/28/99

mn: (pack/cap) CAP Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	CHLOROMETHANE	6	U
74-83-9	BROMOMETHANE	6	U
75-01-4	VINYL CHLORIDE	6	U
75-00-3	CHLOROETHANE	6	U
75-09-2	METHYLENE CHLORIDE	23	B
67-64-1	ACETONE	32	
75-15-0	CARBON DISULFIDE	8	
75-35-4	1 1-DICHLOROETHENE	6	U
75-34-3	1 1-DICHLOROETHANE	6	U
540-59-0	1,2-DICHLOROETHENE(total)	6	U
67-66-3	CHLOROFORM	6	U
107-06-2	1 2-DICHLOROETHANE	6	U
78-93-3	2-BUTANONE	6	U
71-55-6	1 1 1-TRICHLOROETHANE	6	U
56-23-5	CARBON TETRACHLORIDE	6	U
75-27-4	BROMODICHLOROMETHANE	6	U
78-87-5	1 2-DICHLOROPROPANE	6	U
10061-01-5	cis-1,3-Dichloropropene	6	U
79-01-6	TRICHLOROETHENE	6	U
124-48-1	DIBROMOCHLOROMETHANE	6	U
79-00-5	1 1 2-TRICHLOROETHANE	6	U
71-43-2	BENZENE	6	U
10061-02-6	trans-1,3-Dichloropropene	6	U
75-25-2	BROMOFORM	6	U
108-10-1	4-METHYL-2-PENTANONE	6	U
591-78-6	2-HEXANONE	6	U
127-18-4	TETRACHLOROETHENE	6	U
108-88-3	TOLUENE	6	U
79-34-5	1 1 2 2-TETRACHLOROETHANE	6	U
108-90-7	CHLOROBENZENE	6	U
100-41-4	ETHYL BENZENE	6	U
100-42-5	STYRENE	6	U
1330-20-7	XYLENES(total)	6	U

R Re

HH 4/8

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MWS1005N1

Name: SWL-TULSA Contract: LORADO AFB

Case: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38676A

Matrix: (soil/water) SOIL Lab Sample ID: 38676.02

Sample wt/vol: 5.0 (g/mL) G Lab File ID: I41488.D

Level: (low/med) LOW Date Received: 05/22/99

% Moisture: not dec. 16 Date Analyzed: 05/26/99

Column: (pack/cap) CAP Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	CHLOROMETHANE	6	U
74-83-9	BROMOMETHANE	6	U
75-01-4	VINYL CHLORIDE	6	U
75-00-3	CHLOROETHANE	6	U
75-09-2	METHYLENE CHLORIDE	2	J
67-64-1	ACETONE	6	U
75-15-0	CARBON DISULFIDE	9	
75-35-4	1 1-DICHLOROETHENE	6	U
75-34-3	1 1-DICHLOROETHANE	6	U
540-59-0	1,2-DICHLOROETHENE(total)	6	U
67-66-3	CHLOROFORM	6	U
107-06-2	1 2-DICHLOROETHANE	6	U
78-93-3	2-BUTANONE	6	U
71-55-6	1 1 1-TRICHLOROETHANE	6	U
56-23-5	CARBON TETRACHLORIDE	6	U
75-27-4	BROMODICHLOROMETHANE	6	U
78-87-5	1 2-DICHLOROPROPANE	6	U
10061-01-5	cis-1,3-Dichloropropene	6	U
79-01-6	TRICHLOROETHENE	6	U
124-48-1	DIBROMOCHLOROMETHANE	6	U
79-00-5	1 1 2-TRICHLOROETHANE	6	U
71-43-2	BENZENE	6	U
10061-02-6	trans-1,3-Dichloropropene	6	U
75-25-2	BROMOFORM	6	U
108-10-1	4-METHYL-2-PENTANONE	6	U
591-78-6	2-HEXANONE	6	U
127-18-4	TETRACHLOROETHENE	6	U
108-88-3	TOLUENE	6	U
79-34-5	1 1 2 2-TETRACHLOROETHANE	6	U
108-90-7	CHLOROBENZENE	6	U
100-41-4	ETHYL BENZENE	6	U
100-42-5	STYRENE	6	U
1330-20-7	XYLENES(total)	6	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MWS1007N1

Name: SWL-TULSA Contract: LORADO AFB

Code: SWOK Case No.: CH2M-OK SAS No.: . SDG No.: 38676A

Matrix: (soil/water) SOIL Lab Sample ID: 38676.03

Sample wt/vol: 5.0 (g/mL) G Lab File ID: I41489.D

Level: (low/med) LOW Date Received: 05/22/99

% Moisture: not dec. 21 Date Analyzed: 05/26/99

Column: (pack/cap) CAP Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q		
74-87-3	CHLOROMETHANE	6	U		
74-83-9	BROMOMETHANE	6	U		
75-01-4	VINYL CHLORIDE	6	U		
75-00-3	CHLOROETHANE	6	U		
75-09-2	METHYLENE CHLORIDE	7		J	55
67-64-1	ACETONE	340	~~E~~	R	LR
75-15-0	CARBON DISULFIDE	10		J	55
75-35-4	1 1-DICHLOROETHENE	6	U		
75-34-3	1 1-DICHLOROETHANE	6	U		
540-59-0	1,2-DICHLOROETHENE(total)	6	U		
67-66-3	CHLOROFORM	6	U		
107-06-2	1 2-DICHLOROETHANE	6	U		
78-93-3	2-BUTANONE	6	U		
71-55-6	1 1 1-TRICHLOROETHANE	6	U		
56-23-5	CARBON TETRACHLORIDE	6	U		
75-27-4	BROMODICHLOROMETHANE	6	U		
78-87-5	1 2-DICHLOROPROPANE	6	U		
10061-01-5	cis-1,3-Dichloropropene	6	U		
79-01-6	TRICHLOROETHENE	6	U		
124-48-1	DIBROMOCHLOROMETHANE	6	U		
79-00-5	1 1 2-TRICHLOROETHANE	6	U		
71-43-2	BENZENE	6	U		
10061-02-6	trans-1,3-Dichloropropene	6	U		
75-25-2	BROMOFORM	6	U		
108-10-1	4-METHYL-2-PENTANONE	6	U		
591-78-6	2-HEXANONE	6	U		
127-18-4	TETRACHLOROETHENE	6	U		
108-88-3	TOLUENE	6	U		
79-34-5	1 1 2 2-TETRACHLOROETHANE	6	U		
108-90-7	CHLOROBENZENE	6	U		
100-41-4	ETHYL BENZENE	6	U		
100-42-5	STYRENE	6	U		
1330-20-7	XYLENES(total)	6	U		

6/1/6

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MWS1007N1DL

Lab Name: SWL-TULSA Contract: LORADO AFB

Lab Code: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38676A

Matrix: (soil/water) SOIL Lab Sample ID: 38676.03DL

Sample wt/vol: 2.5 (g/mL) G Lab File ID: I51555.D

Level: (low/med) LOW Date Received: 05/22/99

% Moisture: not dec. 21 Date Analyzed: 05/28/99

Column: (pack/cap) CAP Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	CHLOROMETHANE	13	U
74-83-9	BROMOMETHANE	13	U
75-01-4	VINYL CHLORIDE	13	U
75-00-3	CHLOROETHANE	13	U
75-09-2	METHYLENE CHLORIDE	22	BD
67-64-1	ACETONE	240	D
75-15-0	CARBON DISULFIDE	24	D
75-35-4	1 1-DICHLOROETHENE	13	U
75-34-3	1 1-DICHLOROETHANE	13	U
540-59-0	1,2-DICHLOROETHENE(total)	13	U
67-66-3	CHLOROFORM	13	U
107-06-2	1 2-DICHLOROETHANE	13	U
78-93-3	2-BUTANONE	13	U
71-55-6	1 1 1-TRICHLOROETHANE	13	U
56-23-5	CARBON TETRACHLORIDE	13	U
75-27-4	BROMODICHLOROMETHANE	13	U
78-87-5	1 2-DICHLOROPROPANE	13	U
10061-01-5	cis-1,3-Dichloropropene	13	U
79-01-6	TRICHLOROETHENE	13	U
124-48-1	DIBROMOCHLOROMETHANE	13	U
79-00-5	1 1 2-TRICHLOROETHANE	13	U
71-43-2	BENZENE	13	U
10061-02-6	trans-1,3-Dichloropropene	13	U
75-25-2	BROMOFORM	13	U
108-10-1	4-METHYL-2-PENTANONE	13	U
591-78-6	2-HEXANONE	13	U
127-18-4	TETRACHLOROETHENE	13	U
108-88-3	TOLUENE	13	U
79-34-5	1 1 2 2-TETRACHLOROETHANE	13	U
108-90-7	CHLOROBENZENE	13	U
100-41-4	ETHYL BENZENE	13	U
100-42-5	STYRENE	13	U
1330-20-7	XYLENES(total)	13	U

R DL R DL R DL R DL

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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
MWS2000N1

me: SWL-TULSA Contract: LORADO AFB

Code: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38676A

rix: (soil/water) SOIL Lab Sample ID: 38676.04

ple wt/vol: 5.0 (g/mL) G Lab File ID: I41490.D

el: (low/med) LOW Date Received: 05/22/99

loisture: not dec. 7 Date Analyzed: 05/26/99

umn: (pack/cap) CAP Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	CHLOROMETHANE	5	U
74-83-9	BROMOMETHANE	5	U
75-01-4	VINYL CHLORIDE	5	U
75-00-3	CHLOROETHANE	5	U
75-09-2	METHYLENE CHLORIDE	4	J
67-64-1	ACETONE	5	U
75-15-0	CARBON DISULFIDE	8	
75-35-4	1 1-DICHLOROETHENE	5	U
75-34-3	1 1-DICHLOROETHANE	5	U
540-59-0	1,2-DICHLOROETHENE(total)	5	U
67-66-3	CHLOROFORM	5	U
107-06-2	1 2-DICHLOROETHANE	5	U
78-93-3	2-BUTANONE	5	U
71-55-6	1 1 1-TRICHLOROETHANE	5	U
56-23-5	CARBON TETRACHLORIDE	5	U
75-27-4	BROMODICHLOROMETHANE	5	U
78-87-5	1 2-DICHLOROPROPANE	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	TRICHLOROETHENE	5	U
124-48-1	DIBROMOCHLOROMETHANE	5	U
79-00-5	1 1 2-TRICHLOROETHANE	5	U
71-43-2	BENZENE	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
75-25-2	BROMOFORM	5	U
108-10-1	4-METHYL-2-PENTANONE	5	U
591-78-6	2-HEXANONE	5	U
127-18-4	TETRACHLOROETHENE	5	U
108-88-3	TOLUENE	5	U
79-34-5	1 1 2 2-TETRACHLOROETHANE	5	U
108-90-7	CHLOROBENZENE	5	U
100-41-4	ETHYL BENZENE	5	U
100-42-5	STYRENE	5	U
1330-20-7	XYLENES(total)	5	U

02270

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
MWS2004N1

Name: SWL-TULSA Contract: LORADO AFB

Code: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38676A

Matrix: (soil/water) SOIL Lab Sample ID: 38676.05

Sample wt/vol: 5.0 (g/mL) G Lab File ID: I41491.D

Level: (low/med) LOW Date Received: 05/22/99

% Moisture: not dec. 16 Date Analyzed: 05/26/99

Column: (pack/cap) CAP Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	CHLOROMETHANE	6	U
74-83-9	BROMOMETHANE	6	U
75-01-4	VINYL CHLORIDE	6	U
75-00-3	CHLOROETHANE	6	U
75-09-2	METHYLENE CHLORIDE	3	J
67-64-1	ACETONE	6	J
75-15-0	CARBON DISULFIDE	9	
75-35-4	1 1-DICHLOROETHENE	6	U
75-34-3	1 1-DICHLOROETHANE	6	U
540-59-0	1,2-DICHLOROETHENE(total)	6	U
67-66-3	CHLOROFORM	6	U
107-06-2	1 2-DICHLOROETHANE	6	U
78-93-3	2-BUTANONE	6	U
71-55-6	1 1 1-TRICHLOROETHANE	6	U
56-23-5	CARBON TETRACHLORIDE	6	U
75-27-4	BROMODICHLOROMETHANE	6	U
78-87-5	1 2-DICHLOROPROPANE	6	U
10061-01-5	cis-1,3-Dichloropropene	6	U
79-01-6	TRICHLOROETHENE	6	U
124-48-1	DIBROMOCHLOROMETHANE	6	U
79-00-5	1 1 2-TRICHLOROETHANE	6	U
71-43-2	BENZENE	6	U
10061-02-6	trans-1,3-Dichloropropene	6	U
75-25-2	BROMOFORM	6	U
108-10-1	4-METHYL-2-PENTANONE	6	U
591-78-6	2-HEXANONE	6	U
127-18-4	TETRACHLOROETHENE	2	J
108-88-3	TOLUENE	6	U
79-34-5	1 1 2 2-TETRACHLOROETHANE	6	U
108-90-7	CHLOROBENZENE	6	U
100-41-4	ETHYL BENZENE	6	U
100-42-5	STYRENE	6	U
1330-20-7	XYLENES(total)	6	U

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1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MWS2007N1

Name: SWL-TULSA Contract: LORADO AFB

Code: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38676A

ix: (soil/water) SOIL Lab Sample ID: 38676.06

le wt/vol: 5.0 (g/mL) G Lab File ID: I41492.D

l: (low/med) LOW Date Received: 05/22/99

isture: not dec. 21 Date Analyzed: 05/26/99

mn: (pack/cap) CAP Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	CHLOROMETHANE	6	U
74-83-9	BROMOMETHANE	6	U
75-01-4	VINYL CHLORIDE	6	U
75-00-3	CHLOROETHANE	6	U
75-09-2	METHYLENE CHLORIDE	6	U
67-64-1	ACETONE	11	
75-15-0	CARBON DISULFIDE	14	
75-35-4	1 1-DICHLOROETHENE	6	U
75-34-3	1 1-DICHLOROETHANE	6	U
540-59-0	1,2-DICHLOROETHENE(total)	6	U
67-66-3	CHLOROFORM	6	U
107-06-2	1 2-DICHLOROETHANE	6	U
78-93-3	2-BUTANONE	6	U
71-55-6	1 1 1-TRICHLOROETHANE	6	U
56-23-5	CARBON TETRACHLORIDE	6	U
75-27-4	BROMODICHLOROMETHANE	6	U
78-87-5	1 2-DICHLOROPROPANE	6	U
10061-01-5	cis-1,3-Dichloropropene	6	U
79-01-6	TRICHLOROETHENE	6	U
124-48-1	DIBROMOCHLOROMETHANE	6	U
79-00-5	1 1 2-TRICHLOROETHANE	6	U
71-43-2	BENZENE	6	U
10061-02-6	trans-1,3-Dichloropropene	6	U
75-25-2	BROMOFORM	6	U
108-10-1	4-METHYL-2-PENTANONE	6	U
591-78-6	2-HEXANONE	6	U
127-18-4	TETRACHLOROETHENE	6	U
108-88-3	TOLUENE	6	U
79-34-5	1 1 2 2-TETRACHLOROETHANE	6	U
108-90-7	CHLOROBENZENE	6	U
100-41-4	ETHYL BENZENE	6	U
100-42-5	STYRENE	6	U
1330-20-7	XYLENES(total)	6	U

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02272

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MWS3000N1

Name: SWL-TULSA Contract: LORADO AFB

Code: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38676A

Matrix: (soil/water) SOIL Lab Sample ID: 38676.07

Sample wt/vol: 5.0 (g/mL) G Lab File ID: I51556.D

Level: (low/med) LOW Date Received: 05/22/99

% Moisture: not dec. 5 Date Analyzed: 05/28/99

Column: (pack/cap) CAP Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	CHLOROMETHANE	5	U
74-83-9	BROMOMETHANE	5	U
75-01-4	VINYL CHLORIDE	5	U
75-00-3	CHLOROETHANE	5	U
75-09-2	METHYLENE CHLORIDE	13	~~B~~ u BL
67-64-1	ACETONE	10	J JC
75-15-0	CARBON DISULFIDE	5	U
75-35-4	1 1-DICHLOROETHENE	5	U
75-34-3	1 1-DICHLOROETHANE	5	U
540-59-0	1,2-DICHLOROETHENE(total)	5	U
67-66-3	CHLOROFORM	5	U
107-06-2	1 2-DICHLOROETHANE	5	U
78-93-3	2-BUTANONE	5	U
71-55-6	1 1 1-TRICHLOROETHANE	5	U
56-23-5	CARBON TETRACHLORIDE	5	U
75-27-4	BROMODICHLOROMETHANE	5	U
78-87-5	1 2-DICHLOROPROPANE	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	TRICHLOROETHENE	5	U
124-48-1	DIBROMOCHLOROMETHANE	5	U
79-00-5	1 1 2-TRICHLOROETHANE	5	U
71-43-2	BENZENE	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
75-25-2	BROMOFORM	5	U
108-10-1	4-METHYL-2-PENTANONE	5	U
591-78-6	2-HEXANONE	5	U
127-18-4	TETRACHLOROETHENE	5	U
108-88-3	TOLUENE	5	U
79-34-5	1 1 2 2-TETRACHLOROETHANE	5	U
108-90-7	CHLOROBENZENE	5	U
100-41-4	ETHYL BENZENE	5	U
100-42-5	STYRENE	5	U
1330-20-7	XYLENES(total)	5	U

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1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MWS3006N1

Name: SWL-TULSA Contract: LORADO AFB

Code: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38676A

Matrix: (soil/water) SOIL Lab Sample ID: 38676.08

Sample wt/vol: 5.0 (g/mL) G Lab File ID: I41494.D

Level: (low/med) LOW Date Received: 05/22/99

% Moisture: not dec. 19 Date Analyzed: 05/26/99

Column: (pack/cap) CAP Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG		Q
74-87-3	CHLOROMETHANE	6	U	
74-83-9	BROMOMETHANE	6	U	
75-01-4	VINYL CHLORIDE	6	U	
75-00-3	CHLOROETHANE	6	U	
75-09-2	METHYLENE CHLORIDE	3	~~U~~	u BL
67-64-1	ACETONE	6	U	
75-15-0	CARBON DISULFIDE	9		
75-35-4	1 1-DICHLOROETHENE	6	U	
75-34-3	1 1-DICHLOROETHANE	6	U	
540-59-0	1,2-DICHLOROETHENE(total)	6	U	
67-66-3	CHLOROFORM	6	U	
107-06-2	1 2-DICHLOROETHANE	6	U	
78-93-3	2-BUTANONE	6	U	
71-55-6	1 1 1-TRICHLOROETHANE	6	U	
56-23-5	CARBON TETRACHLORIDE	6	U	
75-27-4	BROMODICHLOROMETHANE	6	U	
78-87-5	1 2-DICHLOROPROPANE	6	U	
10061-01-5	cis-1,3-Dichloropropene	6	U	
79-01-6	TRICHLOROETHENE	6	U	
124-48-1	DIBROMOCHLOROMETHANE	6	U	
79-00-5	1 1 2-TRICHLOROETHANE	6	U	
71-43-2	BENZENE	6	U	
10061-02-6	trans-1,3-Dichloropropene	6	U	
75-25-2	BROMOFORM	6	U	
108-10-1	4-METHYL-2-PENTANONE	6	U	
591-78-6	2-HEXANONE	6	U	
127-18-4	TETRACHLOROETHENE	6	U	
108-88-3	TOLUENE	6	U	
79-34-5	1 1 2 2-TETRACHLOROETHANE	6	U	
108-90-7	CHLOROBENZENE	6	U	
100-41-4	ETHYL BENZENE	6	U	
100-42-5	STYRENE	6	U	
1330-20-7	XYLENES(total)	6	U	

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1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MWS3012N1

Name: SWL-TULSA Contract: LORADO AFB

Code: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38676A

Matrix: (soil/water) SOIL Lab Sample ID: 38676.09

Sample wt/vol: 5.0 (g/mL) G Lab File ID: I51557.D

Level: (low/med) LOW Date Received: 05/22/99

% Moisture: not dec. 12 Date Analyzed: 05/28/99

Column: (pack/cap) CAP Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	CHLOROMETHANE	6	U
74-83-9	BROMOMETHANE	6	U
75-01-4	VINYL CHLORIDE	6	U
75-00-3	CHLOROETHANE	6	U
75-09-2	METHYLENE CHLORIDE	15	~~B~~ U BC
67-64-1	ACETONE	33	J CC
75-15-0	CARBON DISULFIDE	9	
75-35-4	1 1-DICHLOROETHENE	6	U
75-34-3	1 1-DICHLOROETHANE	6	U
540-59-0	1,2-DICHLOROETHENE(total)	6	U
67-66-3	CHLOROFORM	6	U
107-06-2	1 2-DICHLOROETHANE	6	U
78-93-3	2-BUTANONE	6	U
71-55-6	1 1 1-TRICHLOROETHANE	6	U
56-23-5	CARBON TETRACHLORIDE	6	U
75-27-4	BROMODICHLOROMETHANE	6	U
78-87-5	1 2-DICHLOROPROPANE	6	U
10061-01-5	cis-1,3-Dichloropropene	6	U
79-01-6	TRICHLOROETHENE	6	U
124-48-1	DIBROMOCHLOROMETHANE	6	U
79-00-5	1 1 2-TRICHLOROETHANE	6	U
71-43-2	BENZENE	6	U
10061-02-6	trans-1,3-Dichloropropene	6	U
75-25-2	BROMOFORM	6	U
108-10-1	4-METHYL-2-PENTANONE	6	U
591-78-6	2-HEXANONE	6	U
127-18-4	TETRACHLOROETHENE	6	U
108-88-3	TOLUENE	6	U
79-34-5	1 1 2 2-TETRACHLOROETHANE	6	U
108-90-7	CHLOROBENZENE	6	U
100-41-4	ETHYL BENZENE	6	U
100-42-5	STYRENE	6	U
1330-20-7	XYLENES(total)	6	U

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1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBS1000N1

Lab Name: SWL-TULSA Contract: LORADO AFB

Lab Code: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38676A

Matrix: (soil/water) SOIL Lab Sample ID: 38676.10

Sample wt/vol: 5.0 (g/mL) G Lab File ID: I51558.D

Level: (low/med) LOW Date Received: 05/22/99

% Moisture: not dec. 11 Date Analyzed: 05/28/99

Column: (pack/cap) CAP Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG		Q
74-87-3	CHLOROMETHANE	6	U	
74-83-9	BROMOMETHANE	6	U	
75-01-4	VINYL CHLORIDE	6	U	
75-00-3	CHLOROETHANE	6	U	
75-09-2	METHYLENE CHLORIDE	16	~~B~~ U	B C
67-64-1	ACETONE	15	J	C
75-15-0	CARBON DISULFIDE	8		
75-35-4	1 1-DICHLOROETHENE	6	U	
75-34-3	1 1-DICHLOROETHANE	6	U	
540-59-0	1,2-DICHLOROETHENE(total)	6	U	
67-66-3	CHLOROFORM	6	U	
107-06-2	1 2-DICHLOROETHANE	6	U	
78-93-3	2-BUTANONE	6	U	
71-55-6	1 1 1-TRICHLOROETHANE	6	U	
56-23-5	CARBON TETRACHLORIDE	6	U	
75-27-4	BROMODICHLOROMETHANE	6	U	
78-87-5	1 2-DICHLOROPROPANE	6	U	
10061-01-5	cis-1,3-Dichloropropene	6	U	
79-01-6	TRICHLOROETHENE	6	U	
124-48-1	DIBROMOCHLOROMETHANE	6	U	
79-00-5	1 1 2-TRICHLOROETHANE	6	U	
71-43-2	BENZENE	6	U	
10061-02-6	trans-1,3-Dichloropropene	6	U	
75-25-2	BROMOFORM	6	U	
108-10-1	4-METHYL-2-PENTANONE	6	U	
591-78-6	2-HEXANONE	6	U	
127-18-4	TETRACHLOROETHENE	6	U	
108-88-3	TOLUENE	6	U	
79-34-5	1 1 2 2-TETRACHLOROETHANE	6	U	
108-90-7	CHLOROBENZENE	6	U	
100-41-4	ETHYL BENZENE	6	U	
100-42-5	STYRENE	6	U	
1330-20-7	XYLENES(total)	6	U	

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1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBS1000FD1

N-me: SWL-TULSA Contract: LORADO AFB

Code: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38676A

-ix: (soil/water) SOIL Lab Sample ID: 38676.11

)le wt/vol: 5.0 (g/mL) G Lab File ID: I41531.D

:l: (low/med) LOW Date Received: 05/22/99

)isture: not dec. 11 Date Analyzed: 05/28/99

ımn: (pack/cap) CAP Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	CHLOROMETHANE	6	U
74-83-9	BROMOMETHANE	6	U
75-01-4	VINYL CHLORIDE	6	U
75-00-3	CHLOROETHANE	6	U
75-09-2	METHYLENE CHLORIDE	6	U
67-64-1	ACETONE	6	U
75-15-0	CARBON DISULFIDE	6	U
75-35-4	1 1-DICHLOROETHENE	6	U
75-34-3	1 1-DICHLOROETHANE	6	U
540-59-0	1,2-DICHLOROETHENE(total)	6	U
67-66-3	CHLOROFORM	6	U
107-06-2	1 2-DICHLOROETHANE	6	U
78-93-3	2-BUTANONE	6	U
71-55-6	1 1 1-TRICHLOROETHANE	6	U
56-23-5	CARBON TETRACHLORIDE	6	U
75-27-4	BROMODICHLOROMETHANE	6	U
78-87-5	1 2-DICHLOROPROPANE	6	U
10061-01-5	cis-1,3-Dichloropropene	6	U
79-01-6	TRICHLOROETHENE	6	U
124-48-1	DIBROMOCHLOROMETHANE	6	U
79-00-5	1 1 2-TRICHLOROETHANE	6	U
71-43-2	BENZENE	6	U
10061-02-6	trans-1,3-Dichloropropene	6	U
75-25-2	BROMOFORM	6	U
108-10-1	4-METHYL-2-PENTANONE	6	U
591-78-6	2-HEXANONE	6	U
127-18-4	TETRACHLOROETHENE	6	U
108-88-3	TOLUENE	6	U
79-34-5	1 1 2 2-TETRACHLOROETHANE	6	U
108-90-7	CHLOROBENZENE	6	U
100-41-4	ETHYL BENZENE	6	U
100-42-5	STYRENE	6	U
1330-20-7	XYLENES(total)	6	U

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1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBS1000FD1RE

Lab Name: SWL-TULSA Contract: LORADO AFB

Lab Code: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38676A

Matrix: (soil/water) SOIL Lab Sample ID: 38676.11RA

Sample wt/vol: 5.0 (g/mL) G Lab File ID: I51559.D

Level: (low/med) LOW Date Received: 05/22/99

% Moisture: not dec. 11 Date Analyzed: 05/28/99

Column: (pack/cap) CAP Dilution Factor: 1.0

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND		Q		
74-87-3	CHLOROMETHANE	6	U		
74-83-9	BROMOMETHANE	6	U		
75-01-4	VINYL CHLORIDE	6	U		
75-00-3	CHLOROETHANE	6	U		
75-09-2	METHYLENE CHLORIDE	17	~~B~~ U	U	BL
67-64-1	ACETONE	13		J	SS
75-15-0	CARBON DISULFIDE	8		J	SS
75-35-4	1 1-DICHLOROETHENE	6	U		
75-34-3	1 1-DICHLOROETHANE	6	U		
540-59-0	1,2-DICHLOROETHENE(total)	6	U		
67-66-3	CHLOROFORM	6	U		
107-06-2	1 2-DICHLOROETHANE	6	U		
78-93-3	2-BUTANONE	6	U		
71-55-6	1 1 1-TRICHLOROETHANE	6	U		
56-23-5	CARBON TETRACHLORIDE	6	U		
75-27-4	BROMODICHLOROMETHANE	6	U		
78-87-5	1 2-DICHLOROPROPANE	6	U		
10061-01-5	cis-1,3-Dichloropropene	6	U		
79-01-6	TRICHLOROETHENE	6	U		
124-48-1	DIBROMOCHLOROMETHANE	6	U		
79-00-5	1 1 2-TRICHLOROETHANE	6	U		
71-43-2	BENZENE	6	U		
10061-02-6	trans-1,3-Dichloropropene	6	U		
75-25-2	BROMOFORM	6	U		
108-10-1	4-METHYL-2-PENTANONE	6	U		
591-78-6	2-HEXANONE	6	U		
127-18-4	TETRACHLOROETHENE	6	U		
108-88-3	TOLUENE	6	U		
79-34-5	1 1 2 2-TETRACHLOROETHANE	6	U		
108-90-7	CHLOROBENZENE	6	U	UJ	#S
100-41-4	ETHYL BENZENE	6	U	UJ	#S
100-42-5	STYRENE	6	U	UJ	#S
1330-20-7	XYLENES(total)	6	U	UJ	#S

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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBS1004N1

Lab Name: SWL-TULSA Contract: LORADO AFB

Lab Code: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38676A

Matrix: (soil/water) SOIL Lab Sample ID: 38676.12

Sample wt/vol: 5.0 (g/mL) G Lab File ID: I41532.D

Level: (low/med) LOW Date Received: 05/22/99

% Moisture: not dec. 19 Date Analyzed: 05/28/99

Column: (pack/cap) CAP Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	CHLOROMETHANE	6	U
74-83-9	BROMOMETHANE	6	U
75-01-4	VINYL CHLORIDE	6	U
75-00-3	CHLOROETHANE	6	U
75-09-2	METHYLENE CHLORIDE	6	U
67-64-1	ACETONE	6	U
75-15-0	CARBON DISULFIDE	9	
75-35-4	1 1-DICHLOROETHENE	6	U
75-34-3	1 1-DICHLOROETHANE	6	U
540-59-0	1,2-DICHLOROETHENE(total)	6	U
67-66-3	CHLOROFORM	6	U
107-06-2	1 2-DICHLOROETHANE	6	U
78-93-3	2-BUTANONE	6	U
71-55-6	1 1 1-TRICHLOROETHANE	6	U
56-23-5	CARBON TETRACHLORIDE	6	U
75-27-4	BROMODICHLOROMETHANE	6	U
78-87-5	1 2-DICHLOROPROPANE	6	U
10061-01-5	cis-1,3-Dichloropropene	6	U
79-01-6	TRICHLOROETHENE	6	U
124-48-1	DIBROMOCHLOROMETHANE	6	U
79-00-5	1 1 2-TRICHLOROETHANE	6	U
71-43-2	BENZENE	6	U
10061-02-6	trans-1,3-Dichloropropene	6	U
75-25-2	BROMOFORM	6	U
108-10-1	4-METHYL-2-PENTANONE	6	U
591-78-6	2-HEXANONE	6	U
127-18-4	TETRACHLOROETHENE	6	U
108-88-3	TOLUENE	6	U
79-34-5	1 1 2 2-TETRACHLOROETHANE	6	U
108-90-7	CHLOROBENZENE	6	U
100-41-4	ETHYL BENZENE	6	U
100-42-5	STYRENE	6	U
1330-20-7	XYLENES(total)	6	U

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1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBS1006N1

N e: SWL-TULSA Contract: LORADO AFB

Code: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38676A

ix: (soil/water) SOIL Lab Sample ID: 38676.13

le wt/vol: 5.0 (g/mL) G Lab File ID: I51560.D

l: (low/med) LOW Date Received: 05/22/99

isture: not dec. 21 Date Analyzed: 05/28/99

mn: (pack/cap) CAP Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	CHLOROMETHANE	6	U
74-83-9	BROMOMETHANE	6	U
75-01-4	VINYL CHLORIDE	6	U
75-00-3	CHLOROETHANE	6	U
75-09-2	METHYLENE CHLORIDE	16	~~B~~ U BL
67-64-1	ACETONE	41	J CC
75-15-0	CARBON DISULFIDE	10	
75-35-4	1 1-DICHLOROETHENE	6	U
75-34-3	1 1-DICHLOROETHANE	6	U
540-59-0	1,2-DICHLOROETHENE(total)	6	U
67-66-3	CHLOROFORM	6	U
107-06-2	1 2-DICHLOROETHANE	6	U
78-93-3	2-BUTANONE	6	U
71-55-6	1 1 1-TRICHLOROETHANE	6	U
56-23-5	CARBON TETRACHLORIDE	6	U
75-27-4	BROMODICHLOROMETHANE	6	U
78-87-5	1 2-DICHLOROPROPANE	6	U
10061-01-5	cis-1,3-Dichloropropene	6	U
79-01-6	TRICHLOROETHENE	6	U
124-48-1	DIBROMOCHLOROMETHANE	6	U
79-00-5	1 1 2-TRICHLOROETHANE	6	U
71-43-2	BENZENE	6	U
10061-02-6	trans-1,3-Dichloropropene	6	U
75-25-2	BROMOFORM	6	U
108-10-1	4-METHYL-2-PENTANONE	6	U
591-78-6	2-HEXANONE	6	U
127-18-4	TETRACHLOROETHENE	6	U
108-88-3	TOLUENE	6	U
79-34-5	1 1 2 2-TETRACHLOROETHANE	6	U
108-90-7	CHLOROBENZENE	6	U
100-41-4	ETHYL BENZENE	6	U
100-42-5	STYRENE	6	U
1330-20-7	XYLENES(total)	6	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBS2000N1

Name: SWL-TULSA Contract: LORADO AFB

Code: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38676A

Matrix: (soil/water) SOIL Lab Sample ID: 38676.14

Sample wt/vol: 5.0 (g/mL) G Lab File ID: I41534.D

Level: (low/med) LOW Date Received: 05/22/99

% Moisture: not dec. 8 Date Analyzed: 05/28/99

Column: (pack/cap) CAP Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	CHLOROMETHANE	5	U
74-83-9	BROMOMETHANE	5	U
75-01-4	VINYL CHLORIDE	5	U
75-00-3	CHLOROETHANE	5	U
75-09-2	METHYLENE CHLORIDE	2	J
67-64-1	ACETONE	16	
75-15-0	CARBON DISULFIDE	8	
75-35-4	1 1-DICHLOROETHENE	5	U
75-34-3	1 1-DICHLOROETHANE	5	U
540-59-0	1,2-DICHLOROETHENE(total)	5	U
67-66-3	CHLOROFORM	5	U
107-06-2	1 2-DICHLOROETHANE	5	U
78-93-3	2-BUTANONE	5	U
71-55-6	1 1 1-TRICHLOROETHANE	5	U
56-23-5	CARBON TETRACHLORIDE	5	U
75-27-4	BROMODICHLOROMETHANE	5	U
78-87-5	1 2-DICHLOROPROPANE	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	TRICHLOROETHENE	5	U
124-48-1	DIBROMOCHLOROMETHANE	5	U
79-00-5	1 1 2-TRICHLOROETHANE	5	U
71-43-2	BENZENE	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
75-25-2	BROMOFORM	5	U
108-10-1	4-METHYL-2-PENTANONE	5	U
591-78-6	2-HEXANONE	5	U
127-18-4	TETRACHLOROETHENE	5	U
108-88-3	TOLUENE	5	U
79-34-5	1 1 2 2-TETRACHLOROETHANE	5	U
108-90-7	CHLOROBENZENE	5	U
100-41-4	ETHYL BENZENE	5	U
100-42-5	STYRENE	5	U
1330-20-7	XYLENES(total)	5	U

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1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBS2004N1

ıe: SWL-TULSA Contract: LORADO AFB

Code: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38676A

ix: (soil/water) SOIL Lab Sample ID: 38676.15

ıle wt/vol: 5.0 (g/mL) G Lab File ID: I51562.D

el: (low/med) LOW Date Received: 05/22/99

ıisture: not dec. 15 Date Analyzed: 05/28/99

ımn: (pack/cap) CAP Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	CHLOROMETHANE	6	U
74-83-9	BROMOMETHANE	6	U
75-01-4	VINYL CHLORIDE	6	U
75-00-3	CHLOROETHANE	6	U
75-09-2	METHYLENE CHLORIDE	13	~~B~~ U BL
67-64-1	ACETONE	14	J CC
75-15-0	CARBON DISULFIDE	9	
75-35-4	1 1-DICHLOROETHENE	6	U
75-34-3	1 1-DICHLOROETHANE	6	U
540-59-0	1,2-DICHLOROETHENE(total)	6	U
67-66-3	CHLOROFORM	6	U
107-06-2	1 2-DICHLOROETHANE	6	U
78-93-3	2-BUTANONE	6	U
71-55-6	1 1 1-TRICHLOROETHANE	6	U
56-23-5	CARBON TETRACHLORIDE	6	U
75-27-4	BROMODICHLOROMETHANE	6	U
78-87-5	1 2-DICHLOROPROPANE	6	U
10061-01-5	cis-1,3-Dichloropropene	6	U
79-01-6	TRICHLOROETHENE	6	U
124-48-1	DIBROMOCHLOROMETHANE	6	U
79-00-5	1 1 2-TRICHLOROETHANE	6	U
71-43-2	BENZENE	6	U
10061-02-6	trans-1,3-Dichloropropene	6	U
75-25-2	BROMOFORM	6	U
108-10-1	4-METHYL-2-PENTANONE	6	U
591-78-6	2-HEXANONE	6	U
127-18-4	TETRACHLOROETHENE	6	U
108-88-3	TOLUENE	6	U
79-34-5	1 1 2 2-TETRACHLOROETHANE	6	U
108-90-7	CHLOROBENZENE	6	U
100-41-4	ETHYL BENZENE	6	U
100-42-5	STYRENE	6	U
1330-20-7	XYLENES(total)	6	U

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1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBS2006N1

b Name: SWL-TULSA Contract: LORADO AFB

.ode: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38676A

trix: (soil/water) SOIL Lab Sample ID: 38676.16

mple wt/vol: 5.0 (g/mL) G Lab File ID: I51563.D

vel: (low/med) LOW Date Received: 05/22/99

Moisture: not dec. 12 Date Analyzed: 05/28/99

olumn: (pack/cap) CAP Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	CHLOROMETHANE	6	U
74-83-9	BROMOMETHANE	6	U
75-01-4	VINYL CHLORIDE	6	U
75-00-3	CHLOROETHANE	6	U
75-09-2	METHYLENE CHLORIDE	14	B
67-64-1	ACETONE	10	J CC
75-15-0	CARBON DISULFIDE	8	
75-35-4	1 1-DICHLOROETHENE	6	U
75-34-3	1 1-DICHLOROETHANE	6	U
540-59-0	1,2-DICHLOROETHENE(total)	6	U
67-66-3	CHLOROFORM	6	U
107-06-2	1 2-DICHLOROETHANE	6	U
78-93-3	2-BUTANONE	6	U
71-55-6	1 1 1-TRICHLOROETHANE	6	U
56-23-5	CARBON TETRACHLORIDE	6	U
75-27-4	BROMODICHLOROMETHANE	6	U
78-87-5	1 2-DICHLOROPROPANE	6	U
10061-01-5	cis-1,3-Dichloropropene	6	U
79-01-6	TRICHLOROETHENE	6	U
124-48-1	DIBROMOCHLOROMETHANE	6	U
79-00-5	1 1 2-TRICHLOROETHANE	6	U
71-43-2	BENZENE	6	U
10061-02-6	trans-1,3-Dichloropropene	6	U
75-25-2	BROMOFORM	6	U
108-10-1	4-METHYL-2-PENTANONE	6	U
591-78-6	2-HEXANONE	6	U
127-18-4	TETRACHLOROETHENE	6	U
108-88-3	TOLUENE	6	U
79-34-5	1 1 2 2-TETRACHLOROETHANE	6	U
108-90-7	CHLOROBENZENE	6	U
100-41-4	ETHYL BENZENE	6	U
100-42-5	STYRENE	6	U
1330-20-7	XYLENES(total)	6	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBS3000N1

Name: SWL-TULSA Contract: LORADO AFB

Code: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38676A

Matrix: (soil/water) SOIL Lab Sample ID: 38676.17

Sample wt/vol: 5.0 (g/mL) G Lab File ID: I41537.D

Level: (low/med) LOW Date Received: 05/22/99

% Moisture: not dec. 7 Date Analyzed: 05/28/99

Column: (pack/cap) CAP Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	CHLOROMETHANE	5	U
74-83-9	BROMOMETHANE	5	U
75-01-4	VINYL CHLORIDE	5	U
75-00-3	CHLOROETHANE	5	U
75-09-2	METHYLENE CHLORIDE	5	U
67-64-1	ACETONE	5	U
75-15-0	CARBON DISULFIDE	8	
75-35-4	1 1-DICHLOROETHENE	5	U
75-34-3	1 1-DICHLOROETHANE	5	U
540-59-0	1,2-DICHLOROETHENE(total)	5	U
67-66-3	CHLOROFORM	5	U
107-06-2	1 2-DICHLOROETHANE	5	U
78-93-3	2-BUTANONE	5	U
71-55-6	1 1 1-TRICHLOROETHANE	5	U
56-23-5	CARBON TETRACHLORIDE	5	U
75-27-4	BROMODICHLOROMETHANE	5	U
78-87-5	1 2-DICHLOROPROPANE	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	TRICHLOROETHENE	5	U
124-48-1	DIBROMOCHLOROMETHANE	5	U
79-00-5	1 1 2-TRICHLOROETHANE	5	U
71-43-2	BENZENE	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
75-25-2	BROMOFORM	5	U
108-10-1	4-METHYL-2-PENTANONE	5	U
591-78-6	2-HEXANONE	5	U
127-18-4	TETRACHLOROETHENE	5	U
108-88-3	TOLUENE	5	U
79-34-5	1 1 2 2-TETRACHLOROETHANE	5	U
108-90-7	CHLOROBENZENE	5	U
100-41-4	ETHYL BENZENE	5	U
100-42-5	STYRENE	5	U
1330-20-7	XYLENES(total)	5	U

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1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBS3004N1

N e: SWL-TULSA Contract: LORADO AFB

Code: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38676A

ix: (soil/water) SOIL Lab Sample ID: 38676.18

le wt/vol: 5.0 (g/mL) G Lab File ID: I51564.D

l: (low/med) LOW Date Received: 05/22/99

isture: not dec. 18 Date Analyzed: 05/28/99

mn: (pack/cap) CAP .Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	CHLOROMETHANE	6	U
74-83-9	BROMOMETHANE	6	U
75-01-4	VINYL CHLORIDE	6	U
75-00-3	CHLOROETHANE	6	U
75-09-2	METHYLENE CHLORIDE	14	~~B~~ U BL
67-64-1	ACETONE	10	J CC
75-15-0	CARBON DISULFIDE	10	
75-35-4	1 1-DICHLOROETHENE	6	U
75-34-3	1 1-DICHLOROETHANE	6	U
540-59-0	1,2-DICHLOROETHENE(total)	6	U
67-66-3	CHLOROFORM	6	U
107-06-2	1 2-DICHLOROETHANE	6	U
78-93-3	2-BUTANONE	6	U
71-55-6	1 1 1-TRICHLOROETHANE	6	U
56-23-5	CARBON TETRACHLORIDE	6	U
75-27-4	BROMODICHLOROMETHANE	6	U
78-87-5	1 2-DICHLOROPROPANE	6	U
10061-01-5	cis-1,3-Dichloropropene	6	U
79-01-6	TRICHLOROETHENE	6	U
124-48-1	DIBROMOCHLOROMETHANE	6	U
79-00-5	1 1 2-TRICHLOROETHANE	6	U
71-43-2	BENZENE	6	U
10061-02-6	trans-1,3-Dichloropropene	6	U
75-25-2	BROMOFORM	6	U
108-10-1	4-METHYL-2-PENTANONE	6	U
591-78-6	2-HEXANONE	6	U
127-18-4	TETRACHLOROETHENE	6	U
108-88-3	TOLUENE	6	U
79-34-5	1 1 2 2-TETRACHLOROETHANE	6	U
108-90-7	CHLOROBENZENE	6	U
100-41-4	ETHYL BENZENE	6	U
100-42-5	STYRENE	6	U
1330-20-7	XYLENES(total)	6	U

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1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBS3006N1

Name: SWL-TULSA Contract: LORADO AFB

Code: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38676A

Matrix: (soil/water) SOIL Lab Sample ID: 38676.19

Sample wt/vol: 5.0 (g/mL) G Lab File ID: I51567.D

Level: (low/med) LOW Date Received: 05/22/99

% Moisture: not dec. 19 Date Analyzed: 05/28/99

Column: (pack/cap) CAP Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	CHLOROMETHANE	6	U
74-83-9	BROMOMETHANE	6	U
75-01-4	VINYL CHLORIDE	6	U
75-00-3	CHLOROETHANE	6	U
75-09-2	METHYLENE CHLORIDE	15	B
67-64-1	ACETONE	16	
75-15-0	CARBON DISULFIDE	9	
75-35-4	1 1-DICHLOROETHENE	6	U
75-34-3	1 1-DICHLOROETHANE	6	U
540-59-0	1,2-DICHLOROETHENE(total)	6	U
67-66-3	CHLOROFORM	6	U
107-06-2	1 2-DICHLOROETHANE	6	U
78-93-3	2-BUTANONE	6	U
71-55-6	1 1 1-TRICHLOROETHANE	6	U
56-23-5	CARBON TETRACHLORIDE	6	U
75-27-4	BROMODICHLOROMETHANE	6	U
78-87-5	1 2-DICHLOROPROPANE	6	U
10061-01-5	cis-1,3-Dichloropropene	6	U
79-01-6	TRICHLOROETHENE	6	U
124-48-1	DIBROMOCHLOROMETHANE	6	U
79-00-5	1 1 2-TRICHLOROETHANE	6	U
71-43-2	BENZENE	6	U
10061-02-6	trans-1,3-Dichloropropene	6	U
75-25-2	BROMOFORM	6	U
108-10-1	4-METHYL-2-PENTANONE	6	U
591-78-6	2-HEXANONE	6	U
127-18-4	TETRACHLOROETHENE	6	U
108-88-3	TOLUENE	6	U
79-34-5	1 1 2 2-TETRACHLOROETHANE	6	U
108-90-7	CHLOROBENZENE	6	U
100-41-4	ETHYL BENZENE	6	U
100-42-5	STYRENE	6	U
1330-20-7	XYLENES(total)	6	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBS3006N1RE

Lab Name: SWL-TULSA Contract: LORADO AFB

Code: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38676A

Matrix: (soil/water) SOIL Lab Sample ID: 38676.19RA

Sample wt/vol: 5.0 (g/mL) G Lab File ID: R33077.D

Level: (low/med) LOW Date Received: 05/22/99

% Moisture: not dec. 19 Date Analyzed: 05/28/99

Column: (pack/cap) CAP Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	CHLOROMETHANE	6	U
74-83-9	BROMOMETHANE	6	U
75-01-4	VINYL CHLORIDE	6	U
75-00-3	CHLOROETHANE	6	U
75-09-2	METHYLENE CHLORIDE	6	U
67-64-1	ACETONE	6	U
75-15-0	CARBON DISULFIDE	6	U
75-35-4	1 1-DICHLOROETHENE	6	U
75-34-3	1 1-DICHLOROETHANE	6	U
540-59-0	1,2-Dichloroethene (total)	6	U
67-66-3	CHLOROFORM	6	U
107-06-2	1 2-DICHLOROETHANE	6	U
78-93-3	2-BUTANONE	6	U
71-55-6	1 1 1-TRICHLOROETHANE	6	U
56-23-5	CARBON TETRACHLORIDE	6	U
75-27-4	BROMODICHLOROMETHANE	6	U
78-87-5	1 2-DICHLOROPROPANE	6	U
10061-01-5	cis-1,3-Dichloropropene	6	U
79-01-6	TRICHLOROETHENE	6	U
124-48-1	DIBROMOCHLOROMETHANE	6	U
79-00-5	1 1 2-TRICHLOROETHANE	6	U
71-43-2	BENZENE	6	U
10061-02-6	trans-1,3-Dichloropropene	6	U
75-25-2	BROMOFORM	6	U
108-10-1	4-METHYL-2-PENTANONE	6	U
591-78-6	2-HEXANONE	6	U
127-18-4	TETRACHLOROETHENE	6	U
108-88-3	TOLUENE	6	U
79-34-5	1 1 2 2-TETRACHLOROETHANE	6	U
108-90-7	CHLOROBENZENE	6	U
100-41-4	ETHYL BENZENE	6	U
100-42-5	STYRENE	6	U
1330-20-7	Xylene (Total)	6	U

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1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBS4000N1

me: SWL-TULSA Contract: LORADO AFB

Code: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38676A

rix: (soil/water) SOIL Lab Sample ID: 38676.20

ple wt/vol: 5.0 (g/mL) G Lab File ID: I41540.D

el: (low/med) LOW Date Received: 05/22/99

oisture: not dec. 6 Date Analyzed: 05/28/99

umn: (pack/cap) CAP Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	CHLOROMETHANE	5	U
74-83-9	BROMOMETHANE	5	U
75-01-4	VINYL CHLORIDE	5	U
75-00-3	CHLOROETHANE	5	U
75-09-2	METHYLENE CHLORIDE	5	U
67-64-1	ACETONE	7	
75-15-0	CARBON DISULFIDE	8	
75-35-4	1 1-DICHLOROETHENE	5	U
75-34-3	1 1-DICHLOROETHANE	5	U
540-59-0	1,2-DICHLOROETHENE(total)	5	U
67-66-3	CHLOROFORM	5	U
107-06-2	1 2-DICHLOROETHANE	5	U
78-93-3	2-BUTANONE	5	U
71-55-6	1 1 1-TRICHLOROETHANE	5	U
56-23-5	CARBON TETRACHLORIDE	5	U
75-27-4	BROMODICHLOROMETHANE	5	U
78-87-5	1 2-DICHLOROPROPANE	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	TRICHLOROETHENE	5	U
124-48-1	DIBROMOCHLOROMETHANE	5	U
79-00-5	1 1 2-TRICHLOROETHANE	5	U
71-43-2	BENZENE	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
75-25-2	BROMOFORM	5	U
108-10-1	4-METHYL-2-PENTANONE	5	U
591-78-6	2-HEXANONE	5	U
127-18-4	TETRACHLOROETHENE	5	U
108-88-3	TOLUENE	5	U
79-34-5	1 1 2 2-TETRACHLOROETHANE	5	U
108-90-7	CHLOROBENZENE	5	U
100-41-4	ETHYL BENZENE	5	U
100-42-5	STYRENE	5	U
1330-20-7	XYLENES(total)	5	U

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1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBS4004N1

Lab Name: SWL-TULSA Contract: LORADO AFB

Lab Code: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38676A

Matrix: (soil/water) SOIL Lab Sample ID: 38676.23

Sample wt/vol: 5.0 (g/mL) G Lab File ID: R33078.D

Level: (low/med) LOW Date Received: 05/22/99

% Moisture: not dec. 16 Date Analyzed: 05/28/99

Column: (pack/cap) CAP Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	CHLOROMETHANE	6	U
74-83-9	BROMOMETHANE	6	U
75-01-4	VINYL CHLORIDE	6	U
75-00-3	CHLOROETHANE	6	U
75-09-2	METHYLENE CHLORIDE	6	U
67-64-1	ACETONE	6	U
75-15-0	CARBON DISULFIDE	6	U
75-35-4	1 1-DICHLOROETHENE	6	U
75-34-3	1 1-DICHLOROETHANE	6	U
540-59-0	1,2-Dichloroethene (total)	6	U
67-66-3	CHLOROFORM	6	U
107-06-2	1 2-DICHLOROETHANE	6	U
78-93-3	2-BUTANONE	6	U
71-55-6	1 1 1-TRICHLOROETHANE	6	U
56-23-5	CARBON TETRACHLORIDE	6	U
75-27-4	BROMODICHLOROMETHANE	6	U
78-87-5	1 2-DICHLOROPROPANE	6	U
10061-01-5	cis-1,3-Dichloropropene	6	U
79-01-6	TRICHLOROETHENE	6	U
124-48-1	DIBROMOCHLOROMETHANE	6	U
79-00-5	1 1 2-TRICHLOROETHANE	6	U
71-43-2	BENZENE	6	U
10061-02-6	trans-1,3-Dichloropropene	6	U
75-25-2	BROMOFORM	6	U
108-10-1	4-METHYL-2-PENTANONE	6	U
591-78-6	2-HEXANONE	6	U
127-18-4	TETRACHLOROETHENE	6	U
108-88-3	TOLUENE	6	U
79-34-5	1 1 2 2-TETRACHLOROETHANE	6	U
108-90-7	CHLOROBENZENE	6	U
100-41-4	ETHYL BENZENE	6	U
100-42-5	STYRENE	6	U
1330-20-7	Xylene (Total)	6	U

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1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBS4008N1

Name: SWL-TULSA Contract: LORADO AFB

Code: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38676A

Matrix: (soil/water) SOIL Lab Sample ID: 38676.24

Sample wt/vol: 5.0 (g/mL) G Lab File ID: I51569.D

Level: (low/med) LOW Date Received: 05/22/99

Moisture: not dec. 21 Date Analyzed: 05/29/99

Column: (pack/cap) CAP Dilution Factor: 1.0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND	Q
74-87-3	CHLOROMETHANE	6 U
74-83-9	BROMOMETHANE	6 U
75-01-4	VINYL CHLORIDE	6 U
75-00-3	CHLOROETHANE	6 U
75-09-2	METHYLENE CHLORIDE	6 U
67-64-1	ACETONE	6 U
75-15-0	CARBON DISULFIDE	11
75-35-4	1 1-DICHLOROETHENE	6 U
75-34-3	1 1-DICHLOROETHANE	6 U
540-59-0	1,2-DICHLOROETHENE(total)	6 U
67-66-3	CHLOROFORM	6 U
107-06-2	1 2-DICHLOROETHANE	6 U
78-93-3	2-BUTANONE	6 U
71-55-6	1 1 1-TRICHLOROETHANE	6 U
56-23-5	CARBON TETRACHLORIDE	6 U
75-27-4	BROMODICHLOROMETHANE	6 U
78-87-5	1 2-DICHLOROPROPANE	6 U
10061-01-5	cis-1,3-Dichloropropene	6 U
79-01-6	TRICHLOROETHENE	6 U
124-48-1	DIBROMOCHLOROMETHANE	6 U
79-00-5	1 1 2-TRICHLOROETHANE	6 U
71-43-2	BENZENE	6 U
10061-02-6	trans-1,3-Dichloropropene	6 U
75-25-2	BROMOFORM	6 U
108-10-1	4-METHYL-2-PENTANONE	6 U
591-78-6	2-HEXANONE	6 U
127-18-4	TETRACHLOROETHENE	6 U
108-88-3	TOLUENE	6 U
79-34-5	1 1 2 2-TETRACHLOROETHANE	6 U
108-90-7	CHLOROBENZENE	3 U
100-41-4	ETHYL BENZENE	6 U
100-42-5	STYRENE	6 U
1330-20-7	XYLENES(total)	6 U

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1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBS4008N1RE

N~me: SWL-TULSA Contract: LORADO AFB

Code: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38676A

ix: (soil/water) SOIL Lab Sample ID: 38676.24RA

le wt/vol: 5.0 (g/mL) G Lab File ID: R33092.D

l: (low/med) LOW Date Received: 05/22/99

isture: not dec. 21 Date Analyzed: 06/01/99

mn: (pack/cap) CAP Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	CHLOROMETHANE	6	U
74-83-9	BROMOMETHANE	6	U
75-01-4	VINYL CHLORIDE	6	U
75-00-3	CHLOROETHANE	6	U
75-09-2	METHYLENE CHLORIDE	6	U
67-64-1	ACETONE	12	J
75-15-0	CARBON DISULFIDE	6	U
75-35-4	1 1-DICHLOROETHENE	6	U
75-34-3	1 1-DICHLOROETHANE	6	U
540-59-0	1,2-Dichloroethene (total)	6	U
67-66-3	CHLOROFORM	6	U
107-06-2	1 2-DICHLOROETHANE	6	U
78-93-3	2-BUTANONE	6	U
71-55-6	1 1 1-TRICHLOROETHANE	6	U
56-23-5	CARBON TETRACHLORIDE	6	U
75-27-4	BROMODICHLOROMETHANE	6	U
78-87-5	1 2-DICHLOROPROPANE	6	U
10061-01-5	cis-1,3-Dichloropropene	6	U
79-01-6	TRICHLOROETHENE	6	U
124-48-1	DIBROMOCHLOROMETHANE	6	U
79-00-5	1 1 2-TRICHLOROETHANE	6	U
71-43-2	BENZENE	6	U
10061-02-6	trans-1,3-Dichloropropene	6	U
75-25-2	BROMOFORM	6	U
108-10-1	4-METHYL-2-PENTANONE	6	U
591-78-6	2-HEXANONE	6	U
127-18-4	TETRACHLOROETHENE	6	U
108-88-3	TOLUENE	6	U
79-34-5	1 1 2 2-TETRACHLOROETHANE	6	U
108-90-7	CHLOROBENZENE	6	U
100-41-4	ETHYL BENZENE	6	U
100-42-5	STYRENE	6	U
1330-20-7	Xylene (Total)	6	U

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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBS4008FD1

Lab Name: SWL-TULSA Contract: LORADO AFB

Lab Code: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38676A

Matrix: (soil/water) SOIL Lab Sample ID: 38676.25

Sample wt/vol: 5.0 (g/mL) G Lab File ID: I51570.D

Level: (low/med) LOW Date Received: 05/22/99

% Moisture: not dec. 19 Date Analyzed: 05/29/99

Column: (pack/cap) CAP Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	CHLOROMETHANE	6	U
74-83-9	BROMOMETHANE	6	U
75-01-4	VINYL CHLORIDE	6	U
75-00-3	CHLOROETHANE	6	U
75-09-2	METHYLENE CHLORIDE	13	~~B~~ U BL
67-64-1	ACETONE	82	J CC
75-15-0	CARBON DISULFIDE	10	J SS
75-35-4	1 1-DICHLOROETHENE	6	U
75-34-3	1 1-DICHLOROETHANE	6	U
540-59-0	1,2-DICHLOROETHENE(total)	6	U
67-66-3	CHLOROFORM	6	U
107-06-2	1 2-DICHLOROETHANE	6	U
78-93-3	2-BUTANONE	6	U
71-55-6	1 1 1-TRICHLOROETHANE	6	U
56-23-5	CARBON TETRACHLORIDE	6	U
75-27-4	BROMODICHLOROMETHANE	6	U
78-87-5	1 2-DICHLOROPROPANE	6	U
10061-01-5	cis-1,3-Dichloropropene	6	U
79-01-6	TRICHLOROETHENE	6	U
124-48-1	DIBROMOCHLOROMETHANE	6	U
79-00-5	1 1 2-TRICHLOROETHANE	6	U
71-43-2	BENZENE	6	U
10061-02-6	trans-1,3-Dichloropropene	6	U
75-25-2	BROMOFORM	6	U
108-10-1	4-METHYL-2-PENTANONE	6	U
591-78-6	2-HEXANONE	6	U
127-18-4	TETRACHLOROETHENE	6	U
108-88-3	TOLUENE	6	U
79-34-5	1 1 2 2-TETRACHLOROETHANE	6	U
108-90-7	CHLOROBENZENE	6	U
100-41-4	ETHYL BENZENE	6	U
100-42-5	STYRENE	6	U
1330-20-7	XYLENES(total)	6	U

4/8

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBS4008FD1RE

ne: SWL-TULSA Contract: LORADO AFB

Code: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38676A

rix: (soil/water) SOIL Lab Sample ID: 38676.25RA

ole wt/vol: 5.0 (g/mL) G Lab File ID: R33093.D

el: (low/med) LOW Date Received: 05/22/99

oisture: not dec. 19 Date Analyzed: 06/01/99

umn: (pack/cap) CAP Dilution Factor: 1.0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND		Q
74-87-3	CHLOROMETHANE	6	U
74-83-9	BROMOMETHANE	6	U
75-01-4	VINYL CHLORIDE	6	U
75-00-3	CHLOROETHANE	6	U
75-09-2	METHYLENE CHLORIDE	6	U
67-64-1	ACETONE	6	U
75-15-0	CARBON DISULFIDE	6	U
75-35-4	1 1-DICHLOROETHENE	6	U
75-34-3	1 1-DICHLOROETHANE	6	U
540-59-0	1,2-Dichloroethene (total)	6	U
67-66-3	CHLOROFORM	6	U
107-06-2	1 2-DICHLOROETHANE	6	U
78-93-3	2-BUTANONE	6	U
71-55-6	1 1 1-TRICHLOROETHANE	6	U
56-23-5	CARBON TETRACHLORIDE	6	U
75-27-4	BROMODICHLOROMETHANE	6	U
78-87-5	1 2-DICHLOROPROPANE	6	U
10061-01-5	cis-1,3-Dichloropropene	6	U
79-01-6	TRICHLOROETHENE	6	U
124-48-1	DIBROMOCHLOROMETHANE	6	U
79-00-5	1 1 2-TRICHLOROETHANE	6	U
71-43-2	BENZENE	6	U
10061-02-6	trans-1,3-Dichloropropene	6	U
75-25-2	BROMOFORM	6	U
108-10-1	4-METHYL-2-PENTANONE	6	U
591-78-6	2-HEXANONE	6	U
127-18-4	TETRACHLOROETHENE	6	U
108-88-3	TOLUENE	6	U
79-34-5	1 1 2 2-TETRACHLOROETHANE	6	U
108-90-7	CHLOROBENZENE	6	U
100-41-4	ETHYL BENZENE	6	U
100-42-5	STYRENE	6	U
1330-20-7	Xylene (Total)	6	U

R SS

LA

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PSBWQ4000EB1

c ame: SWL-TULSA Contract: LORADO AFB

o Code: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38676C

trix: (soil/water) WATER Lab Sample ID: 38676.26

mple wt/vol: 25.0 (g/mL) ML Lab File ID: K27857.D

vel: (low/med) LOW Date Received: 05/22/99

Moisture: not dec. _____ Date Analyzed: 05/25/99

lumn: (pack/cap) CAP Dilution Factor: 1.0

EB

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	CHLOROMETHANE	1	U
74-83-9	BROMOMETHANE	1	U
75-01-4	VINYL CHLORIDE	1	U
75-00-3	CHLOROETHANE	1	U
75-09-2	METHYLENE CHLORIDE	1	U
67-64-1	ACETONE	5	U
75-15-0	CARBON DISULFIDE	1	U
75-35-4	1 1-DICHLOROETHENE	1	U
75-34-3	1 1-DICHLOROETHANE	1	U
540-59-0	1,2-DICHLOROETHENE(total)	1	U
67-66-3	CHLOROFORM	1	U
107-06-2	1 2-DICHLOROETHANE	1	U
78-93-3	2-BUTANONE	5	U
71-55-6	1 1 1-TRICHLOROETHANE	1	U
56-23-5	CARBON TETRACHLORIDE	1	U
75-27-4	BROMODICHLOROMETHANE	1	U
78-87-5	1 2-DICHLOROPROPANE	1	U
10061-01-5	cis-1,3-Dichloropropene	1	U
79-01-6	TRICHLOROETHENE	1	U
124-48-1	DIBROMOCHLOROMETHANE	1	U
79-00-5	1 1 2-TRICHLOROETHANE	1	U
71-43-2	BENZENE	1	U
10061-02-6	trans-1,3-Dichloropropene	1	U
75-25-2	BROMOFORM	1	U
108-10-1	4-METHYL-2-PENTANONE	5	U
591-78-6	2-HEXANONE	5	U
127-18-4	TETRACHLOROETHENE	1	U
108-88-3	TOLUENE	1	U
79-34-5	1 1 2 2-TETRACHLOROETHANE	1	U
108-90-7	CHLOROBENZENE	1	U
100-41-4	ETHYL BENZENE	1	U
100-42-5	STYRENE	1	U
1330-20-7	XYLENES(total)	1	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PNQWQ1000TB1

ame: SWL-TULSA Contract: LORADO AFB

o Code: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38676C

trix: (soil/water) WATER Lab Sample ID: 38676.27

mple wt/vol: 25.0 (g/mL) ML Lab File ID: K27853.D

vel: (low/med) LOW Date Received: 05/22/99

Moisture: not dec. _____ Date Analyzed: 05/25/99

lumn: (pack/cap) CAP Dilution Factor: 1.0

TB

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	CHLOROMETHANE	1	U
74-83-9	BROMOMETHANE	1	U
75-01-4	VINYL CHLORIDE	1	U
75-00-3	CHLOROETHANE	1	U
75-09-2	METHYLENE CHLORIDE	1	U
67-64-1	ACETONE	5	U
75-15-0	CARBON DISULFIDE	1	U
75-35-4	1 1-DICHLOROETHENE	1	U
75-34-3	1 1-DICHLOROETHANE	1	U
540-59-0	1,2-DICHLOROETHENE(total)	1	U
67-66-3	CHLOROFORM	1	U
107-06-2	1 2-DICHLOROETHANE	1	U
78-93-3	2-BUTANONE	5	U
71-55-6	1 1 1-TRICHLOROETHANE	1	U
56-23-5	CARBON TETRACHLORIDE	1	U
75-27-4	BROMODICHLOROMETHANE	1	U
78-87-5	1 2-DICHLOROPROPANE	1	U
10061-01-5	cis-1,3-Dichloropropene	1	U
79-01-6	TRICHLOROETHENE	1	U
124-48-1	DIBROMOCHLOROMETHANE	1	U
79-00-5	1 1 2-TRICHLOROETHANE	1	U
71-43-2	BENZENE	1	U
10061-02-6	trans-1,3-Dichloropropene	1	U
75-25-2	BROMOFORM	1	U
108-10-1	4-METHYL-2-PENTANONE	5	U
591-78-6	2-HEXANONE	5	U
127-18-4	TETRACHLOROETHENE	1	U
108-88-3	TOLUENE	1	U
79-34-5	1 1 2 2-TETRACHLOROETHANE	1	U
108-90-7	CHLOROBENZENE	1	U
100-41-4	ETHYL BENZENE	1	U
100-42-5	STYRENE	1	U
1330-20-7	XYLENES(total)	1	U

Semivolatiles

Data Review and Validation for: GC/MS Semivolatiles

Project Name & Task:	LAREDO AFB	IWTP	
Project # & Case/SDG:	147436.DV.ZZ	38706	
Methods:	☐ OLMO3.2 ☑ SW-846 8270C ☐ EPA 625 ☐ Other:		
Program:	☐ AFCEE ☐ NFESC ☐ Other	**Number of Samples:**	7 total
Field QC Samples:	1/2-FDUP, 3/4/5-NATIVE/MS/MSD, 7-EB		
Reviewed by & Date:	H. Kelly	4/12/2000	
Matrix:	☑ Water ☐ Soil ☐ Other		

Quality Control	Form #	Requirements	Check (If No* checked, see comments)	Flags Applied (see comments)
Data Pkg Complete (DP)	Pkg	All required deliverables in pkg.	☑ OK ☐ No* ☐ Not provided	☐ Flags Applied
	COC	All samples on COC reported	☑ OK ☐ No*	☐ Flags Applied
Holding Times (HT)	1	Extraction HT (water 7d, soil 14d)	☐ OK ☑ No*	☐ Flags Applied
	COC	Analysis HT (40d from extraction)	☑ OK ☐ No*	☐ Flags Applied
			☐ OK ☐ No*	☐ Flags Applied
Surrogates (SS)	2	Method surrogates used	☑ OK ☐ No* ☐ Not provided	☑ Flags Applied
		Recovery Limits: ☑ Lab ☐ Meth	☐ OK ☑ No* ☐ Diluted out	
MS/MSD or MS/LD	3	Matrix Spikes Provided	☑ MS/MSD ☐ MS/LD ☐ None*	☐ Flags Applied
		Correct Spike Used	☑ OK ☐ No*	
		Acceptance Limits: ☑ Lab ☐ Meth	☐ OK ☑ No* ☐ Diluted out	
LCS (BS) ☐ LCS only ☑ LCS/LCSD	3	LCS per prep. batch	☑ OK ☐ No*	☐ Flags Applied
		Acceptance criteria met	☑ OK ☐ No*	
Blanks (MB,TB,EB, FB/AB)	1	Detects (> MDL or RL/CRQL)	☐ All ND ☑ see ~~blnk wksht~~	☐ Flags Applied
Method/Lab Blank (MB)	4	Meth Blnk per prep batch	☑ OK ☐ No* below	
Tune - DFTPP (TN) prior to sample analysis	5	Initial & Begin of 12-hr shift	☑ OK ☐ No*	☐ Flags Applied
		Mass Assignment Correct	☑ OK ☐ No*	
		Ion Abundance Criteria met	☑ OK ☐ No*	
Initial Calibration (IC)	6	Minimum of 5 levels	☑ OK ☐ No*	☐ Flags Applied
		Linearity criteria met	☑ OK ☐ No* ☐ see cal wksht	
		Minimum RRF criteria met	☑ OK ☐ No* ☐ see cal wksht	
Continuing Calib. Verif. (CC) prior to sample analysis	7	Analyzed at begin of 12-hr shift	☑ OK ☐ No*	☐ Flags Applied
		%diff or %drift criteria met	☑ OK ☐ No* ☐ see cal wksht	
		Minimum RRF criteria met	☑ OK ☐ No* ☐ see cal wksht	
	8	Int. Std. RT/Area criteria met	☐ OK ☐ No*	
Internal Standards (IS)	8	Sample IS area criteria met	☐ OK ☑ No*	☐ Flags Applied
Sample Evaluation	1	All hits within cal. Range	☑ OK ☐ No* ☐ All ND	☐ Flags Applied
	5	Samples w/in 12-hr clock	☑ OK ☐ No*	
	raw	Manual Integration performed	☐ No ☐ see comments	
Field Duplicate (FD)	1	Precision of native vs Field Dup	☑ OK ☐ No* ☐ N/A	☐ Flags Applied

This sheet is applicable to multiple methods. All requirement items may not apply to every analytical method.

Case Narrative Comments: HT, BLANKS, SURROGATES, MS/MSD
I.S.

QC Item	Comments
HT.	samples # 1, 2, 3, 4, 5 were re-extracted 5 days out of HT for 3 + 5 days for #1 + #2 due to low acid surrogates
SS	low acid surrogate recoveries for #1, 2, 3, 4 (MS/MSD) → all <10% #1, 2 + 3 re-extracted with same result → possible

Data Review and Validation for: GC/MS Semivolatiles

Project Name & Task:	LAREDO AFB	IWTP
Project # & Case/SDG:	147436.DV.ZZ	38706
Methods:	☐ OLM03.2 ☑ SW-846 8270C ☐ EPA 625 ☐ Other:	
Program:	☐ AFCEE ☐ NFESC ☐ Other	**Number of Samples:** 7 total
Field QC Samples:	1/2-FDUP, 3/4/5-NAT/MS/MSD, 7-EB	
Reviewed by & Date:	H. Kelly	4/12/2000
Matrix:	☑ Water ☐ Soil ☐ Other	

SS/cont — matrix effect. use original + flag all acid compounds "1R". Flag RE "R".

MS/MSD — all acid compounds in MS/MSD <10% except 4-Nitrophenol in MSD @ 36% rec.
RPDs for 3 acid compounds out of criteria

TUNE — tune for ICAL analyzed on 6/7/99 not included. only "RE" samples analyzed against that curve + those samples were not used

BLANKS — MB - ORIGINAL BLANK - OK - NO targets
Re-ext. BLANK - BEHP = 2 ug/L

EB - BEHP = 10 → 100
1,2-DCB = 1 → 5
1,4-DCB = 0.7 → 3.5
Diethylph. - 0.9 → 9

IS

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

001000N1

Lab Name: SWL-TULSA Contract: LORADO AFB,

Lab Code: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38706

Matrix: (soil/water) WATER Lab Sample ID: 38706.01

Sample wt/vol: 1000 (g/mL) ML Lab File ID: M14577.D

Level: (low/med) LOW Date Received: 05/25/99

% Moisture: not dec. 0 dec. Date Extracted: 05/26/99

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 06/01/99

Concentrated Extract Volume: 1000(uL)

GPC Cleanup: (Y/N) N pH: 6.6 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L		Q		
108-95-2	Phenol	10	~~U~~	R	SS	
111-44-4	bis(2-Chloroethyl)ether	10	U			
95-57-8	2-Chlorophenol	10	~~U~~	R	SS	
541-73-1	1,3-Dichlorobenzene	10	U			
106-46-7	1,4-Dichlorobenzene	10	U			
100-51-6	Benzyl alcohol	10	U			
95-50-1	1,2-Dichlorobenzene	10	U			
95-48-7	2-Methylphenol	10	~~U~~	R	SS	
108-60-1	bis(2-Chloroisopropyl)ether	10	U			
106-44-5	4-Methylphenol	10	~~U~~	R	SS	
621-64-7	N-Nitroso-di-n-propylamine	10	U			
67-72-1	Hexachloroethane	10	U			
98-95-3	Nitrobenzene	10	U			
78-59-1	Isophorone	10	U			
88-75-5	2-Nitrophenol	10	~~U~~	R	SS	
105-67-9	2,4-Dimethylphenol	10	~~U~~	R	SS	
65-85-0	Benzoic Acid	25	~~U~~	R	SS	
111-91-1	bis(2-Chloroethoxy)methane	10	U			
120-83-2	2,4-Dichlorophenol	10	~~U~~	R	SS	
120-82-1	1,2,4-Trichlorobenzene	10	U			
91-20-3	Naphthalene	10	U			
106-47-8	4-Chloroaniline	10	U			
87-68-3	Hexachlorobutadiene	10	U			
59-50-7	4-Chloro-3-methylphenol	10	~~U~~	R	SS	
91-57-6	2-Methylnaphthalene	10	U			
77-47-4	Hexachlorocyclopentadiene	10	U			
88-06-2	2,4,6-Trichlorophenol	10	~~U~~	R	SS	
95-95-4	2,4,5-Trichlorophenol	25	~~U~~	R	SS	
91-58-7	2-Chloronaphthalene	10	U			
88-74-4	2-Nitroaniline	25	U			
131-11-3	Dimethylphthalate	10	U			
208-96-8	Acenaphthylene	10	U			
606-20-2	2,6-Dinitrotoluene	10	U			

6/12/2000

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.: 001000N1

Lab Name: SWL-TULSA Contract: LORADO AFB,

Lab Code: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38706

Matrix: (soil/water) WATER Lab Sample ID: 38706.01

Sample wt/vol: 1000 (g/mL) ML Lab File ID: M14577.D

Level: (low/med) LOW Date Received: 05/25/99

% Moisture: not dec. 0 dec. Date Extracted: 05/26/99

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 06/01/99

Concentrated Extract Volume: 1000(uL)

GPC Cleanup: (Y/N) N pH: 6.6 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L		Q
99-09-2	3-Nitroaniline		25	U
83-32-9	Acenaphthene		2	J
121-14-2	2,4-Dinitrotoluene		10	U
51-28-5	2,4-Dinitrophenol		25	~~U~~ R SS
100-02-7	4-Nitrophenol		25	~~U~~ R SS
132-64-9	Dibenzofuran		2	J
84-66-2	Diethylphthalate	10	~~2~~	~~J~~ U BL
7005-72-3	4-Chlorophenyl-phenylether		10	U
86-73-7	Fluorene		10	U
100-01-6	4-Nitroaniline		25	U
534-52-1	4,6-Dinitro-2-methylphenol		25	~~U~~ R SS
86-30-6	N-Nitrosodiphenylamine (1)		10	U
101-55-3	4-Bromophenylphenylether		10	U
118-74-1	Hexachlorobenzene		10	U
87-86-5	Pentachlorophenol		25	~~U~~ R SS
86-74-8	Carbazole		10	U
85-01-8	Phenanthrene		10	U
120-12-7	Anthracene		10	U
84-74-2	Di-n-butylphthalate		10	U
206-44-0	Fluoranthene		0.80	J
129-00-0	Pyrene		10	U
85-68-7	Butylbenzylphthalate		10	U
91-94-1	3,3'-Dichlorobenzidine		10	U
56-55-3	Benzo(a)anthracene		10	U
218-01-9	Chrysene		10	U
117-81-7	bis(2-Ethylhexyl)phthalate		10	U
117-84-0	Di-n-octylphthalate		10	U
205-99-2	Benzo(b)fluoranthene		10	U
207-08-9	Benzo(k)fluoranthene		10	U
50-32-8	Benzo(a)pyrene		10	U
193-39-5	Indeno(1,2,3-cd)pyrene		10	U
53-70-3	Dibenz(a,h)anthracene		10	U
191-24-2	Benzo(g,h,i)perylene		10	U

(1) - Cannot be separated from Diphenylamine

4/12

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

001000N1RE

Lab Name: SWL-TULSA Contract: LORADO AFB,

Lab Code: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38706

Matrix: (soil/water) WATER Lab Sample ID: 38706.01RE

Sample wt/vol: 950 (g/mL) ML Lab File ID: P21311.D

Level: (low/med) LOW Date Received: 05/25/99

% Moisture: not dec. 0 dec. Date Extracted: 06/03/99

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 06/07/99

Concentrated Extract Volume: 1000(uL)

GPC Cleanup: (Y/N) N pH: 6.6 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L		Q
108-95-2	Phenol	10	U	
111-44-4	bis(2-Chloroethyl)ether	10	U	
95-57-8	2-Chlorophenol	10	U	
541-73-1	1,3-Dichlorobenzene	10	U	
106-46-7	1,4-Dichlorobenzene	10	U	
100-51-6	Benzyl alcohol	10	U	
95-50-1	1,2-Dichlorobenzene	10	U	
95-48-7	2-Methylphenol	10	U	
108-60-1	bis(2-Chloroisopropyl)ether	10	U	
106-44-5	4-Methylphenol	10	U	
621-64-7	N-Nitroso-di-n-propylamine	10	U	
67-72-1	Hexachloroethane	10	U	
98-95-3	Nitrobenzene	10	U	
78-59-1	Isophorone	10	U	
88-75-5	2-Nitrophenol	10	U	
105-67-9	2,4-Dimethylphenol	10	U	
65-85-0	Benzoic Acid	26	U	
111-91-1	bis(2-Chloroethoxy)methane	10	U	
120-83-2	2,4-Dichlorophenol	10	U	
120-82-1	1,2,4-Trichlorobenzene	10	U	
91-20-3	Naphthalene	10	U	
106-47-8	4-Chloroaniline	10	U	
87-68-3	Hexachlorobutadiene	10	U	
59-50-7	4-Chloro-3-methylphenol	10	U	
91-57-6	2-Methylnaphthalene	10	U	
77-47-4	Hexachlorocyclopentadiene	10	U	
88-06-2	2,4,6-Trichlorophenol	10	U	
95-95-4	2,4,5-Trichlorophenol	26	U	
91-58-7	2-Chloronaphthalene	10	U	
88-74-4	2-Nitroaniline	26	U	
131-11-3	Dimethylphthalate	10	U	
208-96-8	Acenaphthylene	10	U	
606-20-2	2,6-Dinitrotoluene	10	U	

R Re

4/1

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

001000N1RE

Lab Name: SWL-TULSA Contract: LORADO AFB,

Lab Code: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38706

Matrix: (soil/water) WATER Lab Sample ID: 38706.01RE

Sample wt/vol: 950 (g/mL) ML Lab File ID: P21311.D

Level: (low/med) LOW Date Received: 05/25/99

% Moisture: not dec. 0 dec. Date Extracted: 06/03/99

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 06/07/99

Concentrated Extract Volume: 1000(uL)

GPC Cleanup: (Y/N) N pH: 6.6 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
99-09-2	3-Nitroaniline	26	U
83-32-9	Acenaphthene	3	U
121-14-2	2,4-Dinitrotoluene	10	U
51-28-5	2,4-Dinitrophenol	26	U
100-02-7	4-Nitrophenol	26	U
132-64-9	Dibenzofuran	2	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	26	U
534-52-1	4,6-Dinitro-2-methylphenol	26	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenylphenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	26	U
86-74-8	Carbazole	10	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
84-74-2	Di-n-butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	10	U
56-55-3	Benzo(a)anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)phthalate	14	B
117-84-0	Di-n-octylphthalate	10	U
205-99-2	Benzo(b)fluoranthene	10	U
207-08-9	Benzo(k)fluoranthene	10	U
50-32-8	Benzo(a)pyrene	10	U
193-39-5	Indeno(1,2,3-cd)pyrene	10	U
53-70-3	Dibenz(a,h)anthracene	10	U
191-24-2	Benzo(g,h,i)perylene	10	U

R Re

(1) - Cannot be separated from Diphenylamine

4/12

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

001000FD1

Lab Name: SWL-TULSA Contract: LORADO AFB,

Lab Code: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38706

Matrix: (soil/water) WATER Lab Sample ID: 38706.02

Sample wt/vol: 1000 (g/mL) ML Lab File ID: M14578.D

Level: (low/med) LOW Date Received: 05/25/99

% Moisture: not dec. 0 dec. Date Extracted: 05/26/99

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 06/02/99

Concentrated Extract Volume: 1000(uL)

GPC Cleanup: (Y/N) N pH: 7.1 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L		Q	
108-95-2	Phenol		10	~~U~~	R SS
111-44-4	bis(2-Chloroethyl)ether		10	U	
95-57-8	2-Chlorophenol		10	~~U~~	R SS
541-73-1	1,3-Dichlorobenzene		10	U	
106-46-7	1,4-Dichlorobenzene		10	U	
100-51-6	Benzyl alcohol		10	U	
95-50-1	1,2-Dichlorobenzene	10	~~0.70~~	~~J~~	u BL
95-48-7	2-Methylphenol		10	~~U~~	R SS
108-60-1	bis(2-Chloroisopropyl)ether		10	U	
106-44-5	4-Methylphenol		10	~~U~~	R SS
621-64-7	N-Nitroso-di-n-propylamine		10	U	
67-72-1	Hexachloroethane		10	U	
98-95-3	Nitrobenzene		10	U	
78-59-1	Isophorone		10	U	
88-75-5	2-Nitrophenol		10	~~U~~	R SS
105-67-9	2,4-Dimethylphenol		10	~~U~~	R SS
65-85-0	Benzoic Acid		25	~~U~~	R SS
111-91-1	bis(2-Chloroethoxy)methane		10	U	
120-83-2	2,4-Dichlorophenol		10	~~U~~	R SS
120-82-1	1,2,4-Trichlorobenzene		10	U	
91-20-3	Naphthalene		10	U	
106-47-8	4-Chloroaniline		10	U	
87-68-3	Hexachlorobutadiene		10	U	
59-50-7	4-Chloro-3-methylphenol		10	~~U~~	R SS
91-57-6	2-Methylnaphthalene		10	U	
77-47-4	Hexachlorocyclopentadiene		10	U	
88-06-2	2,4,6-Trichlorophenol		10	~~U~~	R SS
95-95-4	2,4,5-Trichlorophenol		25	~~U~~	R SS
91-58-7	2-Chloronaphthalene		10	U	
88-74-4	2-Nitroaniline		25	U	
131-11-3	Dimethylphthalate		10	U	
208-96-8	Acenaphthylene		10	U	
606-20-2	2,6-Dinitrotoluene		10	U	

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1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

001000FD1

Lab Name: SWL-TULSA Contract: LORADO AFB,

Lab Code: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38706

Matrix: (soil/water) WATER Lab Sample ID: 38706.02

Sample wt/vol: 1000 (g/mL) ML Lab File ID: M14578.D

Level: (low/med) LOW Date Received: 05/25/99

% Moisture: not dec. 0 dec. Date Extracted: 05/26/99

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 06/02/99

Concentrated Extract Volume: 1000(uL)

GPC Cleanup: (Y/N) N pH: 7.1 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L		Q	
99-09-2	3-Nitroaniline		25	U	
83-32-9	Acenaphthene		2	J	
121-14-2	2,4-Dinitrotoluene		10	U	
51-28-5	2,4-Dinitrophenol		25	~~U~~	R SS
100-02-7	4-Nitrophenol		25	~~U~~	R SS
132-64-9	Dibenzofuran		2	J	
84-66-2	Diethylphthalate	10	~~0.70~~	~~J~~	u BL
7005-72-3	4-Chlorophenyl-phenylether		10	U	
86-73-7	Fluorene		10	U	
100-01-6	4-Nitroaniline		25	U	
534-52-1	4,6-Dinitro-2-methylphenol		25	~~U~~	R S
86-30-6	N-Nitrosodiphenylamine (1)		10	U	
101-55-3	4-Bromophenylphenylether		10	U	
118-74-1	Hexachlorobenzene		10	U	
87-86-5	Pentachlorophenol		25	~~U~~	R SS
86-74-8	Carbazole		10	U	
85-01-8	Phenanthrene		10	U	
120-12-7	Anthracene		10	U	
84-74-2	Di-n-butylphthalate		10	U	
206-44-0	Fluoranthene		0.90	J	
129-00-0	Pyrene		0.50	J	
85-68-7	Butylbenzylphthalate		10	U	
91-94-1	3,3'-Dichlorobenzidine		10	U	
56-55-3	Benzo(a)anthracene		10	U	
218-01-9	Chrysene		10	U	
117-81-7	bis(2-Ethylhexyl)phthalate	10	~~0.80~~	~~J~~	u BL
117-84-0	Di-n-octylphthalate		10	U	
205-99-2	Benzo(b)fluoranthene		10	U	
207-08-9	Benzo(k)fluoranthene		10	U	
50-32-8	Benzo(a)pyrene		10	U	
193-39-5	Indeno(1,2,3-cd)pyrene		10	U	
53-70-3	Dibenz(a,h)anthracene		10	U	
191-24-2	Benzo(g,h,i)perylene		10	U	

(1) - Cannot be separated from Diphenylamine

FORM I SV-2

HK 6/12

02303

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

001000FD1RE

Lab Name: SWL-TULSA Contract: LORADO AFB,

b Code: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38706

Matrix: (soil/water) WATER Lab Sample ID: 38706.02RE

Sample wt/vol: 940 (g/mL) ML Lab File ID: P21312.D

Level: (low/med) LOW Date Received: 05/25/99

% Moisture: not dec. 0 dec. Date Extracted: 06/03/99

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 06/07/99

Concentrated Extract Volume: 1000(uL)

GPC Cleanup: (Y/N) N pH: 7.1 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-95-2	Phenol	11	U
111-44-4	bis(2-Chloroethyl)ether	11	U
95-57-8	2-Chlorophenol	11	U
541-73-1	1,3-Dichlorobenzene	11	U
106-46-7	1,4-Dichlorobenzene	11	U
100-51-6	Benzyl alcohol	11	U
95-50-1	1,2-Dichlorobenzene	11	U
95-48-7	2-Methylphenol	11	U
108-60-1	bis(2-Chloroisopropyl)ether	11	U
106-44-5	4-Methylphenol	11	U
621-64-7	N-Nitroso-di-n-propylamine	11	U
67-72-1	Hexachloroethane	11	U
98-95-3	Nitrobenzene	11	U
78-59-1	Isophorone	11	U
88-75-5	2-Nitrophenol	11	U
105-67-9	2,4-Dimethylphenol	11	U
65-85-0	Benzoic Acid	26	U
111-91-1	bis(2-Chloroethoxy)methane	11	U
120-83-2	2,4-Dichlorophenol	11	U
120-82-1	1,2,4-Trichlorobenzene	11	U
91-20-3	Naphthalene	11	U
106-47-8	4-Chloroaniline	11	U
87-68-3	Hexachlorobutadiene	11	U
59-50-7	4-Chloro-3-methylphenol	11	U
91-57-6	2-Methylnaphthalene	11	U
77-47-4	Hexachlorocyclopentadiene	11	U
88-06-2	2,4,6-Trichlorophenol	11	U
95-95-4	2,4,5-Trichlorophenol	26	U
91-58-7	2-Chloronaphthalene	11	U
88-74-4	2-Nitroaniline	26	U
131-11-3	Dimethylphthalate	11	U
208-96-8	Acenaphthylene	11	U
606-20-2	2,6-Dinitrotoluene	11	U

R Re

HK 4/12

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

001000FD1RE

Lab Name: SWL-TULSA Contract: LORADO AFB,

Lab Code: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38706

Matrix: (soil/water) WATER Lab Sample ID: 38706.02RE

Sample wt/vol: 940 (g/mL) ML Lab File ID: P21312.D

Level: (low/med) LOW Date Received: 05/25/99

% Moisture: not dec. 0 dec. Date Extracted: 06/03/99

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 06/07/99

Concentrated Extract Volume: 1000(uL)

GPC Cleanup: (Y/N) N pH: 7.1 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L		
99-09-2	3-Nitroaniline	26	U	R Re
83-32-9	Acenaphthene	2	J	
121-14-2	2,4-Dinitrotoluene	11	U	
51-28-5	2,4-Dinitrophenol	26	U	
100-02-7	4-Nitrophenol	26	U	
132-64-9	Dibenzofuran	1	J	
84-66-2	Diethylphthalate	11	U	
7005-72-3	4-Chlorophenyl-phenylether	11	U	
86-73-7	Fluorene	11	U	
100-01-6	4-Nitroaniline	26	U	
534-52-1	4,6-Dinitro-2-methylphenol	26	U	
86-30-6	N-Nitrosodiphenylamine (1)	11	U	
101-55-3	4-Bromophenylphenylether	11	U	
118-74-1	Hexachlorobenzene	11	U	
87-86-5	Pentachlorophenol	26	U	
86-74-8	Carbazole	11	U	
85-01-8	Phenanthrene	11	U	
120-12-7	Anthracene	11	U	
84-74-2	Di-n-butylphthalate	11	U	
206-44-0	Fluoranthene	11	U	
129-00-0	Pyrene	11	U	
85-68-7	Butylbenzylphthalate	11	U	
91-94-1	3,3'-Dichlorobenzidine	11	U	
56-55-3	Benzo(a)anthracene	11	U	
218-01-9	Chrysene	11	U	
117-81-7	bis(2-Ethylhexyl)phthalate	3	JB	
117-84-0	Di-n-octylphthalate	11	U	
205-99-2	Benzo(b)fluoranthene	11	U	
207-08-9	Benzo(k)fluoranthene	11	U	
50-32-8	Benzo(a)pyrene	11	U	
193-39-5	Indeno(1,2,3-cd)pyrene	11	U	
53-70-3	Dibenz(a,h)anthracene	11	U	
191-24-2	Benzo(g,h,i)perylene	11	U	

(1) - Cannot be separated from Diphenylamine

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1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

002000N1

Lab Name: SWL-TULSA Contract: LORADO AFB,

Lab Code: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38706

Matrix: (soil/water) WATER Lab Sample ID: 38706.03

Sample wt/vol: 1000 (g/mL) ML Lab File ID: M14579.D

Level: (low/med) LOW Date Received: 05/25/99

% Moisture: not dec. 0 dec. Date Extracted: 05/26/99

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 06/02/99

Concentrated Extract Volume: 1000(uL)

GPC Cleanup: (Y/N) N pH: 6.8 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L		Q
108-95-2	Phenol	10	U	R SS
111-44-4	bis(2-Chloroethyl)ether	10	U	
95-57-8	2-Chlorophenol	10	U	R SS
541-73-1	1,3-Dichlorobenzene	10	U	
106-46-7	1,4-Dichlorobenzene	10	U	
100-51-6	Benzyl alcohol	10	U	
95-50-1	1,2-Dichlorobenzene	10	U	
95-48-7	2-Methylphenol	10	U	R SS
108-60-1	bis(2-Chloroisopropyl)ether	10	U	
106-44-5	4-Methylphenol	10	U	R SS
621-64-7	N-Nitroso-di-n-propylamine	10	U	
67-72-1	Hexachloroethane	10	U	
98-95-3	Nitrobenzene	10	U	
78-59-1	Isophorone	10	U	
88-75-5	2-Nitrophenol	10	U	R SS
105-67-9	2,4-Dimethylphenol	10	U	R SS
65-85-0	Benzoic Acid	25	U	R SS
111-91-1	bis(2-Chloroethoxy)methane	10	U	
120-83-2	2,4-Dichlorophenol	10	U	R SS
120-82-1	1,2,4-Trichlorobenzene	10	U	
91-20-3	Naphthalene	10	U	
106-47-8	4-Chloroaniline	10	U	
87-68-3	Hexachlorobutadiene	10	U	
59-50-7	4-Chloro-3-methylphenol	10	U	R SS
91-57-6	2-Methylnaphthalene	10	U	
77-47-4	Hexachlorocyclopentadiene	10	U	
88-06-2	2,4,6-Trichlorophenol	10	U	R SS
95-95-4	2,4,5-Trichlorophenol	25	U	R SS
91-58-7	2-Chloronaphthalene	10	U	
88-74-4	2-Nitroaniline	25	U	
131-11-3	Dimethylphthalate	10	U	
208-96-8	Acenaphthylene	10	U	
606-20-2	2,6-Dinitrotoluene	10	U	

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1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

002000N1

Lab Name: SWL-TULSA Contract: LORADO AFB,

Lab Code: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38706

Matrix: (soil/water) WATER Lab Sample ID: 38706.03

Sample wt/vol: 1000 (g/mL) ML Lab File ID: M14579.D

Level: (low/med) LOW Date Received: 05/25/99

% Moisture: not dec. 0 dec. Date Extracted: 05/26/99

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 06/02/99

Concentrated Extract Volume: 1000(uL)

GPC Cleanup: (Y/N) N pH: 6.8 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L		Q	
99-09-2	3-Nitroaniline		25	U	
83-32-9	Acenaphthene		10	U	
121-14-2	2,4-Dinitrotoluene		10	U	
51-28-5	2,4-Dinitrophenol		25	~~U~~ R	55
100-02-7	4-Nitrophenol		25	~~U~~ R	55
132-64-9	Dibenzofuran		10	U	
84-66-2	Diethylphthalate	10	~~1~~	~~J~~ U	BL
7005-72-3	4-Chlorophenyl-phenylether		10	U	
86-73-7	Fluorene		10	U	
100-01-6	4-Nitroaniline		25	U	
534-52-1	4,6-Dinitro-2-methylphenol		25	~~U~~ R	55
86-30-6	N-Nitrosodiphenylamine (1)		10	U	
101-55-3	4-Bromophenylphenylether		10	U	
118-74-1	Hexachlorobenzene		10	U	
87-86-5	Pentachlorophenol		25	~~U~~ R	55
86-74-8	Carbazole		10	U	
85-01-8	Phenanthrene		10	U	
120-12-7	Anthracene		10	U	
84-74-2	Di-n-butylphthalate		10	U	
206-44-0	Fluoranthene		10	U	
129-00-0	Pyrene		10	U	
85-68-7	Butylbenzylphthalate		10	U	
91-94-1	3,3'-Dichlorobenzidine		10	U	
56-55-3	Benzo(a)anthracene		10	U	
218-01-9	Chrysene		10	U	
117-81-7	bis(2-Ethylhexyl)phthalate	10	~~0.50~~	~~J~~ U	BL
117-84-0	Di-n-octylphthalate		10	U	
205-99-2	Benzo(b)fluoranthene		10	U	
207-08-9	Benzo(k)fluoranthene		10	U	
50-32-8	Benzo(a)pyrene		10	U	
193-39-5	Indeno(1,2,3-cd)pyrene		10	U	
53-70-3	Dibenz(a,h)anthracene		10	U	
191-24-2	Benzo(g,h,i)perylene		10	U	

(1) - Cannot be separated from Diphenylamine

6/12

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

002000N1RE

Lab Name: SWL-TULSA Contract: LORADO AFB,

Lab Code: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38706

Matrix: (soil/water) WATER Lab Sample ID: 38706.03RE

Sample wt/vol: 1000 (g/mL) ML Lab File ID: P21313.D

Level: (low/med) LOW Date Received: 05/25/99

% Moisture: not dec. 0 dec. Date Extracted: 06/03/99

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 06/07/99

Concentrated Extract Volume: 1000(uL)

GPC Cleanup: (Y/N) N pH: 6.8 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-95-2	Phenol	10	U
111-44-4	bis(2-Chloroethyl)ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
100-51-6	Benzyl alcohol	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	bis(2-Chloroisopropyl)ether	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-di-n-propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
65-85-0	Benzoic Acid	25	U
111-91-1	bis(2-Chloroethoxy)methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	25	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	25	U
131-11-3	Dimethylphthalate	10	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U

R Re

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1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

002000N1RE

Lab Name: SWL-TULSA Contract: LORADO AFB,

Lab Code: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38706

Matrix: (soil/water) WATER Lab Sample ID: 38706.03RE

Sample wt/vol: 1000 (g/mL) ML Lab File ID: P21313.D

Level: (low/med) LOW Date Received: 05/25/99

% Moisture: not dec. 0 dec. Date Extracted: 06/03/99

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 06/07/99

Concentrated Extract Volume: 1000(uL)

GPC Cleanup: (Y/N) N pH: 6.8 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L		Q
99-09-2	3-Nitroaniline	25	U	
83-32-9	Acenaphthene	10	U	
121-14-2	2,4-Dinitrotoluene	10	U	
51-28-5	2,4-Dinitrophenol	25	U	
100-02-7	4-Nitrophenol	25	U	
132-64-9	Dibenzofuran	10	U	
84-66-2	Diethylphthalate	10	U	
7005-72-3	4-Chlorophenyl-phenylether	10	U	
86-73-7	Fluorene	10	U	
100-01-6	4-Nitroaniline	25	U	
534-52-1	4,6-Dinitro-2-methylphenol	25	U	
86-30-6	N-Nitrosodiphenylamine (1)	10	U	
101-55-3	4-Bromophenylphenylether	10	U	
118-74-1	Hexachlorobenzene	10	U	
87-86-5	Pentachlorophenol	25	U	
86-74-8	Carbazole	10	U	
85-01-8	Phenanthrene	10	U	
120-12-7	Anthracene	10	U	
84-74-2	Di-n-butylphthalate	10	U	
206-44-0	Fluoranthene	10	U	
129-00-0	Pyrene	10	U	
85-68-7	Butylbenzylphthalate	10	U	
91-94-1	3,3'-Dichlorobenzidine	10	U	
56-55-3	Benzo(a)anthracene	10	U	
218-01-9	Chrysene	10	U	
117-81-7	bis(2-Ethylhexyl)phthalate	3	JB	
117-84-0	Di-n-octylphthalate	10	U	
205-99-2	Benzo(b)fluoranthene	10	U	
207-08-9	Benzo(k)fluoranthene	10	U	
50-32-8	Benzo(a)pyrene	10	U	
193-39-5	Indeno(1,2,3-cd)pyrene	10	U	
53-70-3	Dibenz(a,h)anthracene	10	U	
191-24-2	Benzo(g,h,i)perylene	10	U	

R Re

(1) - Cannot be separated from Diphenylamine

FORM I SV-2

4/12

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

003000N1

Lab Name: SWL-TULSA Contract: LORADO AFB,

Lab Code: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38706

Matrix: (soil/water) WATER Lab Sample ID: 38706.06

Sample wt/vol: 1000 (g/mL) ML Lab File ID: M14580.D

Level: (low/med) LOW Date Received: 05/25/99

% Moisture: not dec. 0 dec. Date Extracted: 05/26/99

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 06/02/99

Concentrated Extract Volume: 1000(uL)

GPC Cleanup: (Y/N) N pH: 6.1 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-95-2	Phenol	10	~~U~~ R SS
111-44-4	bis(2-Chloroethyl)ether	10	U
95-57-8	2-Chlorophenol	10	~~U~~ R SS
541-73-1	1,3-Dichlorobenzene	7	J
106-46-7	1,4-Dichlorobenzene	59	
100-51-6	Benzyl alcohol	10	U
95-50-1	1,2-Dichlorobenzene	530	~~E~~ R LR
95-48-7	2-Methylphenol	10	~~U~~ R SS
108-60-1	bis(2-Chloroisopropyl)ether	10	U
106-44-5	4-Methylphenol	10	~~U~~ R SS
621-64-7	N-Nitroso-di-n-propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	~~U~~ R SS
105-67-9	2,4-Dimethylphenol	10	~~U~~ R SS
65-85-0	Benzoic Acid	25	~~U~~ R SS
111-91-1	bis(2-Chloroethoxy)methane	10	U
120-83-2	2,4-Dichlorophenol	10	~~U~~ R SS
120-82-1	1,2,4-Trichlorobenzene	6	J
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-methylphenol	10	~~U~~ R SS
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	~~U~~ R SS
95-95-4	2,4,5-Trichlorophenol	25	~~U~~ R SS
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	25	U
131-11-3	Dimethylphthalate	10	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U

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1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

003000N1

Lab Name: SWL-TULSA Contract: LORADO AFB,

Lab Code: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38706

Matrix: (soil/water) WATER Lab Sample ID: 38706.06

Sample wt/vol: 1000 (g/mL) ML Lab File ID: M14580.D

Level: (low/med) LOW Date Received: 05/25/99

% Moisture: not dec. 0 dec. Date Extracted: 05/26/99

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 06/02/99

Concentrated Extract Volume: 1000(uL)

GPC Cleanup: (Y/N) N pH: 6.1 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L		Q	
99-09-2	3-Nitroaniline		25	U	
83-32-9	Acenaphthene		10	U	
121-14-2	2,4-Dinitrotoluene		10	U	
51-28-5	2,4-Dinitrophenol		25	~~U~~	R SS
100-02-7	4-Nitrophenol		25	~~U~~	R SS
132-64-9	Dibenzofuran		10	U	
84-66-2	Diethylphthalate	10	~~1~~	~~J~~	u BL
7005-72-3	4-Chlorophenyl-phenylether		10	U	
86-73-7	Fluorene		10	U	
100-01-6	4-Nitroaniline		25	U	
534-52-1	4,6-Dinitro-2-methylphenol		25	~~U~~	R SS
86-30-6	N-Nitrosodiphenylamine (1)		10	U	
101-55-3	4-Bromophenylphenylether		10	U	
118-74-1	Hexachlorobenzene		10	U	
87-86-5	Pentachlorophenol		25	~~U~~	R SS
86-74-8	Carbazole		10	U	
85-01-8	Phenanthrene		10	U	
120-12-7	Anthracene		10	U	
84-74-2	Di-n-butylphthalate		10	U	
206-44-0	Fluoranthene		10	U	
129-00-0	Pyrene		10	U	
85-68-7	Butylbenzylphthalate		10	U	
91-94-1	3,3'-Dichlorobenzidine		10	U	
56-55-3	Benzo(a)anthracene		10	U	
218-01-9	Chrysene		10	U	
117-81-7	bis(2-Ethylhexyl)phthalate	10	~~0.90~~	~~J~~	u BL
117-84-0	Di-n-octylphthalate		10	U	
205-99-2	Benzo(b)fluoranthene		10	U	
207-08-9	Benzo(k)fluoranthene		10	U	
50-32-8	Benzo(a)pyrene		10	U	
193-39-5	Indeno(1,2,3-cd)pyrene		10	U	
53-70-3	Dibenz(a,h)anthracene		10	U	
191-24-2	Benzo(g,h,i)perylene		10	U	

(1) - Cannot be separated from Diphenylamine

6/17

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

003000N1DL

Lab Name: SWL-TULSA Contract: LORADO AFB,

Lab Code: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38706

Matrix: (soil/water) WATER Lab Sample ID: 38706.06DL

Sample wt/vol: 1000 (g/mL) ML Lab File ID: M14656.D

Level: (low/med) LOW Date Received: 05/25/99

% Moisture: not dec. 0 dec. Date Extracted: 05/26/99

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 06/08/99

Concentrated Extract Volume: 1000(uL)

GPC Cleanup: (Y/N) N pH: 6.1 Dilution Factor: 50.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-95-2	Phenol	500	U
111-44-4	bis(2-Chloroethyl)ether	500	U
95-57-8	2-Chlorophenol	500	U
541-73-1	1,3-Dichlorobenzene	500	U
106-46-7	1,4-Dichlorobenzene	55	JD
100-51-6	Benzyl alcohol	500	U
95-50-1	1,2-Dichlorobenzene	2700	D
95-48-7	2-Methylphenol	500	U
108-60-1	bis(2-Chloroisopropyl)ether	500	U
106-44-5	4-Methylphenol	500	U
621-64-7	N-Nitroso-di-n-propylamine	500	U
67-72-1	Hexachloroethane	500	U
98-95-3	Nitrobenzene	500	U
78-59-1	Isophorone	500	U
88-75-5	2-Nitrophenol	500	U
105-67-9	2,4-Dimethylphenol	500	U
65-85-0	Benzoic Acid	1200	U
111-91-1	bis(2-Chloroethoxy)methane	500	U
120-83-2	2,4-Dichlorophenol	500	U
120-82-1	1,2,4-Trichlorobenzene	500	U
91-20-3	Naphthalene	500	U
106-47-8	4-Chloroaniline	500	U
87-68-3	Hexachlorobutadiene	500	U
59-50-7	4-Chloro-3-methylphenol	500	U
91-57-6	2-Methylnaphthalene	500	U
77-47-4	Hexachlorocyclopentadiene	500	U
88-06-2	2,4,6-Trichlorophenol	1200	U
95-95-4	2,4,5-Trichlorophenol	500	U
91-58-7	2-Chloronaphthalene	1200	U
88-74-4	2-Nitroaniline	500	U
131-11-3	Dimethylphthalate	500	U
208-96-8	Acenaphthylene	500	U
606-20-2	2,6-Dinitrotoluene	500	U

R DL

R DL

R DL

FORM I SV-1

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1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

003000N1DL

Lab Name: SWL-TULSA Contract: LORADO AFB,

Lab Code: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38706

Matrix: (soil/water) WATER Lab Sample ID: 38706.06DL

Sample wt/vol: 1000 (g/mL) ML Lab File ID: M14656.D

Level: (low/med) LOW Date Received: 05/25/99

% Moisture: not dec. 0 dec. Date Extracted: 05/26/99

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 06/08/99

Concentrated Extract Volume: 1000(uL)

GPC Cleanup: (Y/N) N pH: 6.1 Dilution Factor: 50.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L		
99-09-2	3-Nitroaniline	1200	U	R DL
83-32-9	Acenaphthene	500	U	
121-14-2	2,4-Dinitrotoluene	500	U	
51-28-5	2,4-Dinitrophenol	1200	U	
100-02-7	4-Nitrophenol	1200	U	
132-64-9	Dibenzofuran	500	U	
84-66-2	Diethylphthalate	500	U	
7005-72-3	4-Chlorophenyl-phenylether	500	U	
86-73-7	Fluorene	500	U	
100-01-6	4-Nitroaniline	1200	U	
534-52-1	4,6-Dinitro-2-methylphenol	1200	U	
86-30-6	N-Nitrosodiphenylamine (1)	500	U	
101-55-3	4-Bromophenylphenylether	500	U	
118-74-1	Hexachlorobenzene	500	U	
87-86-5	Pentachlorophenol	1200	U	
86-74-8	Carbazole	500	U	
85-01-8	Phenanthrene	500	U	
120-12-7	Anthracene	500	U	
84-74-2	Di-n-butylphthalate	500	U	
206-44-0	Fluoranthene	500	U	
129-00-0	Pyrene	500	U	
85-68-7	Butylbenzylphthalate	500	U	
91-94-1	3,3'-Dichlorobenzidine	500	U	
56-55-3	Benzo(a)anthracene	500	U	
218-01-9	Chrysene	500	U	
117-81-7	bis(2-Ethylhexyl)phthalate	500	U	
117-84-0	Di-n-octylphthalate	500	U	
205-99-2	Benzo(b)fluoranthene	500	U	
207-08-9	Benzo(k)fluoranthene	500	U	
50-32-8	Benzo(a)pyrene	500	U	
193-39-5	Indeno(1,2,3-cd)pyrene	500	U	
53-70-3	Dibenz(a,h)anthracene	500	U	
191-24-2	Benzo(g,h,i)perylene	500	U	

(1) - Cannot be separated from Diphenylamine

4/12

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

002000EB1

Lab Name: SWL-TULSA Contract: LORADO AFB,

Lab Code: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38706

Matrix: (soil/water) WATER Lab Sample ID: 38706.07

Sample wt/vol: 1000 (g/mL) ML Lab File ID: M14581.D

Level: (low/med) LOW Date Received: 05/25/99

% Moisture: not dec. 0 dec. Date Extracted: 05/26/99

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 06/02/99

Concentrated Extract Volume: 1000(uL)

GPC Cleanup: (Y/N) N pH: 7.7 Dilution Factor: 1.0 EB

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-95-2	Phenol	10	U
111-44-4	bis(2-Chloroethyl)ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	0.70	J
100-51-6	Benzyl alcohol	10	U
95-50-1	1,2-Dichlorobenzene	1	J
95-48-7	2-Methylphenol	10	U
108-60-1	bis(2-Chloroisopropyl)ether	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-di-n-propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
65-85-0	Benzoic Acid	25	U
111-91-1	bis(2-Chloroethoxy)methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	25	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	25	U
131-11-3	Dimethylphthalate	10	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U

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1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

002000EB1

Lab Name: SWL-TULSA Contract: LORADO AFB,

Lab Code: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38706

Matrix: (soil/water) WATER Lab Sample ID: 38706.07

Sample wt/vol: 1000 (g/mL) ML Lab File ID: M14581.D

Level: (low/med) LOW Date Received: 05/25/99

% Moisture: not dec. 0 dec. Date Extracted: 05/26/99

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 06/02/99

Concentrated Extract Volume: 1000(uL)

GPC Cleanup: (Y/N) N pH: 7.7 Dilution Factor: 1.0

EB

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
99-09-2	3-Nitroaniline	25	U
83-32-9	Acenaphthene	10	U
121-14-2	2,4-Dinitrotoluene	10	U
51-28-5	2,4-Dinitrophenol	25	U
100-02-7	4-Nitrophenol	25	U
132-64-9	Dibenzofuran	10	U
84-66-2	Diethylphthalate	0.90	J
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	25	U
534-52-1	4,6-Dinitro-2-methylphenol	25	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenylphenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	25	U
86-74-8	Carbazole	10	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
84-74-2	Di-n-butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	10	U
56-55-3	Benzo(a)anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)phthalate	10	U
117-84-0	Di-n-octylphthalate	10	U
205-99-2	Benzo(b)fluoranthene	10	U
207-08-9	Benzo(k)fluoranthene	10	U
50-32-8	Benzo(a)pyrene	10	U
193-39-5	Indeno(1,2,3-cd)pyrene	10	U
53-70-3	Dibenz(a,h)anthracene	10	U
191-24-2	Benzo(g,h,i)perylene	10	U

(1) - Cannot be separated from Diphenylamine

4/2

Data Review and Validation for: GC/MS Semivolatiles

Project Name & Task:	LAREDO AFB	IWTP	
Project # & Case/SDG:	147436.DV.ZZ	38676	
Methods:	☐ OLM03.2 ☑ SW-846 8270C ☐ EPA 625 ☐ Other:		
Program:	☐ AFCEE ☐ NFESC ☐ Other	**Number of Samples:** 26 total	
Field QC Samples:	10/11 + 24/25 - FDUP, 20/21/22 - NAT/MS/MSD, 25 MS/MSD, 26 - EB (MS/MSD)		
Reviewed by & Date:	[signature]	4/8/2000	
Matrix:	☐ Water ☑ Soil ☐ Other		

Quality Control	Form #	Requirements	Check (If No* checked, see comments)	Flags Applied (see comments)
Data Pkg Complete (DP)	Pkg	All required deliverables in pkg.	☑ OK ☐ No* ☐ Not provided	☐ Flags Applied
	COC	All samples on COC reported	☑ OK ☐ No*	☐ Flags Applied
Holding Times (HT)	1	Extraction HT (water 7d, soil 14d)	☐ OK ☑ No*	☑ Flags Applied
	COC	Analysis HT (40d from extraction)	☑ OK ☐ No*	☐ Flags Applied
			☐ OK ☐ No*	☐ Flags Applied
Surrogates (SS)	2	Method surrogates used	☑ OK ☐ No* ☐ Not provided	☑ Flags Applied
		Recovery Limits: ☑ Lab ☐ Meth	☐ OK ☑ No* ☐ Diluted out	
MS/MSD or MS/LD	3	Matrix Spikes Provided	☑ MS/MSD ☐ MS/LD ☐ None*	☐ Flags Applied
		Correct Spike Used	☑ OK ☐ No*	
		Acceptance Limits: ☑ Lab ☐ Meth	☐ OK ☑ No* ☐ Diluted out	
LCS (BS) ☐ LCS only ☑ LCS/LCSD	3	LCS per prep. batch	☑ OK ☐ No*	☐ Flags Applied
		Acceptance criteria met	☐ OK ☑ No*	
Blanks (MB,TB,EB, FB/AB)	1	Detects (> MDL or RL/CRQL)	☐ All ND ☐ see ~~blnk wksht~~ below	☑ Flags Applied
Method/Lab Blank (MB)	4	Meth Blnk per prep batch	☑ OK ☐ No*	
Tune - DFTPP (TN) prior to sample analysis	5	Initial & Begin of 12-hr shift	☑ OK ☐ No*	☐ Flags Applied
		Mass Assignment Correct	☑ OK ☐ No*	
		Ion Abundance Criteria met	☑ OK ☐ No*	
Initial Calibration (IC)	6	Minimum of 5 levels	☑ OK ☐ No*	☐ Flags Applied
		Linearity criteria met	☐ OK ☑ No* ☐ see cal wksht	
		Minimum RRF criteria met	☑ OK ☐ No* ☐ see cal wksht	
Continuing Calib. Verif. (CC) prior to sample analysis	7	Analyzed at begin of 12-hr shift	☑ OK ☐ No*	☐ Flags Applied
		%diff or %drift criteria met	☐ OK ☑ No* ☐ see cal wksht	
		Minimum RRF criteria met	☑ OK ☐ No* ☐ see cal wksht	
	8	Int. Std. RT/Area criteria met	☐ OK ☐ No*	
Internal Standards (IS)	8	Sample IS area criteria met	☐ OK ☑ No*	☑ Flags Applied
Sample Evaluation	1	All hits within cal. Range	☑ OK ☐ No* ☐ All ND	☐ Flags Applied
	5	Samples w/in 12-hr clock	☑ OK ☐ No*	
	raw	Manual Integration performed	☐ No ☐ see comments	
Field Duplicate (FD)	1	Precision of native vs Field Dup	☑ OK ☐ No* ☐ N/A	☐ Flags Applied

This sheet is applicable to multiple methods. All requirement items may not apply to every analytical method.

Case Narrative Comments: SURROGATES, MS, BLANK, LCS, IS HT.

QC Item	Comments
SS	3 samples with low surrogate recoveries.
	2 samples re-extracted out of HT - surr. recoveries
	OK in re-extracted samples. (#6 + #14)
	Sample #23 - low surrogates - not re-extracted
	• Flag re-ext. #6 + #14 UJ due to HT - "R" original
	• Flag original results #23 - J/UJ

Data Review and Validation for: GC/MS Semivolatiles

Project Name & Task:	LAREDO AFB	IWTP	
Project # & Case/SDG:	147436.DV.ZZ	38676	
Methods:	☐ OLM03.2 ☑ SW-846 8270C ☐ EPA 625 ☐ Other:		
Program:	☐ AFCEE ☐ NFESC ☐ Other	**Number of Samples:** 22 total	
Field QC Samples:	10/11, 24/25 - FDUP, 26-EB, 20/21/22 + 25 + 26 - MS/MSD sets		
Reviewed by & Date:	A. Kelly		
Matrix:	☐ Water ☑ Soil ☐ Other		

MS/MSD — 4000EB1 - MS/MSD - OK

4008FD1 - MS/MSD - 4-chloro-3-methyl phenol
Recoveries = 133/125 (Limits 26-103)
- No 7/Ags - All ND

4000N1 RPDs out for several compounds

Phenol - RPD = 54 (Limit = 35)
1,4-Dichlorobenzene - 39 (Limit = 27)
N-nitroso-di-n-propy - 48 (Limit = 38)
1,2,4-Trichlorobenzene - 45 ~~23~~ (Limit = 23 ~~45~~)
4-cl-3-methylphenol - 35 (Limit = 33)
Acenaphthene 51% (Limit = 19)
Pyrene 53 (Limit = 36)

LCS — LCS 2
2-cl-phenol 15 (14%)
N-nitroso-di-n-prop. 16 (9%)
4-cl-3-methylphenol 16 (15%)
2,4-Dinitrotoluene 16 (14%)
Pentachlorophenol 16 (14%)
Pyrene 16 (14%)

MB — BEHP = 0.90 ug/L EB only
EB — BEHP - 1.0 ug/L soil equiv = 33 x 10 = 330 ug/kg
All less than than 330 ug/kg flag U

IC/CC - See Report
IS out - See Report

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SO001000N1

) Name: SWL-TULSA Contract: LORADO AFB,

) Code: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38676

:rix: (soil/water) SOIL Lab Sample ID: 38676.01

ıple wt/vol: 31.7 (g/mL) G Lab File ID: P21368.D

/el: (low/med) LOW Date Received: 05/22/99

Moisture: not dec. 13 dec. Date Extracted:05/29/99

:raction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/09/99

ıcentrated Extract Volume: 1000(uL)

: Cleanup: (Y/N) N pH: 7.5 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	360	U
111-44-4	bis(2-Chloroethyl)ether	360	U
95-57-8	2-Chlorophenol	360	U
541-73-1	1,3-Dichlorobenzene	360	U
106-46-7	1,4-Dichlorobenzene	360	U
100-51-6	Benzyl alcohol	360	U
95-50-1	1,2-Dichlorobenzene	360	U
95-48-7	2-Methylphenol	360	U
108-60-1	bis(2-Chloroisopropyl)ether	360	U
106-44-5	4-Methylphenol	360	U
621-64-7	N-Nitroso-di-n-propylamine	360	U
67-72-1	Hexachloroethane	360	U
98-95-3	Nitrobenzene	360	U
78-59-1	Isophorone	360	U
88-75-5	2-Nitrophenol	360	U
105-67-9	2,4-Dimethylphenol	360	U
65-85-0	Benzoic Acid	910	U
111-91-1	bis(2-Chloroethoxy)methane	360	U
120-83-2	2,4-Dichlorophenol	360	U
120-82-1	1,2,4-Trichlorobenzene	360	U
91-20-3	Naphthalene	360	U
106-47-8	4-Chloroaniline	360	U
87-68-3	Hexachlorobutadiene	360	U
59-50-7	4-Chloro-3-methylphenol	360	U
91-57-6	2-Methylnaphthalene	360	U
77-47-4	Hexachlorocyclopentadiene	360	U
88-06-2	2,4,6-Trichlorophenol	360	U
95-95-4	2,4,5-Trichlorophenol	910	U
91-58-7	2-Chloronaphthalene	360	U
88-74-4	2-Nitroaniline	910	U
131-11-3	Dimethylphthalate	360	U
208-96-8	Acenaphthylene	360	U
606-20-2	2,6-Dinitrotoluene	360	U

4/8/2000

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

S0001000N1

) Name: SWL-TULSA Contract: LORADO AFB,

) Code: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38676

:rix: (soil/water) SOIL Lab Sample ID: 38676.01

nple wt/vol: 31.7 (g/mL) G Lab File ID: P21368.D

vel: (low/med) LOW Date Received: 05/22/99

Moisture: not dec. 13 dec. Date Extracted: 05/29/99

:raction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/09/99

ncentrated Extract Volume: 1000(uL)

C Cleanup: (Y/N) N pH: 7.5 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG		Q		
99-09-2	3-Nitroaniline		910	U		
83-32-9	Acenaphthene		360	U		
121-14-2	2,4-Dinitrotoluene		360	U		
51-28-5	2,4-Dinitrophenol		910	U		
100-02-7	4-Nitrophenol		910	U		
132-64-9	Dibenzofuran		360	U		
84-66-2	Diethylphthalate		360	U		
7005-72-3	4-Chlorophenyl-phenylether		360	U		
86-73-7	Fluorene		360	U		
100-01-6	4-Nitroaniline		910	U		
534-52-1	4,6-Dinitro-2-methylphenol		910	U		
86-30-6	N-Nitrosodiphenylamine (1)		360	U		
101-55-3	4-Bromophenylphenylether		360	U		
118-74-1	Hexachlorobenzene		360	U		
87-86-5	Pentachlorophenol		910	U		
86-74-8	Carbazole		360	U		
85-01-8	Phenanthrene		360	U		
120-12-7	Anthracene		360	U		
84-74-2	Di-n-butylphthalate		360	U		
206-44-0	Fluoranthene		360	U		
129-00-0	Pyrene		360	U		
85-68-7	Butylbenzylphthalate		360	U		
91-94-1	3,3'-Dichlorobenzidine		360	U	UJ	IS
56-55-3	Benzo(a)anthracene		360	U	UJ	IS
218-01-9	Chrysene		360	U	UJ	IS
117-81-7	bis(2-Ethylhexyl)phthalate	360	~~88~~	~~J~~	UJ	BL/IS
117-84-0	Di-n-octylphthalate		360	U	UJ	IS
205-99-2	Benzo(b)fluoranthene		360	U		
207-08-9	Benzo(k)fluoranthene		360	U		
50-32-8	Benzo(a)pyrene		360	U		
193-39-5	Indeno(1,2,3-cd)pyrene		360	U		
53-70-3	Dibenz(a,h)anthracene		360	U		
191-24-2	Benzo(g,h,i)perylene		360	U		

(1) - Cannot be separated from Diphenylamine

FORM I SV-2

HH 6/18

02319

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SO001000N1RE

Name: SWL-TULSA Contract: LORADO AFB,

Code: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38676

trix: (soil/water) SOIL Lab Sample ID: 38676.01RA

mple wt/vol: 31.7 (g/mL) G Lab File ID: P21372.D

vel: (low/med) LOW Date Received: 05/22/99

Moisture: not dec. 13 dec. Date Extracted: 05/29/99

traction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/10/99

ncentrated Extract Volume: 1000(uL)

C Cleanup: (Y/N) N pH: 7.5 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	360	U
111-44-4	bis(2-Chloroethyl)ether	360	U
95-57-8	2-Chlorophenol	360	U
541-73-1	1,3-Dichlorobenzene	360	U
106-46-7	1,4-Dichlorobenzene	360	U
100-51-6	Benzyl alcohol	360	U
95-50-1	1,2-Dichlorobenzene	360	U
95-48-7	2-Methylphenol	360	U
108-60-1	bis(2-Chloroisopropyl)ether	360	U
106-44-5	4-Methylphenol	360	U
621-64-7	N-Nitroso-di-n-propylamine	360	U
67-72-1	Hexachloroethane	360	U
98-95-3	Nitrobenzene	360	U
78-59-1	Isophorone	360	U
88-75-5	2-Nitrophenol	360	U
105-67-9	2,4-Dimethylphenol	360	U
65-85-0	Benzoic Acid	910	U
111-91-1	bis(2-Chloroethoxy)methane	360	U
120-83-2	2,4-Dichlorophenol	360	U
120-82-1	1,2,4-Trichlorobenzene	360	U
91-20-3	Naphthalene	360	U
106-47-8	4-Chloroaniline	360	U
87-68-3	Hexachlorobutadiene	360	U
59-50-7	4-Chloro-3-methylphenol	360	U
91-57-6	2-Methylnaphthalene	360	U
77-47-4	Hexachlorocyclopentadiene	360	U
88-06-2	2,4,6-Trichlorophenol	360	U
95-95-4	2,4,5-Trichlorophenol	910	U
91-58-7	2-Chloronaphthalene	360	U
88-74-4	2-Nitroaniline	910	U
131-11-3	Dimethylphthalate	360	U
208-96-8	Acenaphthylene	360	U
606-20-2	2,6-Dinitrotoluene	360	U

R IS

4/8

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SO001000N1RE

Lab Name: SWL-TULSA Contract: LORADO AFB,

Lab Code: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38676

Matrix: (soil/water) SOIL Lab Sample ID: 38676.01RA

Sample wt/vol: 31.7 (g/mL) G Lab File ID: P21372.D

Level: (low/med) LOW Date Received: 05/22/99

% Moisture: not dec. 13 dec. Date Extracted: 05/29/99

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/10/99

Concentrated Extract Volume: 1000 (uL)

GPC Cleanup: (Y/N) N pH: 7.5 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
99-09-2	3-Nitroaniline	910	U
83-32-9	Acenaphthene	360	U
121-14-2	2,4-Dinitrotoluene	360	U
51-28-5	2,4-Dinitrophenol	910	U
100-02-7	4-Nitrophenol	910	U
132-64-9	Dibenzofuran	360	U
84-66-2	Diethylphthalate	360	U
7005-72-3	4-Chlorophenyl-phenylether	360	U
86-73-7	Fluorene	360	U
100-01-6	4-Nitroaniline	910	U
534-52-1	4,6-Dinitro-2-methylphenol	910	U
86-30-6	N-Nitrosodiphenylamine (1)	360	U
101-55-3	4-Bromophenylphenylether	360	U
118-74-1	Hexachlorobenzene	360	U
87-86-5	Pentachlorophenol	910	U
86-74-8	Carbazole	360	U
85-01-8	Phenanthrene	360	U
120-12-7	Anthracene	360	U
84-74-2	Di-n-butylphthalate	360	U
206-44-0	Fluoranthene	360	U
129-00-0	Pyrene	360	U
85-68-7	Butylbenzylphthalate	360	U
91-94-1	3,3'-Dichlorobenzidine	360	U
56-55-3	Benzo(a)anthracene	360	U
218-01-9	Chrysene	360	U
117-81-7	bis(2-Ethylhexyl)phthalate	85	J
117-84-0	Di-n-octylphthalate	360	U
205-99-2	Benzo(b)fluoranthene	360	U
207-08-9	Benzo(k)fluoranthene	360	U
50-32-8	Benzo(a)pyrene	360	U
193-39-5	Indeno(1,2,3-cd)pyrene	360	U
53-70-3	Dibenz(a,h)anthracene	360	U
191-24-2	Benzo(g,h,i)perylene	360	U

R IS

(1) - Cannot be separated from Diphenylamine

FORM I SV-2

4/8

02321

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MWSO001005N1

- Name: SWL-TULSA Contract: LORADO AFB,

o Code: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38676

trix: (soil/water) SOIL Lab Sample ID: 38676.02

mple wt/vol: 30.0 (g/mL) G Lab File ID: P21363.D

vel: (low/med) LOW Date Received: 05/22/99

Moisture: not dec. 16 dec. Date Extracted:05/29/99

traction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/09/99

ncentrated Extract Volume: 1000(uL)

C Cleanup: (Y/N) N pH: 8.1 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	400	U
111-44-4	bis(2-Chloroethyl)ether	400	U
95-57-8	2-Chlorophenol	400	U
541-73-1	1,3-Dichlorobenzene	400	U
106-46-7	1,4-Dichlorobenzene	400	U
100-51-6	Benzyl alcohol	400	U
95-50-1	1,2-Dichlorobenzene	400	U
95-48-7	2-Methylphenol	400	U
108-60-1	bis(2-Chloroisopropyl)ether	400	U
106-44-5	4-Methylphenol	400	U
621-64-7	N-Nitroso-di-n-propylamine	400	U
67-72-1	Hexachloroethane	400	U
98-95-3	Nitrobenzene	400	U
78-59-1	Isophorone	400	U
88-75-5	2-Nitrophenol	400	U
105-67-9	2,4-Dimethylphenol	400	U
65-85-0	Benzoic Acid	990	U
111-91-1	bis(2-Chloroethoxy)methane	400	U
120-83-2	2,4-Dichlorophenol	400	U
120-82-1	1,2,4-Trichlorobenzene	400	U
91-20-3	Naphthalene	400	U
106-47-8	4-Chloroaniline	400	U
87-68-3	Hexachlorobutadiene	400	U
59-50-7	4-Chloro-3-methylphenol	400	U
91-57-6	2-Methylnaphthalene	400	U
77-47-4	Hexachlorocyclopentadiene	400	U
88-06-2	2,4,6-Trichlorophenol	400	U
95-95-4	2,4,5-Trichlorophenol	990	U
91-58-7	2-Chloronaphthalene	400	U
88-74-4	2-Nitroaniline	990	U
131-11-3	Dimethylphthalate	400	U
208-96-8	Acenaphthylene	400	U
606-20-2	2,6-Dinitrotoluene	400	U

4/8

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MWS0001005N1

r ame: SWL-TULSA Contract: LORADO AFB,

b Code: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38676

trix: (soil/water) SOIL Lab Sample ID: 38676.02

mple wt/vol: 30.0 (g/mL) G Lab File ID: P21363.D

vel: (low/med) LOW Date Received: 05/22/99

Moisture: not dec. 16 dec. Date Extracted: 05/29/99

traction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/09/99

ncentrated Extract Volume: 1000(uL)

C Cleanup: (Y/N) N pH: 8.1 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
99-09-2	3-Nitroaniline	990	U
83-32-9	Acenaphthene	400	U
121-14-2	2,4-Dinitrotoluene	400	U
51-28-5	2,4-Dinitrophenol	990	U
100-02-7	4-Nitrophenol	990	U
132-64-9	Dibenzofuran	400	U
84-66-2	Diethylphthalate	400	U
7005-72-3	4-Chlorophenyl-phenylether	400	U
86-73-7	Fluorene	400	U
100-01-6	4-Nitroaniline	990	U
534-52-1	4,6-Dinitro-2-methylphenol	990	U
86-30-6	N-Nitrosodiphenylamine (1)	400	U
101-55-3	4-Bromophenylphenylether	400	U
118-74-1	Hexachlorobenzene	400	U
87-86-5	Pentachlorophenol	990	U
86-74-8	Carbazole	400	U
85-01-8	Phenanthrene	400	U
120-12-7	Anthracene	400	U
84-74-2	Di-n-butylphthalate	400	U
206-44-0	Fluoranthene	400	U
129-00-0	Pyrene	400	U
85-68-7	Butylbenzylphthalate	400	U
91-94-1	3,3'-Dichlorobenzidine	400	U
56-55-3	Benzo(a)anthracene	400	U
218-01-9	Chrysene	400	U
117-81-7	bis(2-Ethylhexyl)phthalate	400	U
117-84-0	Di-n-octylphthalate	400	U
205-99-2	Benzo(b)fluoranthene	400	U
207-08-9	Benzo(k)fluoranthene	400	U
50-32-8	Benzo(a)pyrene	400	U
193-39-5	Indeno(1,2,3-cd)pyrene	400	U
53-70-3	Dibenz(a,h)anthracene	400	U
191-24-2	Benzo(g,h,i)perylene	400	U

(1) - Cannot be separated from Diphenylamine

FORM I SV-2

4/8

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SO001007N1

) Name: SWL-TULSA Contract: LORADO AFB,

) Code: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38676

:rix: (soil/water) SOIL Lab Sample ID: 38676.03

nple wt/vol: 30.0 (g/mL) G Lab File ID: P21364.D

vel: (low/med) LOW Date Received: 05/22/99

Moisture: not dec. 21 dec. Date Extracted:05/29/99

:raction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/09/99

ncentrated Extract Volume: 1000(uL)

C Cleanup: (Y/N) N pH: 8.3 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	420	U
111-44-4	bis(2-Chloroethyl)ether	420	U
95-57-8	2-Chlorophenol	420	U
541-73-1	1,3-Dichlorobenzene	420	U
106-46-7	1,4-Dichlorobenzene	420	U
100-51-6	Benzyl alcohol	420	U
95-50-1	1,2-Dichlorobenzene	420	U
95-48-7	2-Methylphenol	420	U
108-60-1	bis(2-Chloroisopropyl)ether	420	U
106-44-5	4-Methylphenol	420	U
621-64-7	N-Nitroso-di-n-propylamine	420	U
67-72-1	Hexachloroethane	420	U
98-95-3	Nitrobenzene	420	U
78-59-1	Isophorone	420	U
88-75-5	2-Nitrophenol	420	U
105-67-9	2,4-Dimethylphenol	420	U
65-85-0	Benzoic Acid	1000	U
111-91-1	bis(2-Chloroethoxy)methane	420	U
120-83-2	2,4-Dichlorophenol	420	U
120-82-1	1,2,4-Trichlorobenzene	420	U
91-20-3	Naphthalene	420	U
106-47-8	4-Chloroaniline	420	U
87-68-3	Hexachlorobutadiene	420	U
59-50-7	4-Chloro-3-methylphenol	420	U
91-57-6	2-Methylnaphthalene	420	U
77-47-4	Hexachlorocyclopentadiene	420	U
88-06-2	2,4,6-Trichlorophenol	420	U
95-95-4	2,4,5-Trichlorophenol	1000	U
91-58-7	2-Chloronaphthalene	420	U
88-74-4	2-Nitroaniline	1000	U
131-11-3	Dimethylphthalate	420	U
208-96-8	Acenaphthylene	420	U
606-20-2	2,6-Dinitrotoluene	420	U

HH 4/8

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SO001007N1

Name: SWL-TULSA Contract: LORADO AFB,

Code: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38676

trix: (soil/water) SOIL Lab Sample ID: 38676.03

mple wt/vol: 30.0 (g/mL) G Lab File ID: P21364.D

vel: (low/med) LOW Date Received: 05/22/99

Moisture: not dec. 21 dec. Date Extracted: 05/29/99

traction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/09/99

ncentrated Extract Volume: 1000(uL)

C Cleanup: (Y/N) N pH: 8.3 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q		
99-09-2	3-Nitroaniline	1000	U		
83-32-9	Acenaphthene	5600	~~E~~	R	LR
121-14-2	2,4-Dinitrotoluene	420	U		
51-28-5	2,4-Dinitrophenol	1000	U		
100-02-7	4-Nitrophenol	1000	U		
132-64-9	Dibenzofuran	4100	~~E~~	R	LR
84-66-2	Diethylphthalate	420	U		
7005-72-3	4-Chlorophenyl-phenylether	420	U		
86-73-7	Fluorene	4500	~~E~~	R	LR
100-01-6	4-Nitroaniline	1000	U		
534-52-1	4,6-Dinitro-2-methylphenol	1000	U		
86-30-6	N-Nitrosodiphenylamine (1)	420	U		
101-55-3	4-Bromophenylphenylether	420	U		
118-74-1	Hexachlorobenzene	420	U		
87-86-5	Pentachlorophenol	1000	U		
86-74-8	Carbazole	1800	J		
85-01-8	Phenanthrene	16000	~~E~~	R	LR
120-12-7	Anthracene	1500			
84-74-2	Di-n-butylphthalate	420	U		
206-44-0	Fluoranthene	6600	~~E~~	R	LR
129-00-0	Pyrene	4900	~~E~~	R	LR
85-68-7	Butylbenzylphthalate	420	U		
91-94-1	3,3'-Dichlorobenzidine	420	U		
56-55-3	Benzo(a)anthracene	960			
218-01-9	Chrysene	920			
117-81-7	bis(2-Ethylhexyl)phthalate	420	U		
117-84-0	Di-n-octylphthalate	420	U		
205-99-2	Benzo(b)fluoranthene	290	J		
207-08-9	Benzo(k)fluoranthene	350	J		
50-32-8	Benzo(a)pyrene	260	J		
193-39-5	Indeno(1,2,3-cd)pyrene	57	J		
53-70-3	Dibenz(a,h)anthracene	420	U		
191-24-2	Benzo(g,h,i)perylene	420	U		

(1) - Cannot be separated from Diphenylamine

FORM I SV-2

4/8

02325

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SO001007N1DL

Name: SWL-TULSA Contract: LORADO AFB,

b Code: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38676

trix: (soil/water) SOIL Lab Sample ID: 38676.03DL

mple wt/vol: 31.1 (g/mL) G Lab File ID: P21390.D

vel: (low/med) LOW Date Received: 05/22/99

Moisture: not dec. 21 dec. Date Extracted: 05/29/99

traction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/11/99

ncentrated Extract Volume: 1000(uL)

C Cleanup: (Y/N) N pH: 8.3 Dilution Factor: 5.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	2000	U
111-44-4	bis(2-Chloroethyl)ether	2000	U
95-57-8	2-Chlorophenol	2000	U
541-73-1	1,3-Dichlorobenzene	2000	U
106-46-7	1,4-Dichlorobenzene	2000	U
100-51-6	Benzyl alcohol	2000	U
95-50-1	1,2-Dichlorobenzene	2000	U
95-48-7	2-Methylphenol	2000	U
108-60-1	bis(2-Chloroisopropyl)ether	2000	U
106-44-5	4-Methylphenol	2000	U
621-64-7	N-Nitroso-di-n-propylamine	2000	U
67-72-1	Hexachloroethane	2000	U
98-95-3	Nitrobenzene	2000	U
78-59-1	Isophorone	2000	U
88-75-5	2-Nitrophenol	2000	U
105-67-9	2,4-Dimethylphenol	2000	U
65-85-0	Benzoic Acid	5100	U
111-91-1	bis(2-Chloroethoxy)methane	2000	U
120-83-2	2,4-Dichlorophenol	2000	U
120-82-1	1,2,4-Trichlorobenzene	2000	U
91-20-3	Naphthalene	2000	U
106-47-8	4-Chloroaniline	2000	U
87-68-3	Hexachlorobutadiene	2000	U
59-50-7	4-Chloro-3-methylphenol	2000	U
91-57-6	2-Methylnaphthalene	2000	U
77-47-4	Hexachlorocyclopentadiene	2000	U
88-06-2	2,4,6-Trichlorophenol	2000	U
95-95-4	2,4,5-Trichlorophenol	5100	U
91-58-7	2-Chloronaphthalene	2000	U
88-74-4	2-Nitroaniline	5100	U
131-11-3	Dimethylphthalate	2000	U
208-96-8	Acenaphthylene	2000	U
606-20-2	2,6-Dinitrotoluene	2000	U

R DC

HL 4/8

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SO001007N1DL

- Name: SWL-TULSA Contract: LORADO AFB,

o Code: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38676

trix: (soil/water) SOIL Lab Sample ID: 38676.03DL

mple wt/vol: 31.1 (g/mL) G Lab File ID: P21390.D

vel: (low/med) LOW Date Received: 05/22/99

Moisture: not dec. 21 dec. Date Extracted:05/29/99

traction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/11/99

ncentrated Extract Volume: 1000(uL)

C Cleanup: (Y/N) N pH: 8.3 Dilution Factor: 5.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q	
99-09-2	3-Nitroaniline	5100	U	R DC
83-32-9	Acenaphthene	3900	D	=
121-14-2	2,4-Dinitrotoluene	2000	U	R DC
51-28-5	2,4-Dinitrophenol	5100	U	↓ ↓
100-02-7	4-Nitrophenol	5100	U	↓ ↓
132-64-9	Dibenzofuran	3200	D	=
84-66-2	Diethylphthalate	2000	U	R DC
7005-72-3	4-Chlorophenyl-phenylether	2000	U	R DC
86-73-7	Fluorene	3700	D	=
100-01-6	4-Nitroaniline	5100	U	R DC
534-52-1	4,6-Dinitro-2-methylphenol	5100	U	↓ ↓
86-30-6	N-Nitrosodiphenylamine (1)	2000	U	↓ ↓
101-55-3	4-Bromophenylphenylether	2000	U	↓ ↓
118-74-1	Hexachlorobenzene	2000	U	↓ ↓
87-86-5	Pentachlorophenol	5100	U	↓ ↓
85-01-8	Phenanthrene	11000	D	=
86-74-8	Carbazole	1600	JD	R DC
120-12-7	Anthracene	1200	JD	↓ ↓
84-74-2	Di-n-butylphthalate	2000	U	↓ ↓
206-44-0	Fluoranthene	5600	D	=
129-00-0	Pyrene	3100	D	=
85-68-7	Butylbenzylphthalate	2000	U	R DC
91-94-1	3,3'-Dichlorobenzidine	2000	U	↓ ↓
56-55-3	Benzo(a)anthracene	760	JD	↓ ↓
218-01-9	Chrysene	740	JD	↓ ↓
117-81-7	bis(2-Ethylhexyl)phthalate	2000	U	↓ ↓
117-84-0	Di-n-octylphthalate	2000	U	↓ ↓
205-99-2	Benzo(b)fluoranthene	190	JD	↓ ↓
207-08-9	Benzo(k)fluoranthene	280	JD	↓ ↓
50-32-8	Benzo(a)pyrene	2000	U	↓ ↓
193-39-5	Indeno(1,2,3-cd)pyrene	2000	U	↓ ↓
53-70-3	Dibenz(a,h)anthracene	2000	U	↓ ↓
191-24-2	Benzo(g,h,i)perylene	2000	U	↓ ↓

(1) - Cannot be separated from Diphenylamine

FORM I SV-2

4/8

02327

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MWS0002000N1

Lab Name: SWL-TULSA Contract: LORADO AFB,

b Code: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38676

Matrix: (soil/water) SOIL Lab Sample ID: 38676.04

Sample wt/vol: 30.4 (g/mL) G Lab File ID: P21365.D

Level: (low/med) LOW Date Received: 05/22/99

% Moisture: not dec. 7 dec. Date Extracted: 05/29/99

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/09/99

Concentrated Extract Volume: 1000(uL)

GPC Cleanup: (Y/N) N pH: 8.2 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
99-09-2	3-Nitroaniline	880	U
83-32-9	Acenaphthene	350	U
121-14-2	2,4-Dinitrotoluene	350	U
51-28-5	2,4-Dinitrophenol	880	U
100-02-7	4-Nitrophenol	880	U
132-64-9	Dibenzofuran	350	U
84-66-2	Diethylphthalate	350	U
7005-72-3	4-Chlorophenyl-phenylether	350	U
86-73-7	Fluorene	350	U
100-01-6	4-Nitroaniline	880	U
534-52-1	4,6-Dinitro-2-methylphenol	880	U
86-30-6	N-Nitrosodiphenylamine (1)	350	U
101-55-3	4-Bromophenylphenylether	350	U
118-74-1	Hexachlorobenzene	350	U
87-86-5	Pentachlorophenol	880	U
86-74-8	Carbazole	350	U
85-01-8	Phenanthrene	350	U
120-12-7	Anthracene	350	U
84-74-2	Di-n-butylphthalate	350	U
206-44-0	Fluoranthene	350	U
129-00-0	Pyrene	350	U
85-68-7	Butylbenzylphthalate	350	U
91-94-1	3,3'-Dichlorobenzidine	350	U
56-55-3	Benzo(a)anthracene	350	U
218-01-9	Chrysene	350	U
117-81-7	bis(2-Ethylhexyl)phthalate	350	U
117-84-0	Di-n-octylphthalate	350	U
205-99-2	Benzo(b)fluoranthene	350	U
207-08-9	Benzo(k)fluoranthene	350	U
50-32-8	Benzo(a)pyrene	350	U
193-39-5	Indeno(1,2,3-cd)pyrene	350	U
53-70-3	Dibenz(a,h)anthracene	350	U
191-24-2	Benzo(g,h,i)perylene	350	U

(1) - Cannot be separated from Diphenylamine

AK 4/8

1B

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

MWSO002000N1

ab Name: SWL-TULSA Contract: LORADO AFB,

Code: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38676

atrix: (soil/water) SOIL Lab Sample ID: 38676.04

ample wt/vol: 30.4 (g/mL) G Lab File ID: P21365.D

evel: (low/med) LOW Date Received: 05/22/99

Moisture: not dec. 7 dec. Date Extracted: 05/29/99

xtraction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/09/99

oncentrated Extract Volume: 1000(uL)

PC Cleanup: (Y/N) N pH: 8.2 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	350	U
111-44-4	bis(2-Chloroethyl)ether	350	U
95-57-8	2-Chlorophenol	350	U
541-73-1	1,3-Dichlorobenzene	350	U
106-46-7	1,4-Dichlorobenzene	350	U
100-51-6	Benzyl alcohol	350	U
95-50-1	1,2-Dichlorobenzene	350	U
95-48-7	2-Methylphenol	350	U
108-60-1	bis(2-Chloroisopropyl)ether	350	U
106-44-5	4-Methylphenol	350	U
621-64-7	N-Nitroso-di-n-propylamine	350	U
67-72-1	Hexachloroethane	350	U
98-95-3	Nitrobenzene	350	U
78-59-1	Isophorone	350	U
88-75-5	2-Nitrophenol	350	U
105-67-9	2,4-Dimethylphenol	350	U
65-85-0	Benzoic Acid	880	U
111-91-1	bis(2-Chloroethoxy)methane	350	U
120-83-2	2,4-Dichlorophenol	350	U
120-82-1	1,2,4-Trichlorobenzene	350	U
91-20-3	Naphthalene	350	U
106-47-8	4-Chloroaniline	350	U
87-68-3	Hexachlorobutadiene	350	U
59-50-7	4-Chloro-3-methylphenol	350	U
91-57-6	2-Methylnaphthalene	350	U
77-47-4	Hexachlorocyclopentadiene	350	U
88-06-2	2,4,6-Trichlorophenol	350	U
95-95-4	2,4,5-Trichlorophenol	880	U
91-58-7	2-Chloronaphthalene	350	U
88-74-4	2-Nitroaniline	880	U
131-11-3	Dimethylphthalate	350	U
208-96-8	Acenaphthylene	350	U
606-20-2	2,6-Dinitrotoluene	350	U

FORM I SV-1

4/8

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MWSQ002004N1

'ame: SWL-TULSA Contract: LORADO AFB,

› Code: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38676

:rix: (soil/water) SOIL Lab Sample ID: 38676.05

mple wt/vol: 32.9 (g/mL) G Lab File ID: P21366.D

vel: (low/med) LOW Date Received: 05/22/99

Moisture: not dec. 16 dec. Date Extracted:05/29/99

traction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/09/99

ncentrated Extract Volume: 1000(uL)

C Cleanup: (Y/N) N pH: 8.2 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	360	U
111-44-4	bis(2-Chloroethyl)ether	360	U
95-57-8	2-Chlorophenol	360	U
541-73-1	1,3-Dichlorobenzene	360	U
106-46-7	1,4-Dichlorobenzene	360	U
100-51-6	Benzyl alcohol	360	U
95-50-1	1,2-Dichlorobenzene	360	U
95-48-7	2-Methylphenol	360	U
108-60-1	bis(2-Chloroisopropyl)ether	360	U
106-44-5	4-Methylphenol	360	U
621-64-7	N-Nitroso-di-n-propylamine	360	U
67-72-1	Hexachloroethane	360	U
98-95-3	Nitrobenzene	360	U
78-59-1	Isophorone	360	U
88-75-5	2-Nitrophenol	360	U
105-67-9	2,4-Dimethylphenol	360	U
65-85-0	Benzoic Acid	900	U
111-91-1	bis(2-Chloroethoxy)methane	360	U
120-83-2	2,4-Dichlorophenol	360	U
120-82-1	1,2,4-Trichlorobenzene	360	U
91-20-3	Naphthalene	360	U
106-47-8	4-Chloroaniline	360	U
87-68-3	Hexachlorobutadiene	360	U
59-50-7	4-Chloro-3-methylphenol	360	U
91-57-6	2-Methylnaphthalene	360	U
77-47-4	Hexachlorocyclopentadiene	360	U
88-06-2	2,4,6-Trichlorophenol	360	U
95-95-4	2,4,5-Trichlorophenol	900	U
91-58-7	2-Chloronaphthalene	360	U
88-74-4	2-Nitroaniline	900	U
131-11-3	Dimethylphthalate	360	U
208-96-8	Acenaphthylene	360	U
606-20-2	2,6-Dinitrotoluene	360	U

4/8

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MWSQ002004N1

) ame: SWL-TULSA Contract: LORADO AFB,

) Code: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38676

trix: (soil/water) SOIL Lab Sample ID: 38676.05

mple wt/vol: 32.9 (g/mL) G Lab File ID: P21366.D

vel: (low/med) LOW Date Received: 05/22/99

Moisture: not dec. 16 dec. Date Extracted: 05/29/99

traction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/09/99

ncentrated Extract Volume: 1000(uL)

C Cleanup: (Y/N) N pH: 8.2 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
99-09-2	3-Nitroaniline	900	U
83-32-9	Acenaphthene	360	U
121-14-2	2,4-Dinitrotoluene	360	U
51-28-5	2,4-Dinitrophenol	900	U
100-02-7	4-Nitrophenol	900	U
132-64-9	Dibenzofuran	360	U
84-66-2	Diethylphthalate	360	U
7005-72-3	4-Chlorophenyl-phenylether	360	U
86-73-7	Fluorene	360	U
100-01-6	4-Nitroaniline	900	U
534-52-1	4,6-Dinitro-2-methylphenol	900	U
86-30-6	N-Nitrosodiphenylamine (1)	360	U
101-55-3	4-Bromophenylphenylether	360	U
118-74-1	Hexachlorobenzene	360	U
87-86-5	Pentachlorophenol	900	U
86-74-8	Carbazole	360	U
85-01-8	Phenanthrene	360	U
120-12-7	Anthracene	360	U
84-74-2	Di-n-butylphthalate	360	U
206-44-0	Fluoranthene	360	U
129-00-0	Pyrene	360	U
85-68-7	Butylbenzylphthalate	360	U
91-94-1	3,3'-Dichlorobenzidine	360	U
56-55-3	Benzo(a)anthracene	360	U
218-01-9	Chrysene	360	U
117-81-7	bis(2-Ethylhexyl)phthalate	360	U
117-84-0	Di-n-octylphthalate	360	U
205-99-2	Benzo(b)fluoranthene	360	U
207-08-9	Benzo(k)fluoranthene	360	U
50-32-8	Benzo(a)pyrene	360	U
193-39-5	Indeno(1,2,3-cd)pyrene	360	U
53-70-3	Dibenz(a,h)anthracene	360	U
191-24-2	Benzo(g,h,i)perylene	360	U

(1) - Cannot be separated from Diphenylamine

4/8

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

S0002007N1

- Name: SWL-TULSA Contract: LORADO AFB,

o Code: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38676

trix: (soil/water) SOIL Lab Sample ID: 38676.06

mple wt/vol: 31.4 (g/mL) G Lab File ID: P21367.D

vel: (low/med) LOW Date Received: 05/22/99

Moisture: not dec. 21 dec. Date Extracted:05/29/99

traction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/09/99

ncentrated Extract Volume: 1000(uL)

C Cleanup: (Y/N) N pH: 8.4 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	400	U
111-44-4	bis(2-Chloroethyl)ether	400	U
95-57-8	2-Chlorophenol	400	U
541-73-1	1,3-Dichlorobenzene	400	U
106-46-7	1,4-Dichlorobenzene	400	U
100-51-6	Benzyl alcohol	400	U
95-50-1	1,2-Dichlorobenzene	400	U
95-48-7	2-Methylphenol	400	U
108-60-1	bis(2-Chloroisopropyl)ether	400	U
106-44-5	4-Methylphenol	400	U
621-64-7	N-Nitroso-di-n-propylamine	400	U
67-72-1	Hexachloroethane	400	U
98-95-3	Nitrobenzene	400	U
78-59-1	Isophorone	400	U
88-75-5	2-Nitrophenol	400	U
105-67-9	2,4-Dimethylphenol	400	U
65-85-0	Benzoic Acid	1000	U
111-91-1	bis(2-Chloroethoxy)methane	400	U
120-83-2	2,4-Dichlorophenol	400	U
120-82-1	1,2,4-Trichlorobenzene	400	U
91-20-3	Naphthalene	400	U
106-47-8	4-Chloroaniline	400	U
87-68-3	Hexachlorobutadiene	400	U
59-50-7	4-Chloro-3-methylphenol	400	U
91-57-6	2-Methylnaphthalene	400	U
77-47-4	Hexachlorocyclopentadiene	400	U
88-06-2	2,4,6-Trichlorophenol	400	U
95-95-4	2,4,5-Trichlorophenol	1000	U
91-58-7	2-Chloronaphthalene	400	U
88-74-4	2-Nitroaniline	1000	U
131-11-3	Dimethylphthalate	400	U
208-96-8	Acenaphthylene	400	U
606-20-2	2,6-Dinitrotoluene	400	U

R SS

R S S

FORM I SV-1

4/8

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SO002007N1

ame: SWL-TULSA Contract: LORADO AFB,

b Code: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38676

trix: (soil/water) SOIL Lab Sample ID: 38676.06

mple wt/vol: 31.4 (g/mL) G Lab File ID: P21367.D

vel: (low/med) LOW Date Received: 05/22/99

Moisture: not dec. 21 dec. Date Extracted: 05/29/99

traction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/09/99

ncentrated Extract Volume: 1000(uL)

C Cleanup: (Y/N) N pH: 8.4 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG		Q
99-09-2	3-Nitroaniline	1000	U	
83-32-9	Acenaphthene	400	U	
121-14-2	2,4-Dinitrotoluene	400	U	
51-28-5	2,4-Dinitrophenol	1000	U	
100-02-7	4-Nitrophenol	1000	U	
132-64-9	Dibenzofuran	400	U	
84-66-2	Diethylphthalate	400	U	
7005-72-3	4-Chlorophenyl-phenylether	400	U	
86-73-7	Fluorene	400	U	
100-01-6	4-Nitroaniline	1000	U	
534-52-1	4,6-Dinitro-2-methylphenol	1000	U	
86-30-6	N-Nitrosodiphenylamine (1)	400	U	
101-55-3	4-Bromophenylphenylether	400	U	
118-74-1	Hexachlorobenzene	400	U	
87-86-5	Pentachlorophenol	1000	U	
86-74-8	Carbazole	400	U	
85-01-8	Phenanthrene	400	U	
120-12-7	Anthracene	400	U	
84-74-2	Di-n-butylphthalate	400	U	
206-44-0	Fluoranthene	400	U	
129-00-0	Pyrene	400	U	
85-68-7	Butylbenzylphthalate	400	U	
91-94-1	3,3'-Dichlorobenzidine	400	U	
56-55-3	Benzo(a)anthracene	400	U	
218-01-9	Chrysene	400	U	
117-81-7	bis(2-Ethylhexyl)phthalate	400	U	
117-84-0	Di-n-octylphthalate	400	U	
205-99-2	Benzo(b)fluoranthene	400	U	
207-08-9	Benzo(k)fluoranthene	400	U	
50-32-8	Benzo(a)pyrene	400	U	
193-39-5	Indeno(1,2,3-cd)pyrene	400	U	
53-70-3	Dibenz(a,h)anthracene	400	U	
191-24-2	Benzo(g,h,i)perylene	400	U	

R SS

R SS

(1) - Cannot be separated from Diphenylamine

4/8

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SO002007N1RE

Name: SWL-TULSA Contract: LORADO AFB,

Code: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38676

trix: (soil/water) SOIL Lab Sample ID: 38676.06RE

mple wt/vol: 30.8 (g/mL) G Lab File ID: M14776.D

vel: (low/med) LOW Date Received: 05/22/99

Moisture: not dec. 21 dec. Date Extracted: 06/16/99

traction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/18/99

ncentrated Extract Volume: 1000 (uL)

C Cleanup: (Y/N) N pH: 8.4 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	410	U
111-44-4	bis(2-Chloroethyl)ether	410	U
95-57-8	2-Chlorophenol	410	U
541-73-1	1,3-Dichlorobenzene	410	U
106-46-7	1,4-Dichlorobenzene	410	U
100-51-6	Benzyl alcohol	410	U
95-50-1	1,2-Dichlorobenzene	410	U
95-48-7	2-Methylphenol	410	U
108-60-1	bis(2-Chloroisopropyl)ether	410	U
106-44-5	4-Methylphenol	410	U
621-64-7	N-Nitroso-di-n-propylamine	410	U
67-72-1	Hexachloroethane	410	U
98-95-3	Nitrobenzene	410	U
78-59-1	Isophorone	410	U
88-75-5	2-Nitrophenol	410	U
105-67-9	2,4-Dimethylphenol	410	U
65-85-0	Benzoic Acid	1000	U
111-91-1	bis(2-Chloroethoxy)methane	410	U
120-83-2	2,4-Dichlorophenol	410	U
120-82-1	1,2,4-Trichlorobenzene	410	U
91-20-3	Naphthalene	410	U
106-47-8	4-Chloroaniline	410	U
87-68-3	Hexachlorobutadiene	410	U
59-50-7	4-Chloro-3-methylphenol	410	U
91-57-6	2-Methylnaphthalene	410	U
77-47-4	Hexachlorocyclopentadiene	410	U
88-06-2	2,4,6-Trichlorophenol	410	U
95-95-4	2,4,5-Trichlorophenol	1000	U
91-58-7	2-Chloronaphthalene	410	U
88-74-4	2-Nitroaniline	1000	U
131-11-3	Dimethylphthalate	410	U
208-96-8	Acenaphthylene	410	U
606-20-2	2,6-Dinitrotoluene	410	U

UJ HT

UJ HT

FORM I SV-1

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1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SO002007N1RE

› Name: SWL-TULSA Contract: LORADO AFB,

› ode: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38676

:rix: (soil/water) SOIL Lab Sample ID: 38676.06RE

nple wt/vol: 30.8 (g/mL) G Lab File ID: M14776.D

vel: (low/med) LOW Date Received: 05/22/99

Moisture: not dec. · 21 dec. Date Extracted: 06/16/99

:raction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/18/99

ncentrated Extract Volume: 1000(uL)

C Cleanup: (Y/N) N pH: 8.4 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG		Q
99-09-2	3-Nitroaniline	1000	U	UJ
83-32-9	Acenaphthene	410	U	
121-14-2	2,4-Dinitrotoluene	410	U	
51-28-5	2,4-Dinitrophenol	1000	U	
100-02-7	4-Nitrophenol	1000	U	
132-64-9	Dibenzofuran	410	U	
84-66-2	Diethylphthalate	410	U	
7005-72-3	4-Chlorophenyl-phenylether	410	U	
86-73-7	Fluorene	410	U	
100-01-6	4-Nitroaniline	1000	U	
534-52-1	4,6-Dinitro-2-methylphenol	1000	U	
86-30-6	N-Nitrosodiphenylamine (1)	410	U	
101-55-3	4-Bromophenylphenylether	410	U	
118-74-1	Hexachlorobenzene	410	U	
87-86-5	Pentachlorophenol	1000	U	
86-74-8	Carbazole	410	U	
85-01-8	Phenanthrene	410	U	
120-12-7	Anthracene	410	U	
84-74-2	Di-n-butylphthalate	410	U	
206-44-0	Fluoranthene	410	U	
129-00-0	Pyrene	410	U	
85-68-7	Butylbenzylphthalate	410	U	
91-94-1	3,3'-Dichlorobenzidine	410	U	
56-55-3	Benzo(a)anthracene	410	U	
218-01-9	Chrysene	410	U	
117-81-7	bis(2-Ethylhexyl)phthalate	410	U	
117-84-0	Di-n-octylphthalate	410	U	
205-99-2	Benzo(b)fluoranthene	410	U	
207-08-9	Benzo(k)fluoranthene	410	U	
50-32-8	Benzo(a)pyrene	410	U	
193-39-5	Indeno(1,2,3-cd)pyrene	410	U	
53-70-3	Dibenz(a,h)anthracene	410	U	
191-24-2	Benzo(g,h,i)perylene	410	U	UJ

HT

HT

(1) - Cannot be separated from Diphenylamine

FORM I SV-2

4/8

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SO003000N1

b Name: SWL-TULSA Contract: LORADO AFB,

b Code: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38676

trix: (soil/water) SOIL Lab Sample ID: 38676.07

mple wt/vol: 32.0 (g/mL) G Lab File ID: P21386.D

vel: (low/med) LOW Date Received: 05/22/99

Moisture: not dec. 5 dec. Date Extracted: 05/29/99

traction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/10/99

ncentrated Extract Volume: 1000(uL)

'C Cleanup: (Y/N) N pH: 7.2 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	330	U
111-44-4	bis(2-Chloroethyl)ether	330	U
95-57-8	2-Chlorophenol	330	U
541-73-1	1,3-Dichlorobenzene	330	U
106-46-7	1,4-Dichlorobenzene	330	U
100-51-6	Benzyl alcohol	330	U
95-50-1	1,2-Dichlorobenzene	330	U
95-48-7	2-Methylphenol	330	U
108-60-1	bis(2-Chloroisopropyl)ether	330	U
106-44-5	4-Methylphenol	330	U
621-64-7	N-Nitroso-di-n-propylamine	330	U
67-72-1	Hexachloroethane	330	U
98-95-3	Nitrobenzene	330	U
78-59-1	Isophorone	330	U
88-75-5	2-Nitrophenol	330	U
105-67-9	2,4-Dimethylphenol	330	U
65-85-0	Benzoic Acid	820	U
111-91-1	bis(2-Chloroethoxy)methane	330	U
120-83-2	2,4-Dichlorophenol	330	U
120-82-1	1,2,4-Trichlorobenzene	330	U
91-20-3	Naphthalene	330	U
106-47-8	4-Chloroaniline	330	U
87-68-3	Hexachlorobutadiene	330	U
59-50-7	4-Chloro-3-methylphenol	330	U
91-57-6	2-Methylnaphthalene	330	U
77-47-4	Hexachlorocyclopentadiene	330	U
88-06-2	2,4,6-Trichlorophenol	330	U
95-95-4	2,4,5-Trichlorophenol	820	U
91-58-7	2-Chloronaphthalene	330	U
88-74-4	2-Nitroaniline	820	U
131-11-3	Dimethylphthalate	330	U
208-96-8	Acenaphthylene	330	U
606-20-2	2,6-Dinitrotoluene	330	U

R IS

R IS

HK 4/8

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SO003000N1

ame: SWL-TULSA Contract: LORADO AFB,

b Code: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38676

trix: (soil/water) SOIL Lab Sample ID: 38676.07

mple wt/vol: 32.0 (g/mL) G Lab File ID: P21386.D

vel: (low/med) LOW Date Received: 05/22/99

Moisture: not dec. 5 dec. Date Extracted: 05/29/99

traction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/10/99

ncentrated Extract Volume: 1000(uL)

C Cleanup: (Y/N) N pH: 7.2 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
99-09-2	3-Nitroaniline	820	U
83-32-9	Acenaphthene	330	U
121-14-2	2,4-Dinitrotoluene	330	U
51-28-5	2,4-Dinitrophenol	820	U
100-02-7	4-Nitrophenol	820	U
132-64-9	Dibenzofuran	330	U
84-66-2	Diethylphthalate	330	U
7005-72-3	4-Chlorophenyl-phenylether	330	U
86-73-7	Fluorene	330	U
100-01-6	4-Nitroaniline	820	U
534-52-1	4,6-Dinitro-2-methylphenol	820	U
86-30-6	N-Nitrosodiphenylamine (1)	330	U
101-55-3	4-Bromophenylphenylether	330	U
118-74-1	Hexachlorobenzene	330	U
87-86-5	Pentachlorophenol	820	U
86-74-8	Carbazole	330	U
85-01-8	Phenanthrene	330	U
120-12-7	Anthracene	330	U
84-74-2	Di-n-butylphthalate	330	U
206-44-0	Fluoranthene	330	U
129-00-0	Pyrene	330	U
85-68-7	Butylbenzylphthalate	330	U
91-94-1	3,3'-Dichlorobenzidine	330	U
56-55-3	Benzo(a)anthracene	330	U
218-01-9	Chrysene	330	U
117-81-7	bis(2-Ethylhexyl)phthalate	130	J
117-84-0	Di-n-octylphthalate	330	U
205-99-2	Benzo(b)fluoranthene	330	U
207-08-9	Benzo(k)fluoranthene	330	U
50-32-8	Benzo(a)pyrene	330	U
193-39-5	Indeno(1,2,3-cd)pyrene	330	U
53-70-3	Dibenz(a,h)anthracene	330	U
191-24-2	Benzo(g,h,i)perylene	330	U

R IS

R IS

(1) - Cannot be separated from Diphenylamine

4/8

02337

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SO003000N1RE

Name: SWL-TULSA Contract: LORADO AFB,

Code: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38676

Matrix: (soil/water) SOIL Lab Sample ID: 38676.07RA

Sample wt/vol: 32.0 (g/mL) G Lab File ID: P21391.D

Level: (low/med) LOW Date Received: 05/22/99

% Moisture: not dec. 5 dec. Date Extracted: 05/29/99

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/11/99

Concentrated Extract Volume: 1000(uL)

GPC Cleanup: (Y/N) N pH: 7.2 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	330	U
111-44-4	bis(2-Chloroethyl)ether	330	U
95-57-8	2-Chlorophenol	330	U
541-73-1	1,3-Dichlorobenzene	330	U
106-46-7	1,4-Dichlorobenzene	330	U
100-51-6	Benzyl alcohol	330	U
95-50-1	1,2-Dichlorobenzene	330	U
95-48-7	2-Methylphenol	330	U
108-60-1	bis(2-Chloroisopropyl)ether	330	U
106-44-5	4-Methylphenol	330	U
621-64-7	N-Nitroso-di-n-propylamine	330	U
67-72-1	Hexachloroethane	330	U
98-95-3	Nitrobenzene	330	U
78-59-1	Isophorone	330	U
88-75-5	2-Nitrophenol	330	U
105-67-9	2,4-Dimethylphenol	330	U
65-85-0	Benzoic Acid	820	U
111-91-1	bis(2-Chloroethoxy)methane	330	U
120-83-2	2,4-Dichlorophenol	330	U
120-82-1	1,2,4-Trichlorobenzene	330	U
91-20-3	Naphthalene	330	U
106-47-8	4-Chloroaniline	330	U
87-68-3	Hexachlorobutadiene	330	U
59-50-7	4-Chloro-3-methylphenol	330	U
91-57-6	2-Methylnaphthalene	330	U
77-47-4	Hexachlorocyclopentadiene	330	U
88-06-2	2,4,6-Trichlorophenol	330	U
95-95-4	2,4,5-Trichlorophenol	820	U
91-58-7	2-Chloronaphthalene	330	U
88-74-4	2-Nitroaniline	820	U
131-11-3	Dimethylphthalate	330	U
208-96-8	Acenaphthylene	330	U
606-20-2	2,6-Dinitrotoluene	330	U

HK 4/8

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

S0003000N1RE

Name: SWL-TULSA Contract: LORADO AFB,

b Code: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38676

trix: (soil/water) SOIL Lab Sample ID: 38676.07RA

mple wt/vol: 32.0 (g/mL) G Lab File ID: P21391.D

vel: (low/med) LOW Date Received: 05/22/99

Moisture: not dec. 5 dec. Date Extracted: 05/29/99

traction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/11/99

ncentrated Extract Volume: 1000 (uL)

C Cleanup: (Y/N) N pH: 7.2 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG		Q		
99-09-2	3-Nitroaniline		820	U		
83-32-9	Acenaphthene		330	U		
121-14-2	2,4-Dinitrotoluene		330	U		
51-28-5	2,4-Dinitrophenol		820	U		
100-02-7	4-Nitrophenol		820	U		
132-64-9	Dibenzofuran		330	U		
84-66-2	Diethylphthalate		330	U		
7005-72-3	4-Chlorophenyl-phenylether		330	U		
86-73-7	Fluorene		330	U		
100-01-6	4-Nitroaniline		820	U		
534-52-1	4,6-Dinitro-2-methylphenol		820	U		
86-30-6	N-Nitrosodiphenylamine (1)		330	U		
101-55-3	4-Bromophenylphenylether		330	U		
118-74-1	Hexachlorobenzene		330	U		
87-86-5	Pentachlorophenol		820	U		
86-74-8	Carbazole		330	U		
85-01-8	Phenanthrene		330	U		
120-12-7	Anthracene		330	U		
84-74-2	Di-n-butylphthalate		330	U		
206-44-0	Fluoranthene		330	U		
129-00-0	Pyrene		330	U		
85-68-7	Butylbenzylphthalate		330	U		
91-94-1	3,3'-Dichlorobenzidine		330	U	UJ	IS
56-55-3	Benzo(a)anthracene		330	U	UJ	IS
218-01-9	Chrysene		330	U	UJ	IS
117-81-7	bis(2-Ethylhexyl)phthalate	330	97	J	UJ	BL/IS
117-84-0	Di-n-octylphthalate		330	U		IS
205-99-2	Benzo(b)fluoranthene		330	U		
207-08-9	Benzo(k)fluoranthene		330	U		
50-32-8	Benzo(a)pyrene		330	U		
193-39-5	Indeno(1,2,3-cd)pyrene		330	U		
53-70-3	Dibenz(a,h)anthracene		330	U		
191-24-2	Benzo(g,h,i)perylene		330	U		

(1) - Cannot be separated from Diphenylamine

4/8

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MWSO003006N1

ame: SWL-TULSA Contract: LORADO AFB,

Code: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38676

rix: (soil/water) SOIL Lab Sample ID: 38676.08

ple wt/vol: 32.3 (g/mL) G Lab File ID: P21375.D

vel: (low/med) LOW Date Received: 05/22/99

Moisture: not dec. 19 dec. Date Extracted: 05/29/99

traction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/10/99

ncentrated Extract Volume: 1000 (uL)

C Cleanup: (Y/N) N pH: 7.3 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	380	U
111-44-4	bis(2-Chloroethyl)ether	380	U
95-57-8	2-Chlorophenol	380	U
541-73-1	1,3-Dichlorobenzene	380	U
106-46-7	1,4-Dichlorobenzene	380	U
100-51-6	Benzyl alcohol	380	U
95-50-1	1,2-Dichlorobenzene	380	U
95-48-7	2-Methylphenol	380	U
108-60-1	bis(2-Chloroisopropyl)ether	380	U
106-44-5	4-Methylphenol	380	U
621-64-7	N-Nitroso-di-n-propylamine	380	U
67-72-1	Hexachloroethane	380	U
98-95-3	Nitrobenzene	380	U
78-59-1	Isophorone	380	U
88-75-5	2-Nitrophenol	380	U
105-67-9	2,4-Dimethylphenol	380	U
65-85-0	Benzoic Acid	960	U
111-91-1	bis(2-Chloroethoxy)methane	380	U
120-83-2	2,4-Dichlorophenol	380	U
120-82-1	1,2,4-Trichlorobenzene	380	U
91-20-3	Naphthalene	380	U
106-47-8	4-Chloroaniline	380	U
87-68-3	Hexachlorobutadiene	380	U
59-50-7	4-Chloro-3-methylphenol	380	U
91-57-6	2-Methylnaphthalene	380	U
77-47-4	Hexachlorocyclopentadiene	380	U
88-06-2	2,4,6-Trichlorophenol	380	U
95-95-4	2,4,5-Trichlorophenol	960	U
91-58-7	2-Chloronaphthalene	380	U
88-74-4	2-Nitroaniline	960	U
131-11-3	Dimethylphthalate	380	U
208-96-8	Acenaphthylene	380	U
606-20-2	2,6-Dinitrotoluene	380	U

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1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MWSO003006N1

Name: SWL-TULSA Contract: LORADO AFB,

Code: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38676

Matrix: (soil/water) SOIL Lab Sample ID: 38676.08

Sample wt/vol: 32.3 (g/mL) G Lab File ID: P21375.D

Level: (low/med) LOW Date Received: 05/22/99

% Moisture: not dec. 19 dec. Date Extracted: 05/29/99

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/10/99

Concentrated Extract Volume: 1000(uL)

GPC Cleanup: (Y/N) N pH: 7.3 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
99-09-2	3-Nitroaniline	960	U
83-32-9	Acenaphthene	380	U
121-14-2	2,4-Dinitrotoluene	380	U
51-28-5	2,4-Dinitrophenol	960	U
100-02-7	4-Nitrophenol	960	U
132-64-9	Dibenzofuran	380	U
84-66-2	Diethylphthalate	380	U
7005-72-3	4-Chlorophenyl-phenylether	380	U
86-73-7	Fluorene	380	U
100-01-6	4-Nitroaniline	960	U
534-52-1	4,6-Dinitro-2-methylphenol	960	U
86-30-6	N-Nitrosodiphenylamine (1)	380	U
101-55-3	4-Bromophenylphenylether	380	U
118-74-1	Hexachlorobenzene	380	U
87-86-5	Pentachlorophenol	960	U
86-74-8	Carbazole	380	U
85-01-8	Phenanthrene	380	U
120-12-7	Anthracene	380	U
84-74-2	Di-n-butylphthalate	380	U
206-44-0	Fluoranthene	380	U
129-00-0	Pyrene	380	U
85-68-7	Butylbenzylphthalate	380	U
91-94-1	3,3'-Dichlorobenzidine	380	U
56-55-3	Benzo(a)anthracene	380	U
218-01-9	Chrysene	380	U
117-81-7	bis(2-Ethylhexyl)phthalate	380	U
117-84-0	Di-n-octylphthalate	380	U
205-99-2	Benzo(b)fluoranthene	380	U
207-08-9	Benzo(k)fluoranthene	380	U
50-32-8	Benzo(a)pyrene	380	U
193-39-5	Indeno(1,2,3-cd)pyrene	380	U
53-70-3	Dibenz(a,h)anthracene	380	U
191-24-2	Benzo(g,h,i)perylene	380	U

(1) - Cannot be separated from Diphenylamine

4/8

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MWSO003012N1

Name: SWL-TULSA Contract: LORADO AFB,

b Code: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38676

trix: (soil/water) SOIL Lab Sample ID: 38676.09

mple wt/vol: 30.0 (g/mL) G Lab File ID: P21376.D

vel: (low/med) LOW Date Received: 05/22/99

Moisture: not dec. 12 dec. Date Extracted: 05/29/99

traction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/10/99

ncentrated Extract Volume: 1000(uL)

C Cleanup: (Y/N) N pH: 7.3 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	380	U
111-44-4	bis(2-Chloroethyl)ether	380	U
95-57-8	2-Chlorophenol	380	U
541-73-1	1,3-Dichlorobenzene	380	U
106-46-7	1,4-Dichlorobenzene	380	U
100-51-6	Benzyl alcohol	380	U
95-50-1	1,2-Dichlorobenzene	380	U
95-48-7	2-Methylphenol	380	U
108-60-1	bis(2-Chloroisopropyl)ether	380	U
106-44-5	4-Methylphenol	380	U
621-64-7	N-Nitroso-di-n-propylamine	380	U
67-72-1	Hexachloroethane	380	U
98-95-3	Nitrobenzene	380	U
78-59-1	Isophorone	380	U
88-75-5	2-Nitrophenol	380	U
105-67-9	2,4-Dimethylphenol	380	U
65-85-0	Benzoic Acid	950	U
111-91-1	bis(2-Chloroethoxy)methane	380	U
120-83-2	2,4-Dichlorophenol	380	U
120-82-1	1,2,4-Trichlorobenzene	380	U
91-20-3	Naphthalene	380	U
106-47-8	4-Chloroaniline	380	U
87-68-3	Hexachlorobutadiene	380	U
59-50-7	4-Chloro-3-methylphenol	380	U
91-57-6	2-Methylnaphthalene	380	U
77-47-4	Hexachlorocyclopentadiene	380	U
88-06-2	2,4,6-Trichlorophenol	380	U
95-95-4	2,4,5-Trichlorophenol	950	U
91-58-7	2-Chloronaphthalene	380	U
88-74-4	2-Nitroaniline	950	U
131-11-3	Dimethylphthalate	380	U
208-96-8	Acenaphthylene	380	U
606-20-2	2,6-Dinitrotoluene	380	U

4/8

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MWSO003012N1

ume: SWL-TULSA Contract: LORADO AFB,

Code: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38676

rix: (soil/water) SOIL Lab Sample ID: 38676.09

nple wt/vol: 30.0 (g/mL) G Lab File ID: P21376.D

vel: (low/med) LOW Date Received: 05/22/99

Moisture: not dec. 12 dec. Date Extracted: 05/29/99

traction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/10/99

ncentrated Extract Volume: 1000 (uL)

C Cleanup: (Y/N) N pH: 7.3 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
99-09-2	3-Nitroaniline	950	U
83-32-9	Acenaphthene	380	U
121-14-2	2,4-Dinitrotoluene	380	U
51-28-5	2,4-Dinitrophenol	950	U
100-02-7	4-Nitrophenol	950	U
132-64-9	Dibenzofuran	380	U
84-66-2	Diethylphthalate	380	U
7005-72-3	4-Chlorophenyl-phenylether	380	U
86-73-7	Fluorene	380	U
100-01-6	4-Nitroaniline	950	U
534-52-1	4,6-Dinitro-2-methylphenol	950	U
86-30-6	N-Nitrosodiphenylamine (1)	380	U
101-55-3	4-Bromophenylphenylether	380	U
118-74-1	Hexachlorobenzene	380	U
87-86-5	Pentachlorophenol	950	U
86-74-8	Carbazole	380	U
85-01-8	Phenanthrene	380	U
120-12-7	Anthracene	380	U
84-74-2	Di-n-butylphthalate	380	U
206-44-0	Fluoranthene	380	U
129-00-0	Pyrene	380	U
85-68-7	Butylbenzylphthalate	380	U
91-94-1	3,3'-Dichlorobenzidine	380	U
56-55-3	Benzo(a)anthracene	380	U
218-01-9	Chrysene	380	U
117-81-7	bis(2-Ethylhexyl)phthalate	380	U
117-84-0	Di-n-octylphthalate	380	U
205-99-2	Benzo(b)fluoranthene	380	U
207-08-9	Benzo(k)fluoranthene	380	U
50-32-8	Benzo(a)pyrene	380	U
193-39-5	Indeno(1,2,3-cd)pyrene	380	U
53-70-3	Dibenz(a,h)anthracene	380	U
191-24-2	Benzo(g,h,i)perylene	380	U

(1) - Cannot be separated from Diphenylamine

FORM I SV-2

4/8

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBSO001000N1

b Name: SWL-TULSA Contract: LORADO AFB,

b Code: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38676

trix: (soil/water) SOIL Lab Sample ID: 38676.10

mple wt/vol: 31.1 (g/mL) G Lab File ID: P21377.D

vel: (low/med) LOW Date Received: 05/22/99

Moisture: not dec. 11 dec. Date Extracted: 05/29/99

traction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/10/99

ncentrated Extract Volume: 1000 (uL)

C Cleanup: (Y/N) N pH: 7.3 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	370	U
111-44-4	bis(2-Chloroethyl)ether	370	U
95-57-8	2-Chlorophenol	370	U
541-73-1	1,3-Dichlorobenzene	370	U
106-46-7	1,4-Dichlorobenzene	370	U
100-51-6	Benzyl alcohol	370	U
95-50-1	1,2-Dichlorobenzene	370	U
95-48-7	2-Methylphenol	370	U
108-60-1	bis(2-Chloroisopropyl)ether	370	U
106-44-5	4-Methylphenol	370	U
621-64-7	N-Nitroso-di-n-propylamine	370	U
67-72-1	Hexachloroethane	370	U
98-95-3	Nitrobenzene	370	U
78-59-1	Isophorone	370	U
88-75-5	2-Nitrophenol	370	U
105-67-9	2,4-Dimethylphenol	370	U
65-85-0	Benzoic Acid	940	U
111-91-1	bis(2-Chloroethoxy)methane	370	U
120-83-2	2,4-Dichlorophenol	370	U
120-82-1	1,2,4-Trichlorobenzene	370	U
91-20-3	Naphthalene	370	U
106-47-8	4-Chloroaniline	370	U
87-68-3	Hexachlorobutadiene	370	U
59-50-7	4-Chloro-3-methylphenol	370	U
91-57-6	2-Methylnaphthalene	370	U
77-47-4	Hexachlorocyclopentadiene	370	U
88-06-2	2,4,6-Trichlorophenol	370	U
95-95-4	2,4,5-Trichlorophenol	940	U
91-58-7	2-Chloronaphthalene	370	U
88-74-4	2-Nitroaniline	940	U
131-11-3	Dimethylphthalate	370	U
208-96-8	Acenaphthylene	370	U
606-20-2	2,6-Dinitrotoluene	370	U

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1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBSO001000N1

Name: SWL-TULSA Contract: LORADO AFB,

b Code: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38676

trix: (soil/water) SOIL Lab Sample ID: 38676.10

mple wt/vol: 31.1 (g/mL) G Lab File ID: P21377.D

vel: (low/med) LOW Date Received: 05/22/99

Moisture: not dec. 11 dec. Date Extracted: 05/29/99

traction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/10/99

ncentrated Extract Volume: 1000(uL)

C Cleanup: (Y/N) N pH: 7.3 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
99-09-2	3-Nitroaniline	940	U
83-32-9	Acenaphthene	370	U
121-14-2	2,4-Dinitrotoluene	370	U
51-28-5	2,4-Dinitrophenol	940	U
100-02-7	4-Nitrophenol	940	U
132-64-9	Dibenzofuran	370	U
84-66-2	Diethylphthalate	370	U
7005-72-3	4-Chlorophenyl-phenylether	370	U
86-73-7	Fluorene	370	U
100-01-6	4-Nitroaniline	940	U
534-52-1	4,6-Dinitro-2-methylphenol	940	U
86-30-6	N-Nitrosodiphenylamine (1)	370	U
101-55-3	4-Bromophenylphenylether	370	U
118-74-1	Hexachlorobenzene	370	U
87-86-5	Pentachlorophenol	940	U
86-74-8	Carbazole	370	U
85-01-8	Phenanthrene	370	U
120-12-7	Anthracene	370	U
84-74-2	Di-n-butylphthalate	76	J
206-44-0	Fluoranthene	370	U
129-00-0	Pyrene	370	U
85-68-7	Butylbenzylphthalate	370	U
91-94-1	3,3'-Dichlorobenzidine	370	U
56-55-3	Benzo(a)anthracene	370	U
218-01-9	Chrysene	370	U
117-81-7	bis(2-Ethylhexyl)phthalate	370	U
117-84-0	Di-n-octylphthalate	370	U
205-99-2	Benzo(b)fluoranthene	370	U
207-08-9	Benzo(k)fluoranthene	370	U
50-32-8	Benzo(a)pyrene	370	U
193-39-5	Indeno(1,2,3-cd)pyrene	370	U
53-70-3	Dibenz(a,h)anthracene	370	U
191-24-2	Benzo(g,h,i)perylene	370	U

(1) - Cannot be separated from Diphenylamine

4/8

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BSO001000FD1

Name: SWL-TULSA Contract: LORADO AFB,

b Code: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38676

trix: (soil/water) SOIL Lab Sample ID: 38676.11

mple wt/vol: 32.1 (g/mL) G Lab File ID: P21393.D

vel: (low/med) LOW Date Received: 05/22/99

Moisture: not dec. 11 dec. Date Extracted:05/29/99

traction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/11/99

ncentrated Extract Volume: 1000(uL)

C Cleanup: (Y/N) N pH: 7.3 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	350	U
111-44-4	bis(2-Chloroethyl)ether	350	U
95-57-8	2-Chlorophenol	350	U
541-73-1	1,3-Dichlorobenzene	350	U
106-46-7	1,4-Dichlorobenzene	350	U
100-51-6	Benzyl alcohol	350	U
95-50-1	1,2-Dichlorobenzene	350	U
95-48-7	2-Methylphenol	350	U
108-60-1	bis(2-Chloroisopropyl)ether	350	U
106-44-5	4-Methylphenol	350	U
621-64-7	N-Nitroso-di-n-propylamine	350	U
67-72-1	Hexachloroethane	350	U
98-95-3	Nitrobenzene	350	U
78-59-1	Isophorone	350	U
88-75-5	2-Nitrophenol	350	U
105-67-9	2,4-Dimethylphenol	350	U
65-85-0	Benzoic Acid	880	U
111-91-1	bis(2-Chloroethoxy)methane	350	U
120-83-2	2,4-Dichlorophenol	350	U
120-82-1	1,2,4-Trichlorobenzene	350	U
91-20-3	Naphthalene	350	U
106-47-8	4-Chloroaniline	350	U
87-68-3	Hexachlorobutadiene	350	U
59-50-7	4-Chloro-3-methylphenol	350	U
91-57-6	2-Methylnaphthalene	350	U
77-47-4	Hexachlorocyclopentadiene	350	U
88-06-2	2,4,6-Trichlorophenol	350	U
95-95-4	2,4,5-Trichlorophenol	880	U
91-58-7	2-Chloronaphthalene	350	U
88-74-4	2-Nitroaniline	880	U
131-11-3	Dimethylphthalate	350	U
208-96-8	Acenaphthylene	350	U
606-20-2	2,6-Dinitrotoluene	350	U

4/8

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BSO001000FD1

Name: SWL-TULSA Contract: LORADO AFB,

Code: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38676

Matrix: (soil/water) SOIL Lab Sample ID: 38676.11

Sample wt/vol: 32.1 (g/mL) G Lab File ID: P21393.D

Level: (low/med) LOW Date Received: 05/22/99

% Moisture: not dec. 11 dec. Date Extracted: 05/29/99

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/11/99

Concentrated Extract Volume: 1000(uL)

GPC Cleanup: (Y/N) N pH: 7.3 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG		Q	
99-09-2	3-Nitroaniline		880	U	
83-32-9	Acenaphthene		350	U	
121-14-2	2,4-Dinitrotoluene		350	U	
51-28-5	2,4-Dinitrophenol		880	U	
100-02-7	4-Nitrophenol		880	U	
132-64-9	Dibenzofuran		350	U	
84-66-2	Diethylphthalate		350	U	
7005-72-3	4-Chlorophenyl-phenylether		350	U	
86-73-7	Fluorene		350	U	
100-01-6	4-Nitroaniline		880	U	
534-52-1	4,6-Dinitro-2-methylphenol		880	U	
86-30-6	N-Nitrosodiphenylamine (1)		350	U	
101-55-3	4-Bromophenylphenylether		350	U	
118-74-1	Hexachlorobenzene		350	U	
87-86-5	Pentachlorophenol		880	U	
86-74-8	Carbazole		350	U	
85-01-8	Phenanthrene		350	U	
120-12-7	Anthracene		350	U	
84-74-2	Di-n-butylphthalate		350	U	
206-44-0	Fluoranthene		350	U	
129-00-0	Pyrene		350	U	
85-68-7	Butylbenzylphthalate		350	U	
91-94-1	3,3'-Dichlorobenzidine		350	U	
56-55-3	Benzo(a)anthracene		350	U	
218-01-9	Chrysene		350	U	
117-81-7	bis(2-Ethylhexyl)phthalate	350	~~18~~	~~J~~	u BL
117-84-0	Di-n-octylphthalate		350	U	
205-99-2	Benzo(b)fluoranthene		350	U	
207-08-9	Benzo(k)fluoranthene		350	U	
50-32-8	Benzo(a)pyrene		350	U	
193-39-5	Indeno(1,2,3-cd)pyrene		350	U	
53-70-3	Dibenz(a,h)anthracene		350	U	
191-24-2	Benzo(g,h,i)perylene		350	U	

(1) - Cannot be separated from Diphenylamine

HL 4/8

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBSO001004N1

o Name: SWL-TULSA Contract: LORADO AFB,

b Code: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38676

trix: (soil/water) SOIL Lab Sample ID: 38676.12

mple wt/vol: 30.7 (g/mL) G Lab File ID: P21379.D

vel: (low/med) LOW Date Received: 05/22/99

Moisture: not dec. 19 dec. Date Extracted:05/29/99

traction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/10/99

ncentrated Extract Volume: 1000(uL)

C Cleanup: (Y/N) N pH: 7.3 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	400	U
111-44-4	bis(2-Chloroethyl)ether	400	U
95-57-8	2-Chlorophenol	400	U
541-73-1	1,3-Dichlorobenzene	400	U
106-46-7	1,4-Dichlorobenzene	400	U
100-51-6	Benzyl alcohol	400	U
95-50-1	1,2-Dichlorobenzene	400	U
95-48-7	2-Methylphenol	400	U
108-60-1	bis(2-Chloroisopropyl)ether	400	U
106-44-5	4-Methylphenol	400	U
621-64-7	N-Nitroso-di-n-propylamine	400	U
67-72-1	Hexachloroethane	400	U
98-95-3	Nitrobenzene	400	U
78-59-1	Isophorone	400	U
88-75-5	2-Nitrophenol	400	U
105-67-9	2,4-Dimethylphenol	400	U
65-85-0	Benzoic Acid	1000	U
111-91-1	bis(2-Chloroethoxy)methane	400	U
120-83-2	2,4-Dichlorophenol	400	U
120-82-1	1,2,4-Trichlorobenzene	400	U
91-20-3	Naphthalene	400	U
106-47-8	4-Chloroaniline	400	U
87-68-3	Hexachlorobutadiene	400	U
59-50-7	4-Chloro-3-methylphenol	400	U
91-57-6	2-Methylnaphthalene	400	U
77-47-4	Hexachlorocyclopentadiene	400	U
88-06-2	2,4,6-Trichlorophenol	400	U
95-95-4	2,4,5-Trichlorophenol	1000	U
91-58-7	2-Chloronaphthalene	400	U
88-74-4	2-Nitroaniline	1000	U
131-11-3	Dimethylphthalate	400	U
208-96-8	Acenaphthylene	400	U
606-20-2	2,6-Dinitrotoluene	400	U

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1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBSO001004N1

b Name: SWL-TULSA Contract: LORADO AFB,

b Code: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38676

trix: (soil/water) SOIL Lab Sample ID: 38676.12

mple wt/vol: 30.7 (g/mL) G Lab File ID: P21379.D

vel: (low/med) LOW Date Received: 05/22/99

Moisture: not dec. 19 dec. Date Extracted: 05/29/99

traction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/10/99

ncentrated Extract Volume: 1000(uL)

C Cleanup: (Y/N) N pH: 7.3 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
99-09-2	3-Nitroaniline	1000	U
83-32-9	Acenaphthene	400	U
121-14-2	2,4-Dinitrotoluene	400	U
51-28-5	2,4-Dinitrophenol	1000	U
100-02-7	4-Nitrophenol	1000	U
132-64-9	Dibenzofuran	400	U
84-66-2	Diethylphthalate	400	U
7005-72-3	4-Chlorophenyl-phenylether	400	U
86-73-7	Fluorene	400	U
100-01-6	4-Nitroaniline	1000	U
534-52-1	4,6-Dinitro-2-methylphenol	1000	U
86-30-6	N-Nitrosodiphenylamine (1)	400	U
101-55-3	4-Bromophenylphenylether	400	U
118-74-1	Hexachlorobenzene	400	U
87-86-5	Pentachlorophenol	1000	U
86-74-8	Carbazole	400	U
85-01-8	Phenanthrene	400	U
120-12-7	Anthracene	400	U
84-74-2	Di-n-butylphthalate	400	U
206-44-0	Fluoranthene	400	U
129-00-0	Pyrene	400	U
85-68-7	Butylbenzylphthalate	400	U
91-94-1	3,3'-Dichlorobenzidine	400	U
56-55-3	Benzo(a)anthracene	400	U
218-01-9	Chrysene	400	U
117-81-7	bis(2-Ethylhexyl)phthalate	400 ~~28~~	~~J~~ U BL
117-84-0	Di-n-octylphthalate	400	U
205-99-2	Benzo(b)fluoranthene	400	U
207-08-9	Benzo(k)fluoranthene	400	U
50-32-8	Benzo(a)pyrene	400	U
193-39-5	Indeno(1,2,3-cd)pyrene	400	U
53-70-3	Dibenz(a,h)anthracene	400	U
191-24-2	Benzo(g,h,i)perylene	400	U

(1) - Cannot be separated from Diphenylamine

FORM I SV-2

6/18

02349

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBSO001006N1

b Name: SWL-TULSA Contract: LORADO AFB,

b Code: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38676

trix: (soil/water) SOIL Lab Sample ID: 38676.13

mple wt/vol: 30.4 (g/mL) G Lab File ID: P21380.D

vel: (low/med) LOW Date Received: 05/22/99

Moisture: not dec. 21 dec. Date Extracted:05/29/99

traction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/10/99

ncentrated Extract Volume: 1000(uL)

C Cleanup: (Y/N) N pH: 7.3 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	420	U
111-44-4	bis(2-Chloroethyl)ether	420	U
95-57-8	2-Chlorophenol	420	U
541-73-1	1,3-Dichlorobenzene	420	U
106-46-7	1,4-Dichlorobenzene	420	U
100-51-6	Benzyl alcohol	420	U
95-50-1	1,2-Dichlorobenzene	420	U
95-48-7	2-Methylphenol	420	U
108-60-1	bis(2-Chloroisopropyl)ether	420	U
106-44-5	4-Methylphenol	420	U
621-64-7	N-Nitroso-di-n-propylamine	420	U
67-72-1	Hexachloroethane	420	U
98-95-3	Nitrobenzene	420	U
78-59-1	Isophorone	420	U
88-75-5	2-Nitrophenol	420	U
105-67-9	2,4-Dimethylphenol	420	U
65-85-0	Benzoic Acid	1000	U
111-91-1	bis(2-Chloroethoxy)methane	420	U
120-83-2	2,4-Dichlorophenol	420	U
120-82-1	1,2,4-Trichlorobenzene	420	U
91-20-3	Naphthalene	420	U
106-47-8	4-Chloroaniline	420	U
87-68-3	Hexachlorobutadiene	420	U
59-50-7	4-Chloro-3-methylphenol	420	U
91-57-6	2-Methylnaphthalene	420	U
77-47-4	Hexachlorocyclopentadiene	420	U
88-06-2	2,4,6-Trichlorophenol	420	U
95-95-4	2,4,5-Trichlorophenol	1000	U
91-58-7	2-Chloronaphthalene	420	U
88-74-4	2-Nitroaniline	1000	U
131-11-3	Dimethylphthalate	420	U
208-96-8	Acenaphthylene	420	U
606-20-2	2,6-Dinitrotoluene	420	U

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1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBS0001006N1

b Name: SWL-TULSA Contract: LORADO AFB,

b Code: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38676

trix: (soil/water) SOIL Lab Sample ID: 38676.13

mple wt/vol: 30.4 (g/mL) G Lab File ID: P21380.D

vel: (low/med) LOW Date Received: 05/22/99

Moisture: not dec. 21 dec. Date Extracted: 05/29/99

traction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/10/99

ncentrated Extract Volume: 1000(uL)

C Cleanup: (Y/N) N pH: 7.3 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
99-09-2	3-Nitroaniline	1000	U
83-32-9	Acenaphthene	420	U
121-14-2	2,4-Dinitrotoluene	420	U
51-28-5	2,4-Dinitrophenol	1000	U
100-02-7	4-Nitrophenol	1000	U
132-64-9	Dibenzofuran	420	U
84-66-2	Diethylphthalate	420	U
7005-72-3	4-Chlorophenyl-phenylether	420	U
86-73-7	Fluorene	420	U
100-01-6	4-Nitroaniline	1000	U
534-52-1	4,6-Dinitro-2-methylphenol	1000	U
86-30-6	N-Nitrosodiphenylamine (1)	420	U
101-55-3	4-Bromophenylphenylether	420	U
118-74-1	Hexachlorobenzene	420	U
87-86-5	Pentachlorophenol	1000	U
86-74-8	Carbazole	420	U
85-01-8	Phenanthrene	420	U
120-12-7	Anthracene	420	U
84-74-2	Di-n-butylphthalate	420	U
206-44-0	Fluoranthene	420	U
129-00-0	Pyrene	420	U
85-68-7	Butylbenzylphthalate	420	U
91-94-1	3,3'-Dichlorobenzidine	420	U
56-55-3	Benzo(a)anthracene	420	U
218-01-9	Chrysene	420	U
117-81-7	bis(2-Ethylhexyl)phthalate	420	U
117-84-0	Di-n-octylphthalate	420	U
205-99-2	Benzo(b)fluoranthene	420	U
207-08-9	Benzo(k)fluoranthene	420	U
50-32-8	Benzo(a)pyrene	420	U
193-39-5	Indeno(1,2,3-cd)pyrene	420	U
53-70-3	Dibenz(a,h)anthracene	420	U
191-24-2	Benzo(g,h,i)perylene	420	U

(1) - Cannot be separated from Diphenylamine

FORM I SV-2

4/6

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SO002000N1

r Name: SWL-TULSA Contract: LORADO AFB,

b Code: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38676

trix: (soil/water) SOIL Lab Sample ID: 38676.14

mple wt/vol: 31.0 (g/mL) G Lab File ID: P21381.D

vel: (low/med) LOW Date Received: 05/22/99

Moisture: not dec. 8 dec. Date Extracted: 05/29/99

traction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/10/99

ncentrated Extract Volume: 1000(uL)

C Cleanup: (Y/N) N pH: 7.2 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	350	U
111-44-4	bis(2-Chloroethyl)ether	350	U
95-57-8	2-Chlorophenol	350	U
541-73-1	1,3-Dichlorobenzene	350	U
106-46-7	1,4-Dichlorobenzene	350	U
100-51-6	Benzyl alcohol	350	U
95-50-1	1,2-Dichlorobenzene	350	U
95-48-7	2-Methylphenol	350	U
108-60-1	bis(2-Chloroisopropyl)ether	350	U
106-44-5	4-Methylphenol	350	U
621-64-7	N-Nitroso-di-n-propylamine	350	U
67-72-1	Hexachloroethane	350	U
98-95-3	Nitrobenzene	350	U
78-59-1	Isophorone	350	U
88-75-5	2-Nitrophenol	350	U
105-67-9	2,4-Dimethylphenol	350	U
65-85-0	Benzoic Acid	880	U
111-91-1	bis(2-Chloroethoxy)methane	350	U
120-83-2	2,4-Dichlorophenol	350	U
120-82-1	1,2,4-Trichlorobenzene	350	U
91-20-3	Naphthalene	350	U
106-47-8	4-Chloroaniline	350	U
87-68-3	Hexachlorobutadiene	350	U
59-50-7	4-Chloro-3-methylphenol	350	U
91-57-6	2-Methylnaphthalene	350	U
77-47-4	Hexachlorocyclopentadiene	350	U
88-06-2	2,4,6-Trichlorophenol	350	U
95-95-4	2,4,5-Trichlorophenol	880	U
91-58-7	2-Chloronaphthalene	350	U
88-74-4	2-Nitroaniline	880	U
131-11-3	Dimethylphthalate	350	U
208-96-8	Acenaphthylene	350	U
606-20-2	2,6-Dinitrotoluene	350	U

R 55

R 55

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1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SO002000N1

Lab Name: SWL-TULSA Contract: LORADO AFB,

Lab Code: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38676

Matrix: (soil/water) SOIL Lab Sample ID: 38676.14

Sample wt/vol: 31.0 (g/mL) G Lab File ID: P21381.D

Level: (low/med) LOW Date Received: 05/22/99

% Moisture: not dec. 8 dec. Date Extracted: 05/29/99

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/10/99

Concentrated Extract Volume: 1000(uL)

GPC Cleanup: (Y/N) N pH: 7.2 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
99-09-2	3-Nitroaniline	880	U
83-32-9	Acenaphthene	350	U
121-14-2	2,4-Dinitrotoluene	350	U
51-28-5	2,4-Dinitrophenol	880	U
100-02-7	4-Nitrophenol	880	U
132-64-9	Dibenzofuran	350	U
84-66-2	Diethylphthalate	350	U
7005-72-3	4-Chlorophenyl-phenylether	350	U
86-73-7	Fluorene	350	U
100-01-6	4-Nitroaniline	880	U
534-52-1	4,6-Dinitro-2-methylphenol	880	U
86-30-6	N-Nitrosodiphenylamine (1)	350	U
101-55-3	4-Bromophenylphenylether	350	U
118-74-1	Hexachlorobenzene	350	U
87-86-5	Pentachlorophenol	880	U
86-74-8	Carbazole	350	U
85-01-8	Phenanthrene	350	U
120-12-7	Anthracene	350	U
84-74-2	Di-n-butylphthalate	350	U
206-44-0	Fluoranthene	350	U
129-00-0	Pyrene	350	U
85-68-7	Butylbenzylphthalate	350	U
91-94-1	3,3'-Dichlorobenzidine	350	U
56-55-3	Benzo(a)anthracene	350	U
218-01-9	Chrysene	350	U
117-81-7	bis(2-Ethylhexyl)phthalate	350	U
117-84-0	Di-n-octylphthalate	350	U
205-99-2	Benzo(b)fluoranthene	350	U
207-08-9	Benzo(k)fluoranthene	350	U
50-32-8	Benzo(a)pyrene	350	U
193-39-5	Indeno(1,2,3-cd)pyrene	350	U
53-70-3	Dibenz(a,h)anthracene	350	U
191-24-2	Benzo(g,h,i)perylene	350	U

e SS

R SS

(1) - Cannot be separated from Diphenylamine

4/8

FORM I SV-2

02153

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SO002000N1RE

Lab Name: SWL-TULSA Contract: LORADO AFB,

Lab Code: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38676

Matrix: (soil/water) SOIL Lab Sample ID: 38676.14RE

Sample wt/vol: 30.9 (g/mL) G Lab File ID: M14777.D

Level: (low/med) LOW Date Received: 05/22/99

% Moisture: not dec. 8 dec. Date Extracted: 06/16/99

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/18/99

Concentrated Extract Volume: 1000 (uL)

GPC Cleanup: (Y/N) N pH: 7.2 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	350	U
111-44-4	bis(2-Chloroethyl)ether	350	U
95-57-8	2-Chlorophenol	350	U
541-73-1	1,3-Dichlorobenzene	350	U
106-46-7	1,4-Dichlorobenzene	350	U
100-51-6	Benzyl alcohol	350	U
95-50-1	1,2-Dichlorobenzene	350	U
95-48-7	2-Methylphenol	350	U
108-60-1	bis(2-Chloroisopropyl)ether	350	U
106-44-5	4-Methylphenol	350	U
621-64-7	N-Nitroso-di-n-propylamine	350	U
67-72-1	Hexachloroethane	350	U
98-95-3	Nitrobenzene	350	U
78-59-1	Isophorone	350	U
88-75-5	2-Nitrophenol	350	U
105-67-9	2,4-Dimethylphenol	350	U
65-85-0	Benzoic Acid	880	U
111-91-1	bis(2-Chloroethoxy)methane	350	U
120-83-2	2,4-Dichlorophenol	350	U
120-82-1	1,2,4-Trichlorobenzene	350	U
91-20-3	Naphthalene	350	U
106-47-8	4-Chloroaniline	350	U
87-68-3	Hexachlorobutadiene	350	U
59-50-7	4-Chloro-3-methylphenol	350	U
91-57-6	2-Methylnaphthalene	350	U
77-47-4	Hexachlorocyclopentadiene	350	U
88-06-2	2,4,6-Trichlorophenol	350	U
95-95-4	2,4,5-Trichlorophenol	880	U
91-58-7	2-Chloronaphthalene	350	U
88-74-4	2-Nitroaniline	880	U
131-11-3	Dimethylphthalate	350	U
208-96-8	Acenaphthylene	350	U
606-20-2	2,6-Dinitrotoluene	350	U

UJ HT

UJ HT

4/8

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SO002000N1RE

Lab Name: SWL-TULSA Contract: LORADO AFB,

Lab Code: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38676

Matrix: (soil/water) SOIL Lab Sample ID: 38676.14RE

Sample wt/vol: 30.9 (g/mL) G Lab File ID: M14777.D

Level: (low/med) LOW Date Received: 05/22/99

% Moisture: not dec. 8 dec. Date Extracted: 06/16/99

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/18/99

Concentrated Extract Volume: 1000 (uL)

GPC Cleanup: (Y/N) N pH: 7.2 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
99-09-2	3-Nitroaniline	880	UJ
83-32-9	Acenaphthene	350	U
121-14-2	2,4-Dinitrotoluene	350	U
51-28-5	2,4-Dinitrophenol	880	U
100-02-7	4-Nitrophenol	880	U
132-64-9	Dibenzofuran	350	U
84-66-2	Diethylphthalate	350	U
7005-72-3	4-Chlorophenyl-phenylether	350	U
86-73-7	Fluorene	350	U
100-01-6	4-Nitroaniline	880	U
534-52-1	4,6-Dinitro-2-methylphenol	880	U
86-30-6	N-Nitrosodiphenylamine (1)	350	U
101-55-3	4-Bromophenylphenylether	350	U
118-74-1	Hexachlorobenzene	350	U
87-86-5	Pentachlorophenol	880	U
86-74-8	Carbazole	350	UJ
85-01-8	Phenanthrene	38	J
120-12-7	Anthracene	350	UJ
84-74-2	Di-n-butylphthalate	350	UJ
206-44-0	Fluoranthene	52	J
129-00-0	Pyrene	54	J
85-68-7	Butylbenzylphthalate	350	UJ
91-94-1	3,3'-Dichlorobenzidine	350	UJ
56-55-3	Benzo(a)anthracene	25	J
218-01-9	Chrysene	35	J
117-81-7	bis(2-Ethylhexyl)phthalate	350 ~~22~~	UJ
117-84-0	Di-n-octylphthalate	350	UJ
205-99-2	Benzo(b)fluoranthene	350	UJ
207-08-9	Benzo(k)fluoranthene	21	J
50-32-8	Benzo(a)pyrene	24	J
193-39-5	Indeno(1,2,3-cd)pyrene	350	UJ
53-70-3	Dibenz(a,h)anthracene	350	UJ
191-24-2	Benzo(g,h,i)perylene	350	UJ

HT

HT

BL/HT

(1) - Cannot be separated from Diphenylamine

4/8

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SO002004N1

ame: SWL-TULSA Contract: LORADO AFB,

o Code: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38676

trix: (soil/water) SOIL Lab Sample ID: 38676.15

mple wt/vol: 30.9 (g/mL) G Lab File ID: P21383.D

vel: (low/med) LOW Date Received: 05/22/99

Moisture: not dec. 16 dec. Date Extracted: 05/29/99

traction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/10/99

ncentrated Extract Volume: 1000 (uL)

C Cleanup: (Y/N) N pH: 7.2 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	380	U
111-44-4	bis(2-Chloroethyl)ether	380	U
95-57-8	2-Chlorophenol	380	U
541-73-1	1,3-Dichlorobenzene	380	U
106-46-7	1,4-Dichlorobenzene	380	U
100-51-6	Benzyl alcohol	380	U
95-50-1	1,2-Dichlorobenzene	380	U
95-48-7	2-Methylphenol	380	U
108-60-1	bis(2-Chloroisopropyl)ether	380	U
106-44-5	4-Methylphenol	380	U
621-64-7	N-Nitroso-di-n-propylamine	380	U
67-72-1	Hexachloroethane	380	U
98-95-3	Nitrobenzene	380	U
78-59-1	Isophorone	380	U
88-75-5	2-Nitrophenol	380	U
105-67-9	2,4-Dimethylphenol	380	U
65-85-0	Benzoic Acid	960	U
111-91-1	bis(2-Chloroethoxy)methane	380	U
120-83-2	2,4-Dichlorophenol	380	U
120-82-1	1,2,4-Trichlorobenzene	380	U
91-20-3	Naphthalene	380	U
106-47-8	4-Chloroaniline	380	U
87-68-3	Hexachlorobutadiene	380	U
59-50-7	4-Chloro-3-methylphenol	380	U
91-57-6	2-Methylnaphthalene	380	U
77-47-4	Hexachlorocyclopentadiene	380	U
88-06-2	2,4,6-Trichlorophenol	380	U
95-95-4	2,4,5-Trichlorophenol	960	U
91-58-7	2-Chloronaphthalene	380	U
88-74-4	2-Nitroaniline	960	U
131-11-3	Dimethylphthalate	380	U
208-96-8	Acenaphthylene	380	U
606-20-2	2,6-Dinitrotoluene	380	U

4/8

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SO002004N1

Name: SWL-TULSA Contract: LORADO AFB,

Lab Code: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38676

Matrix: (soil/water) SOIL Lab Sample ID: 38676.15

Sample wt/vol: 30.9 (g/mL) G Lab File ID: P21383.D

Level: (low/med) LOW Date Received: 05/22/99

% Moisture: not dec. 16 dec. Date Extracted: 05/29/99

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/10/99

Concentrated Extract Volume: 1000 (uL)

GPC Cleanup: (Y/N) N pH: 7.2 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
99-09-2	3-Nitroaniline	960	U
83-32-9	Acenaphthene	380	U
121-14-2	2,4-Dinitrotoluene	380	U
51-28-5	2,4-Dinitrophenol	960	U
100-02-7	4-Nitrophenol	960	U
132-64-9	Dibenzofuran	380	U
84-66-2	Diethylphthalate	380	U
7005-72-3	4-Chlorophenyl-phenylether	380	U
86-73-7	Fluorene	380	U
100-01-6	4-Nitroaniline	960	U
534-52-1	4,6-Dinitro-2-methylphenol	960	U
86-30-6	N-Nitrosodiphenylamine (1)	380	U
101-55-3	4-Bromophenylphenylether	380	U
118-74-1	Hexachlorobenzene	380	U
87-86-5	Pentachlorophenol	960	U
86-74-8	Carbazole	380	U
85-01-8	Phenanthrene	380	U
120-12-7	Anthracene	380	U
84-74-2	Di-n-butylphthalate	380	U
206-44-0	Fluoranthene	380	U
129-00-0	Pyrene	380	U
85-68-7	Butylbenzylphthalate	380	U
91-94-1	3,3'-Dichlorobenzidine	380	U
56-55-3	Benzo(a)anthracene	380	U
218-01-9	Chrysene	380	U
117-81-7	bis(2-Ethylhexyl)phthalate	380	U
117-84-0	Di-n-octylphthalate	380	U
205-99-2	Benzo(b)fluoranthene	380	U
207-08-9	Benzo(k)fluoranthene	380	U
50-32-8	Benzo(a)pyrene	380	U
193-39-5	Indeno(1,2,3-cd)pyrene	380	U
53-70-3	Dibenz(a,h)anthracene	380	U
191-24-2	Benzo(g,h,i)perylene	380	U

UJ IS

(1) - Cannot be separated from Diphenylamine

4/8

FORM I SV-2

02357

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SO002004N1RE

ume: SWL-TULSA Contract: LORADO AFB,

Code: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38676

trix: (soil/water) SOIL Lab Sample ID: 38676.15RA

mple wt/vol: 30.9 (g/mL) G Lab File ID: P21394.D

vel: (low/med) LOW Date Received: 05/22/99

Moisture: not dec. 15 dec. Date Extracted: 05/29/99

traction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/11/99

ncentrated Extract Volume: 1000(uL)

C Cleanup: (Y/N) N pH: 7.2 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	380	U
111-44-4	bis(2-Chloroethyl)ether	380	U
95-57-8	2-Chlorophenol	380	U
541-73-1	1,3-Dichlorobenzene	380	U
106-46-7	1,4-Dichlorobenzene	380	U
100-51-6	Benzyl alcohol	380	U
95-50-1	1,2-Dichlorobenzene	380	U
95-48-7	2-Methylphenol	380	U
108-60-1	bis(2-Chloroisopropyl)ether	380	U
106-44-5	4-Methylphenol	380	U
621-64-7	N-Nitroso-di-n-propylamine	380	U
67-72-1	Hexachloroethane	380	U
98-95-3	Nitrobenzene	380	U
78-59-1	Isophorone	380	U
88-75-5	2-Nitrophenol	380	U
105-67-9	2,4-Dimethylphenol	380	U
65-85-0	Benzoic Acid	950	U
111-91-1	bis(2-Chloroethoxy)methane	380	U
120-83-2	2,4-Dichlorophenol	380	U
120-82-1	1,2,4-Trichlorobenzene	380	U
91-20-3	Naphthalene	380	U
106-47-8	4-Chloroaniline	380	U
87-68-3	Hexachlorobutadiene	380	U
59-50-7	4-Chloro-3-methylphenol	380	U
91-57-6	2-Methylnaphthalene	380	U
77-47-4	Hexachlorocyclopentadiene	380	U
88-06-2	2,4,6-Trichlorophenol	380	U
95-95-4	2,4,5-Trichlorophenol	950	U
91-58-7	2-Chloronaphthalene	380	U
88-74-4	2-Nitroaniline	950	U
131-11-3	Dimethylphthalate	380	U
208-96-8	Acenaphthylene	380	U
606-20-2	2,6-Dinitrotoluene	380	U

R IS

R IS

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SO002004N1RE

lame: SWL-TULSA Contract: LORADO AFB,

b Code: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38676

trix: (soil/water) SOIL Lab Sample ID: 38676.15RA

mple wt/vol: 30.9 (g/mL) G Lab File ID: P21394.D

vel: (low/med) LOW Date Received: 05/22/99

Moisture: not dec. 15 dec. Date Extracted: 05/29/99

traction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/11/99

ncentrated Extract Volume: 1000(uL)

C Cleanup: (Y/N) N pH: 7.2 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
99-09-2	3-Nitroaniline	950	U
83-32-9	Acenaphthene	380	U
121-14-2	2,4-Dinitrotoluene	380	U
51-28-5	2,4-Dinitrophenol	950	U
100-02-7	4-Nitrophenol	950	U
132-64-9	Dibenzofuran	380	U
84-66-2	Diethylphthalate	380	U
7005-72-3	4-Chlorophenyl-phenylether	380	U
86-73-7	Fluorene	380	U
100-01-6	4-Nitroaniline	950	U
534-52-1	4,6-Dinitro-2-methylphenol	950	U
86-30-6	N-Nitrosodiphenylamine (1)	380	U
101-55-3	4-Bromophenylphenylether	380	U
118-74-1	Hexachlorobenzene	380	U
87-86-5	Pentachlorophenol	950	U
86-74-8	Carbazole	380	U
85-01-8	Phenanthrene	380	U
120-12-7	Anthracene	380	U
84-74-2	Di-n-butylphthalate	380	U
206-44-0	Fluoranthene	380	U
129-00-0	Pyrene	380	U
85-68-7	Butylbenzylphthalate	380	U
91-94-1	3,3'-Dichlorobenzidine	380	U
56-55-3	Benzo(a)anthracene	380	U
218-01-9	Chrysene	380	U
117-81-7	bis(2-Ethylhexyl)phthalate	380	U
117-84-0	Di-n-octylphthalate	380	U
205-99-2	Benzo(b)fluoranthene	380	U
207-08-9	Benzo(k)fluoranthene	380	U
50-32-8	Benzo(a)pyrene	380	U
193-39-5	Indeno(1,2,3-cd)pyrene	380	U
53-70-3	Dibenz(a,h)anthracene	380	U
191-24-2	Benzo(g,h,i)perylene	380	U

R IS

R IS

(1) - Cannot be separated from Diphenylamine

FORM I SV-2

4/8

02359

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBS0002006N1

'ame: SWL-TULSA Contract: LORADO AFB,

o Code: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38676

trix: (soil/water) SOIL Lab Sample ID: 38676.16

mple wt/vol: 30.0 (g/mL) G Lab File ID: P21395.D

vel: (low/med) LOW Date Received: 05/22/99

Moisture: not dec. 12 dec. Date Extracted: 05/29/99

traction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/11/99

ncentrated Extract Volume: 1000 (uL)

C Cleanup: (Y/N) N pH: 7.2 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	380	U
111-44-4	bis(2-Chloroethyl)ether	380	U
95-57-8	2-Chlorophenol	380	U
541-73-1	1,3-Dichlorobenzene	380	U
106-46-7	1,4-Dichlorobenzene	380	U
100-51-6	Benzyl alcohol	380	U
95-50-1	1,2-Dichlorobenzene	380	U
95-48-7	2-Methylphenol	380	U
108-60-1	bis(2-Chloroisopropyl)ether	380	U
106-44-5	4-Methylphenol	380	U
621-64-7	N-Nitroso-di-n-propylamine	380	U
67-72-1	Hexachloroethane	380	U
98-95-3	Nitrobenzene	380	U
78-59-1	Isophorone	380	U
88-75-5	2-Nitrophenol	380	U
105-67-9	2,4-Dimethylphenol	380	U
65-85-0	Benzoic Acid	950	U
111-91-1	bis(2-Chloroethoxy)methane	380	U
120-83-2	2,4-Dichlorophenol	380	U
120-82-1	1,2,4-Trichlorobenzene	380	U
91-20-3	Naphthalene	380	U
106-47-8	4-Chloroaniline	380	U
87-68-3	Hexachlorobutadiene	380	U
59-50-7	4-Chloro-3-methylphenol	380	U
91-57-6	2-Methylnaphthalene	380	U
77-47-4	Hexachlorocyclopentadiene	380	U
88-06-2	2,4,6-Trichlorophenol	380	U
95-95-4	2,4,5-Trichlorophenol	950	U
91-58-7	2-Chloronaphthalene	380	U
88-74-4	2-Nitroaniline	950	U
131-11-3	Dimethylphthalate	380	U
208-96-8	Acenaphthylene	380	U
606-20-2	2,6-Dinitrotoluene	380	U

AK 4/8

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBSO002006N1

ame: SWL-TULSA Contract: LORADO AFB,

Code: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38676

rix: (soil/water) SOIL Lab Sample ID: 38676.16

nple wt/vol: 30.0 (g/mL) G Lab File ID: P21395.D

vel: (low/med) LOW Date Received: 05/22/99

Moisture: not dec. 12 dec. Date Extracted: 05/29/99

traction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/11/99

ncentrated Extract Volume: 1000(uL)

C Cleanup: (Y/N) N pH: 7.2 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
99-09-2	3-Nitroaniline	950	U
83-32-9	Acenaphthene	380	U
121-14-2	2,4-Dinitrotoluene	380	U
51-28-5	2,4-Dinitrophenol	950	U
100-02-7	4-Nitrophenol	950	U
132-64-9	Dibenzofuran	380	U
84-66-2	Diethylphthalate	380	U
7005-72-3	4-Chlorophenyl-phenylether	380	U
86-73-7	Fluorene	380	U
100-01-6	4-Nitroaniline	950	U
534-52-1	4,6-Dinitro-2-methylphenol	950	U
86-30-6	N-Nitrosodiphenylamine (1)	380	U
101-55-3	4-Bromophenylphenylether	380	U
118-74-1	Hexachlorobenzene	380	U
87-86-5	Pentachlorophenol	950	U
86-74-8	Carbazole	380	U
85-01-8	Phenanthrene	380	U
120-12-7	Anthracene	380	U
84-74-2	Di-n-butylphthalate	380	U
206-44-0	Fluoranthene	380	U
129-00-0	Pyrene	380	U
85-68-7	Butylbenzylphthalate	380	U
91-94-1	3,3'-Dichlorobenzidine	380	U
56-55-3	Benzo(a)anthracene	380	U
218-01-9	Chrysene	380	U
117-81-7	bis(2-Ethylhexyl)phthalate	380	U
117-84-0	Di-n-octylphthalate	380	U
205-99-2	Benzo(b)fluoranthene	380	U
207-08-9	Benzo(k)fluoranthene	380	U
50-32-8	Benzo(a)pyrene	380	U
193-39-5	Indeno(1,2,3-cd)pyrene	380	U
53-70-3	Dibenz(a,h)anthracene	380	U
191-24-2	Benzo(g,h,i)perylene	380	U

(1) - Cannot be separated from Diphenylamine

FORM I SV-2

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBSO003000N1

Lab Name: SWL-TULSA Contract: LORADO AFB,

Lab Code: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38676

Matrix: (soil/water) SOIL Lab Sample ID: 38676.17

Sample wt/vol: 31.0 (g/mL) G Lab File ID: P21447.D

Level: (low/med) LOW Date Received: 05/22/99

% Moisture: not dec. 7 dec. Date Extracted: 05/29/99

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/15/99

Concentrated Extract Volume: 1000(uL)

GPC Cleanup: (Y/N) N pH: 7.2 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	350	U
111-44-4	bis(2-Chloroethyl)ether	350	U
95-57-8	2-Chlorophenol	350	U
541-73-1	1,3-Dichlorobenzene	350	U
106-46-7	1,4-Dichlorobenzene	350	U
100-51-6	Benzyl alcohol	350	U
95-50-1	1,2-Dichlorobenzene	350	U
95-48-7	2-Methylphenol	350	U
108-60-1	bis(2-Chloroisopropyl)ether	350	U
106-44-5	4-Methylphenol	350	U
621-64-7	N-Nitroso-di-n-propylamine	350	U
67-72-1	Hexachloroethane	350	U
98-95-3	Nitrobenzene	350	U
78-59-1	Isophorone	350	U
88-75-5	2-Nitrophenol	350	U
105-67-9	2,4-Dimethylphenol	350	U
65-85-0	Benzoic Acid	870	U
111-91-1	bis(2-Chloroethoxy)methane	350	U
120-83-2	2,4-Dichlorophenol	350	U
120-82-1	1,2,4-Trichlorobenzene	350	U
91-20-3	Naphthalene	350	U
106-47-8	4-Chloroaniline	350	U
87-68-3	Hexachlorobutadiene	350	U
59-50-7	4-Chloro-3-methylphenol	350	U
91-57-6	2-Methylnaphthalene	350	U
77-47-4	Hexachlorocyclopentadiene	350	U
88-06-2	2,4,6-Trichlorophenol	350	U
95-95-4	2,4,5-Trichlorophenol	870	U
91-58-7	2-Chloronaphthalene	350	U
88-74-4	2-Nitroaniline	870	U
131-11-3	Dimethylphthalate	350	U
208-96-8	Acenaphthylene	350	U
606-20-2	2,6-Dinitrotoluene	350	U

HK 4/9

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBSO003000N1

Lab Name: SWL-TULSA Contract: LORADO AFB,

Lab Code: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38676

Matrix: (soil/water) SOIL Lab Sample ID: 38676.17

Sample wt/vol: 31.0 (g/mL) G Lab File ID: P21447.D

Level: (low/med) LOW Date Received: 05/22/99

% Moisture: not dec. 7 dec. Date Extracted: 05/29/99

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/15/99

Concentrated Extract Volume: 1000(uL)

GPC Cleanup: (Y/N) N pH: 7.2 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
99-09-2	3-Nitroaniline	870	U
83-32-9	Acenaphthene	350	U
121-14-2	2,4-Dinitrotoluene	350	U
51-28-5	2,4-Dinitrophenol	870	U
100-02-7	4-Nitrophenol	870	U
132-64-9	Dibenzofuran	350	U
84-66-2	Diethylphthalate	350	U
7005-72-3	4-Chlorophenyl-phenylether	350	U
86-73-7	Fluorene	350	U
100-01-6	4-Nitroaniline	870	U
534-52-1	4,6-Dinitro-2-methylphenol	870	U
86-30-6	N-Nitrosodiphenylamine (1)	350	U
101-55-3	4-Bromophenylphenylether	350	U
118-74-1	Hexachlorobenzene	350	U
87-86-5	Pentachlorophenol	870	U
86-74-8	Carbazole	350	U
85-01-8	Phenanthrene	350	U
120-12-7	Anthracene	350	U
84-74-2	Di-n-butylphthalate	350	U
206-44-0	Fluoranthene	350	U
129-00-0	Pyrene	350	U
85-68-7	Butylbenzylphthalate	350	U
91-94-1	3,3'-Dichlorobenzidine	350	U
56-55-3	Benzo(a)anthracene	350	U
218-01-9	Chrysene	350	U
117-81-7	bis(2-Ethylhexyl)phthalate	350	U
117-84-0	Di-n-octylphthalate	350	U
205-99-2	Benzo(b)fluoranthene	350	U
207-08-9	Benzo(k)fluoranthene	350	U
50-32-8	Benzo(a)pyrene	350	U
193-39-5	Indeno(1,2,3-cd)pyrene	350	U
53-70-3	Dibenz(a,h)anthracene	350	U
191-24-2	Benzo(g,h,i)perylene	350	U

(1) - Cannot be separated from Diphenylamine

HR 4/8

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SO003004N1

Contract: LORADO AFB,

ıe: SWL-TULSA

Code: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38676

ːix: (soil/water) SOIL Lab Sample ID: 38676.18

ɔle wt/vol: 31.9 (g/mL) G Lab File ID: P21397.D

el: (low/med) LOW Date Received: 05/22/99

oisture: not dec. 18 dec. Date Extracted:05/29/99

raction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/11/99

ıcentrated Extract Volume: 1000(uL)

Cleanup: (Y/N) N pH: 7.2 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	380	U
111-44-4	bis(2-Chloroethyl)ether	380	U
95-57-8	2-Chlorophenol	380	U
541-73-1	1,3-Dichlorobenzene	380	U
106-46-7	1,4-Dichlorobenzene	380	U
100-51-6	Benzyl alcohol	380	U
95-50-1	1,2-Dichlorobenzene	380	U
95-48-7	2-Methylphenol	380	U
108-60-1	bis(2-Chloroisopropyl)ether	380	U
106-44-5	4-Methylphenol	380	U
621-64-7	N-Nitroso-di-n-propylamine	380	U
67-72-1	Hexachloroethane	380	U
98-95-3	Nitrobenzene	380	U
78-59-1	Isophorone	380	U
88-75-5	2-Nitrophenol	380	U
105-67-9	2,4-Dimethylphenol	960	U
65-85-0	Benzoic Acid	380	U
111-91-1	bis(2-Chloroethoxy)methane	380	U
120-83-2	2,4-Dichlorophenol	380	U
120-82-1	1,2,4-Trichlorobenzene	380	U
91-20-3	Naphthalene	380	U
106-47-8	4-Chloroaniline	380	U
87-68-3	Hexachlorobutadiene	380	U
59-50-7	4-Chloro-3-methylphenol	380	U
91-57-6	2-Methylnaphthalene	380	U
77-47-4	Hexachlorocyclopentadiene	380	U
88-06-2	2,4,6-Trichlorophenol	960	U
95-95-4	2,4,5-Trichlorophenol	380	U
91-58-7	2-Chloronaphthalene	960	U
88-74-4	2-Nitroaniline	380	U
131-11-3	Dimethylphthalate	380	U
208-96-8	Acenaphthylene	380	U
606-20-2	2,6-Dinitrotoluene	380	U

R IS

R IS

4/8

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SO003004N1

Lab Name: SWL-TULSA Contract: LORADO AFB,

Lab Code: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38676

Matrix: (soil/water) SOIL Lab Sample ID: 38676.18

Sample wt/vol: 31.9 (g/mL) G Lab File ID: P21397.D

Level: (low/med) LOW Date Received: 05/22/99

% Moisture: not dec. 18 dec. Date Extracted: 05/29/99

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/11/99

Concentrated Extract Volume: 1000 (uL)

GPC Cleanup: (Y/N) N pH: 7.2 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
99-09-2	3-Nitroaniline	960	U
83-32-9	Acenaphthene	380	U
121-14-2	2,4-Dinitrotoluene	380	U
51-28-5	2,4-Dinitrophenol	960	U
100-02-7	4-Nitrophenol	960	U
132-64-9	Dibenzofuran	380	U
84-66-2	Diethylphthalate	380	U
7005-72-3	4-Chlorophenyl-phenylether	380	U
86-73-7	Fluorene	380	U
100-01-6	4-Nitroaniline	960	U
534-52-1	4,6-Dinitro-2-methylphenol	960	U
86-30-6	N-Nitrosodiphenylamine (1)	380	U
101-55-3	4-Bromophenylphenylether	380	U
118-74-1	Hexachlorobenzene	380	U
87-86-5	Pentachlorophenol	960	U
86-74-8	Carbazole	380	U
85-01-8	Phenanthrene	380	U
120-12-7	Anthracene	380	U
84-74-2	Di-n-butylphthalate	380	U
206-44-0	Fluoranthene	380	U
129-00-0	Pyrene	380	U
85-68-7	Butylbenzylphthalate	380	U
91-94-1	3,3'-Dichlorobenzidine	380	U
56-55-3	Benzo(a)anthracene	380	U
218-01-9	Chrysene	380	U
117-81-7	bis(2-Ethylhexyl)phthalate	380	U
117-84-0	Di-n-octylphthalate	380	U
205-99-2	Benzo(b)fluoranthene	380	U
207-08-9	Benzo(k)fluoranthene	380	U
50-32-8	Benzo(a)pyrene	380	U
193-39-5	Indeno(1,2,3-cd)pyrene	380	U
53-70-3	Dibenz(a,h)anthracene	380	U
191-24-2	Benzo(g,h,i)perylene	380	U

R IS

R IS

(1) - Cannot be separated from Diphenylamine

4/8

02365

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SO003004N1RE

- Name: SWL-TULSA Contract: LORADO AFB,

o Code: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38676

trix: (soil/water) SOIL Lab Sample ID: 38676.18RA

mple wt/vol: 31.9 (g/mL) G Lab File ID: P21448.D

vel: (low/med) LOW Date Received: 05/22/99

Moisture: not dec. 18 dec. Date Extracted: 05/29/99

traction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/15/99

ncentrated Extract Volume: 1000(uL)

C Cleanup: (Y/N) N pH: 7.2 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	380	U
111-44-4	bis(2-Chloroethyl)ether	380	U
95-57-8	2-Chlorophenol	380	U
541-73-1	1,3-Dichlorobenzene	380	U
106-46-7	1,4-Dichlorobenzene	380	U
100-51-6	Benzyl alcohol	380	U
95-50-1	1,2-Dichlorobenzene	380	U
95-48-7	2-Methylphenol	380	U
108-60-1	bis(2-Chloroisopropyl)ether	380	U
106-44-5	4-Methylphenol	380	U
621-64-7	N-Nitroso-di-n-propylamine	380	U
67-72-1	Hexachloroethane	380	U
98-95-3	Nitrobenzene	380	U
78-59-1	Isophorone	380	U
88-75-5	2-Nitrophenol	380	U
105-67-9	2,4-Dimethylphenol	380	U
65-85-0	Benzoic Acid	960	U
111-91-1	bis(2-Chloroethoxy)methane	380	U
120-83-2	2,4-Dichlorophenol	380	U
120-82-1	1,2,4-Trichlorobenzene	380	U
91-20-3	Naphthalene	380	U
106-47-8	4-Chloroaniline	380	U
87-68-3	Hexachlorobutadiene	380	U
59-50-7	4-Chloro-3-methylphenol	380	U
91-57-6	2-Methylnaphthalene	380	U
77-47-4	Hexachlorocyclopentadiene	380	U
88-06-2	2,4,6-Trichlorophenol	380	U
95-95-4	2,4,5-Trichlorophenol	960	U
91-58-7	2-Chloronaphthalene	380	U
88-74-4	2-Nitroaniline	960	U
131-11-3	Dimethylphthalate	380	U
208-96-8	Acenaphthylene	380	U
606-20-2	2,6-Dinitrotoluene	380	U

4/8

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SO003004N1RE

r Name: SWL-TULSA Contract: LORADO AFB,

b Code: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38676

trix: (soil/water) SOIL Lab Sample ID: 38676.18RA

mple wt/vol: 31.9 (g/mL) G Lab File ID: P21448.D

vel: (low/med) LOW Date Received: 05/22/99

Moisture: not dec. 18 dec. Date Extracted: 05/29/99

traction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/15/99

ncentrated Extract Volume: 1000(uL)

C Cleanup: (Y/N) N pH: 7.2 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
99-09-2	3-Nitroaniline	960	U
83-32-9	Acenaphthene	380	U
121-14-2	2,4-Dinitrotoluene	380	U
51-28-5	2,4-Dinitrophenol	960	U
100-02-7	4-Nitrophenol	960	U
132-64-9	Dibenzofuran	380	U
84-66-2	Diethylphthalate	380	U
7005-72-3	4-Chlorophenyl-phenylether	380	U
86-73-7	Fluorene	380	U
100-01-6	4-Nitroaniline	960	U
534-52-1	4,6-Dinitro-2-methylphenol	960	U
86-30-6	N-Nitrosodiphenylamine (1)	380	U
101-55-3	4-Bromophenylphenylether	380	U
118-74-1	Hexachlorobenzene	380	U
87-86-5	Pentachlorophenol	960	U
86-74-8	Carbazole	380	U
85-01-8	Phenanthrene	380	U
120-12-7	Anthracene	380	U
84-74-2	Di-n-butylphthalate	380	U
206-44-0	Fluoranthene	380	U
129-00-0	Pyrene	380	U
85-68-7	Butylbenzylphthalate	380	U
91-94-1	3,3'-Dichlorobenzidine	380	U
56-55-3	Benzo(a)anthracene	380	U
218-01-9	Chrysene	380	U
117-81-7	bis(2-Ethylhexyl)phthalate	380	U
117-84-0	Di-n-octylphthalate	380	U
205-99-2	Benzo(b)fluoranthene	380	U
207-08-9	Benzo(k)fluoranthene	380	U
50-32-8	Benzo(a)pyrene	380	U
193-39-5	Indeno(1,2,3-cd)pyrene	380	U
53-70-3	Dibenz(a,h)anthracene	380	U
191-24-2	Benzo(g,h,i)perylene	380	U

UJ IS

UJ IS

(1) - Cannot be separated from Diphenylamine

FORM I SV-2

4/8

02367

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBSO003006N1

lame: SWL-TULSA Contract: LORADO AFB,

b Code: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38676

trix: (soil/water) SOIL Lab Sample ID: 38676.19

mple wt/vol: 32.5 (g/mL) G Lab File ID: P21449.D

vel: (low/med) LOW Date Received: 05/22/99

Moisture: not dec. 19 dec. Date Extracted: 05/29/99

traction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/15/99

oncentrated Extract Volume: 1000(uL)

PC Cleanup: (Y/N) N pH: 7.2 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	380	U
111-44-4	bis(2-Chloroethyl)ether	380	U
95-57-8	2-Chlorophenol	380	U
541-73-1	1,3-Dichlorobenzene	380	U
106-46-7	1,4-Dichlorobenzene	380	U
100-51-6	Benzyl alcohol	380	U
95-50-1	1,2-Dichlorobenzene	380	U
95-48-7	2-Methylphenol	380	U
108-60-1	bis(2-Chloroisopropyl)ether	380	U
106-44-5	4-Methylphenol	380	U
621-64-7	N-Nitroso-di-n-propylamine	380	U
67-72-1	Hexachloroethane	380	U
98-95-3	Nitrobenzene	380	U
78-59-1	Isophorone	380	U
88-75-5	2-Nitrophenol	380	U
105-67-9	2,4-Dimethylphenol	380	U
65-85-0	Benzoic Acid	950	U
111-91-1	bis(2-Chloroethoxy)methane	380	U
120-83-2	2,4-Dichlorophenol	380	U
120-82-1	1,2,4-Trichlorobenzene	380	U
91-20-3	Naphthalene	380	U
106-47-8	4-Chloroaniline	380	U
87-68-3	Hexachlorobutadiene	380	U
59-50-7	4-Chloro-3-methylphenol	380	U
91-57-6	2-Methylnaphthalene	380	U
77-47-4	Hexachlorocyclopentadiene	380	U
88-06-2	2,4,6-Trichlorophenol	380	U
95-95-4	2,4,5-Trichlorophenol	950	U
91-58-7	2-Chloronaphthalene	380	U
88-74-4	2-Nitroaniline	950	U
131-11-3	Dimethylphthalate	380	U
208-96-8	Acenaphthylene	380	U
606-20-2	2,6-Dinitrotoluene	380	U

4/8

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBSO003006N1

Name: SWL-TULSA Contract: LORADO AFB,

ab Code: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38676

atrix: (soil/water) SOIL Lab Sample ID: 38676.19

ample wt/vol: 32.5 (g/mL) G Lab File ID: P21449.D

evel: (low/med) LOW Date Received: 05/22/99

Moisture: not dec. 19 dec. Date Extracted: 05/29/99

xtraction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/15/99

oncentrated Extract Volume: 1000(uL)

PC Cleanup: (Y/N) N pH: 7.2 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
99-09-2	3-Nitroaniline	950	U
83-32-9	Acenaphthene	380	U
121-14-2	2,4-Dinitrotoluene	380	U
51-28-5	2,4-Dinitrophenol	950	U
100-02-7	4-Nitrophenol	950	U
132-64-9	Dibenzofuran	380	U
84-66-2	Diethylphthalate	380	U
7005-72-3	4-Chlorophenyl-phenylether	380	U
86-73-7	Fluorene	380	U
100-01-6	4-Nitroaniline	950	U
534-52-1	4,6-Dinitro-2-methylphenol	950	U
86-30-6	N-Nitrosodiphenylamine (1)	380	U
101-55-3	4-Bromophenylphenylether	380	U
118-74-1	Hexachlorobenzene	380	U
87-86-5	Pentachlorophenol	950	U
86-74-8	Carbazole	380	U
85-01-8	Phenanthrene	380	U
120-12-7	Anthracene	380	U
84-74-2	Di-n-butylphthalate	380	U
206-44-0	Fluoranthene	380	U
129-00-0	Pyrene	380	U
85-68-7	Butylbenzylphthalate	380	U
91-94-1	3,3'-Dichlorobenzidine	380	U
56-55-3	Benzo(a)anthracene	380	U
218-01-9	Chrysene	380	U
117-81-7	bis(2-Ethylhexyl)phthalate	380	U
117-84-0	Di-n-octylphthalate	380	U
205-99-2	Benzo(b)fluoranthene	380	U
207-08-9	Benzo(k)fluoranthene	380	U
50-32-8	Benzo(a)pyrene	380	U
193-39-5	Indeno(1,2,3-cd)pyrene	380	U
53-70-3	Dibenz(a,h)anthracene	380	U
191-24-2	Benzo(g,h,i)perylene	380	U

(1) - Cannot be separated from Diphenylamine

AK 4/8

02369

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

0004000N1

) ume: SWL-TULSA Contract: LORADO AFB,

) Code: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38676

:rix: (soil/water) SOIL Lab Sample ID: 38676.20

ıple wt/vol: 30.0 (g/mL) G Lab File ID: P21399.D

/el: (low/med) LOW Date Received: 05/22/99

Moisture: not dec. 6 dec. Date Extracted:05/29/99

:raction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/11/99

ıcentrated Extract Volume: 1000(uL)

: Cleanup: (Y/N) N pH: 7.2 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	350	U
111-44-4	bis(2-Chloroethyl)ether	350	U
95-57-8	2-Chlorophenol	350	U
541-73-1	1,3-Dichlorobenzene	350	U
106-46-7	1,4-Dichlorobenzene	350	U
100-51-6	Benzyl alcohol	350	U
95-50-1	1,2-Dichlorobenzene	350	U
95-48-7	2-Methylphenol	350	U
108-60-1	bis(2-Chloroisopropyl)ether	350	U
106-44-5	4-Methylphenol	350	U
621-64-7	N-Nitroso-di-n-propylamine	350	U
67-72-1	Hexachloroethane	350	U
98-95-3	Nitrobenzene	350	U
78-59-1	Isophorone	350	U
88-75-5	2-Nitrophenol	350	U
105-67-9	2,4-Dimethylphenol	350	U
65-85-0	Benzoic Acid	890	U
111-91-1	bis(2-Chloroethoxy)methane	350	U
120-83-2	2,4-Dichlorophenol	350	U
120-82-1	1,2,4-Trichlorobenzene	350	U
91-20-3	Naphthalene	350	U
106-47-8	4-Chloroaniline	350	U
87-68-3	Hexachlorobutadiene	350	U
59-50-7	4-Chloro-3-methylphenol	350	U
91-57-6	2-Methylnaphthalene	350	U
77-47-4	Hexachlorocyclopentadiene	350	U
88-06-2	2,4,6-Trichlorophenol	350	U
95-95-4	2,4,5-Trichlorophenol	890	U
91-58-7	2-Chloronaphthalene	350	U
88-74-4	2-Nitroaniline	890	U
131-11-3	Dimethylphthalate	350	U
208-96-8	Acenaphthylene	350	U
606-20-2	2,6-Dinitrotoluene	350	U

4/8

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

0004000N1

h Name: SWL-TULSA Contract: LORADO AFB,

b Code: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38676

trix: (soil/water) SOIL Lab Sample ID: 38676.20

mple wt/vol: 30.0 (g/mL) G Lab File ID: P21399.D

vel: (low/med) LOW Date Received: 05/22/99

Moisture: not dec. 6 dec. Date Extracted: 05/29/99

traction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/11/99

ncentrated Extract Volume: 1000(uL)

C Cleanup: (Y/N) N pH: 7.2 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
99-09-2	3-Nitroaniline	890	U
83-32-9	Acenaphthene	350	U
121-14-2	2,4-Dinitrotoluene	350	U
51-28-5	2,4-Dinitrophenol	890	U
100-02-7	4-Nitrophenol	890	U
132-64-9	Dibenzofuran	350	U
84-66-2	Diethylphthalate	350	U
7005-72-3	4-Chlorophenyl-phenylether	350	U
86-73-7	Fluorene	350	U
100-01-6	4-Nitroaniline	890	U
534-52-1	4,6-Dinitro-2-methylphenol	890	U
86-30-6	N-Nitrosodiphenylamine (1)	350	U
101-55-3	4-Bromophenylphenylether	350	U
118-74-1	Hexachlorobenzene	350	U
87-86-5	Pentachlorophenol	890	U
86-74-8	Carbazole	350	U
85-01-8	Phenanthrene	350	U
120-12-7	Anthracene	350	U
84-74-2	Di-n-butylphthalate	350	U
206-44-0	Fluoranthene	350	U
129-00-0	Pyrene	350	U
85-68-7	Butylbenzylphthalate	350	U
91-94-1	3,3'-Dichlorobenzidine	350	U
56-55-3	Benzo(a)anthracene	350	U
218-01-9	Chrysene	350	U
117-81-7	bis(2-Ethylhexyl)phthalate	350	U
117-84-0	Di-n-octylphthalate	350	U
205-99-2	Benzo(b)fluoranthene	350	U
207-08-9	Benzo(k)fluoranthene	350	U
50-32-8	Benzo(a)pyrene	350	U
193-39-5	Indeno(1,2,3-cd)pyrene	350	U
53-70-3	Dibenz(a,h)anthracene	350	U
191-24-2	Benzo(g,h,i)perylene	350	U

UJ IS

UJ IS

(1) - Cannot be separated from Diphenylamine

AR 4/8

FORM I SV-2

02371

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBSQ004004N1

ame: SWL-TULSA Contract: LORADO AFB,

Code: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38676

trix: (soil/water) SOIL Lab Sample ID: 38676.23

mple wt/vol: 30.7 (g/mL) G Lab File ID: P21332.D

vel: (low/med) LOW Date Received: 05/22/99

Moisture: not dec. 16 dec. Date Extracted: 05/29/99

traction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/08/99

ncentrated Extract Volume: 1000(uL)

C Cleanup: (Y/N) N pH: 7.2 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	390	U
111-44-4	bis(2-Chloroethyl)ether	390	U
95-57-8	2-Chlorophenol	390	U
541-73-1	1,3-Dichlorobenzene	390	U
106-46-7	1,4-Dichlorobenzene	390	U
100-51-6	Benzyl alcohol	390	U
95-50-1	1,2-Dichlorobenzene	390	U
95-48-7	2-Methylphenol	390	U
108-60-1	bis(2-Chloroisopropyl)ether	390	U
106-44-5	4-Methylphenol	390	U
621-64-7	N-Nitroso-di-n-propylamine	390	U
67-72-1	Hexachloroethane	390	U
98-95-3	Nitrobenzene	390	U
78-59-1	Isophorone	390	U
88-75-5	2-Nitrophenol	390	U
105-67-9	2,4-Dimethylphenol	390	U
65-85-0	Benzoic Acid	970	U
111-91-1	bis(2-Chloroethoxy)methane	390	U
120-83-2	2,4-Dichlorophenol	390	U
120-82-1	1,2,4-Trichlorobenzene	390	U
91-20-3	Naphthalene	390	U
106-47-8	4-Chloroaniline	390	U
87-68-3	Hexachlorobutadiene	390	U
59-50-7	4-Chloro-3-methylphenol	390	U
91-57-6	2-Methylnaphthalene	390	U
77-47-4	Hexachlorocyclopentadiene	390	U
88-06-2	2,4,6-Trichlorophenol	390	U
95-95-4	2,4,5-Trichlorophenol	970	U
91-58-7	2-Chloronaphthalene	390	U
88-74-4	2-Nitroaniline	970	U
131-11-3	Dimethylphthalate	390	U
208-96-8	Acenaphthylene	390	U
606-20-2	2,6-Dinitrotoluene	390	U

UJ SS

UJ SS

4/8

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBSQ004004N1

ame: SWL-TULSA Contract: LORADO AFB,

b Code: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38676

trix: (soil/water) SOIL Lab Sample ID: 38676.23

mple wt/vol: 30.7 (g/mL) G Lab File ID: P21332.D

vel: (low/med) LOW Date Received: 05/22/99

Moisture: not dec. 16 dec. Date Extracted: 05/29/99

traction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/08/99

ncentrated Extract Volume: 1000(uL)

C Cleanup: (Y/N) N pH: 7.2 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
99-09-2	3-Nitroaniline	970	U
83-32-9	Acenaphthene	390	U
121-14-2	2,4-Dinitrotoluene	390	U
51-28-5	2,4-Dinitrophenol	970	U
100-02-7	4-Nitrophenol	970	U
132-64-9	Dibenzofuran	390	U
84-66-2	Diethylphthalate	390	U
7005-72-3	4-Chlorophenyl-phenylether	390	U
86-73-7	Fluorene	390	U
100-01-6	4-Nitroaniline	970	U
534-52-1	4,6-Dinitro-2-methylphenol	970	U
86-30-6	N-Nitrosodiphenylamine (1)	390	U
101-55-3	4-Bromophenylphenylether	390	U
118-74-1	Hexachlorobenzene	390	U
87-86-5	Pentachlorophenol	970	U
86-74-8	Carbazole	390	U
85-01-8	Phenanthrene	390	U
120-12-7	Anthracene	390	U
84-74-2	Di-n-butylphthalate	390	U
206-44-0	Fluoranthene	390	U
129-00-0	Pyrene	390	U
85-68-7	Butylbenzylphthalate	390	U
91-94-1	3,3'-Dichlorobenzidine	390	U
56-55-3	Benzo(a)anthracene	390	U
218-01-9	Chrysene	390	U
117-81-7	bis(2-Ethylhexyl)phthalate	390	U
117-84-0	Di-n-octylphthalate	390	U
205-99-2	Benzo(b)fluoranthene	390	U
207-08-9	Benzo(k)fluoranthene	390	U
50-32-8	Benzo(a)pyrene	390	U
193-39-5	Indeno(1,2,3-cd)pyrene	390	U
53-70-3	Dibenz(a,h)anthracene	390	U
191-24-2	Benzo(g,h,i)perylene	390	U

(1) - Cannot be separated from Diphenylamine

HK 4/8

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBSQ004008N1

Lab Name: SWL-TULSA Contract: LORADO AFB,

Lab Code: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38676

Matrix: (soil/water) SOIL Lab Sample ID: 38676.24

Sample wt/vol: 30.2 (g/mL) G Lab File ID: P21333.D

Level: (low/med) LOW Date Received: 05/22/99

% Moisture: not dec. 21 dec. Date Extracted: 05/29/99

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/08/99

Concentrated Extract Volume: 1000(uL)

GPC Cleanup: (Y/N) N pH: 7.2 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	420	U
111-44-4	bis(2-Chloroethyl)ether	420	U
95-57-8	2-Chlorophenol	420	U
541-73-1	1,3-Dichlorobenzene	420	U
106-46-7	1,4-Dichlorobenzene	420	U
100-51-6	Benzyl alcohol	420	U
95-50-1	1,2-Dichlorobenzene	420	U
95-48-7	2-Methylphenol	420	U
108-60-1	bis(2-Chloroisopropyl)ether	420	U
106-44-5	4-Methylphenol	420	U
621-64-7	N-Nitroso-di-n-propylamine	420	U
67-72-1	Hexachloroethane	420	U
98-95-3	Nitrobenzene	420	U
78-59-1	Isophorone	420	U
88-75-5	2-Nitrophenol	420	U
105-67-9	2,4-Dimethylphenol	420	U
65-85-0	Benzoic Acid	1000	U
111-91-1	bis(2-Chloroethoxy)methane	420	U
120-83-2	2,4-Dichlorophenol	420	U
120-82-1	1,2,4-Trichlorobenzene	420	U
91-20-3	Naphthalene	420	U
106-47-8	4-Chloroaniline	420	U
87-68-3	Hexachlorobutadiene	420	U
59-50-7	4-Chloro-3-methylphenol	420	U
91-57-6	2-Methylnaphthalene	420	U
77-47-4	Hexachlorocyclopentadiene	420	U
88-06-2	2,4,6-Trichlorophenol	420	U
95-95-4	2,4,5-Trichlorophenol	1000	U
91-58-7	2-Chloronaphthalene	420	U
88-74-4	2-Nitroaniline	1000	U
131-11-3	Dimethylphthalate	420	U
208-96-8	Acenaphthylene	420	U
606-20-2	2,6-Dinitrotoluene	420	U

4/8

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBSQ004008N1

b Name: SWL-TULSA Contract: LORADO AFB,

b Code: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38676

trix: (soil/water) SOIL Lab Sample ID: 38676.24

mple wt/vol: 30.2 (g/mL) G Lab File ID: P21333.D

vel: (low/med) LOW Date Received: 05/22/99

Moisture: not dec. 21 dec. Date Extracted:05/29/99

traction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/08/99

ncentrated Extract Volume: 1000(uL)

C Cleanup: (Y/N) N pH: 7.2 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
99-09-2	3-Nitroaniline	1000	U
83-32-9	Acenaphthene	76	J
121-14-2	2,4-Dinitrotoluene	420	U
51-28-5	2,4-Dinitrophenol	1000	U
100-02-7	4-Nitrophenol	1000	U
132-64-9	Dibenzofuran	150	J
84-66-2	Diethylphthalate	420	U
7005-72-3	4-Chlorophenyl-phenylether	420	U
86-73-7	Fluorene	420	U
100-01-6	4-Nitroaniline	1000	U
534-52-1	4,6-Dinitro-2-methylphenol	1000	U
86-30-6	N-Nitrosodiphenylamine (1)	420	U
101-55-3	4-Bromophenylphenylether	420	U
118-74-1	Hexachlorobenzene	420	U
87-86-5	Pentachlorophenol	1000	U
86-74-8	Carbazole	420	U
85-01-8	Phenanthrene	73	J
120-12-7	Anthracene	420	U
84-74-2	Di-n-butylphthalate	420	U
206-44-0	Fluoranthene	420	U
129-00-0	Pyrene	420	U
85-68-7	Butylbenzylphthalate	420	U
91-94-1	3,3'-Dichlorobenzidine	420	U
56-55-3	Benzo(a)anthracene	420	U
218-01-9	Chrysene	53	J
117-81-7	bis(2-Ethylhexyl)phthalate	420	U
117-84-0	Di-n-octylphthalate	420	U
205-99-2	Benzo(b)fluoranthene	420	U
207-08-9	Benzo(k)fluoranthene	420	U
50-32-8	Benzo(a)pyrene	420	U
193-39-5	Indeno(1,2,3-cd)pyrene	420	U
53-70-3	Dibenz(a,h)anthracene	420	U
191-24-2	Benzo(g,h,i)perylene	420	U

(1) - Cannot be separated from Diphenylamine

4/8

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

004008FD1

Name: SWL-TULSA Contract: LORADO AFB,

b Code: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38676

trix: (soil/water) SOIL Lab Sample ID: 38676.25

mple wt/vol: 32.4 (g/mL) G Lab File ID: P21334.D

vel: (low/med) LOW Date Received: 05/22/99

Moisture: not dec. 19 dec. Date Extracted: 05/29/99

traction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/08/99

ncentrated Extract Volume: 1000(uL)

PC Cleanup: (Y/N) N pH: 7.2 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	380	U
111-44-4	bis(2-Chloroethyl)ether	380	U
95-57-8	2-Chlorophenol	380	U
541-73-1	1,3-Dichlorobenzene	380	U
106-46-7	1,4-Dichlorobenzene	380	U
100-51-6	Benzyl alcohol	380	U
95-50-1	1,2-Dichlorobenzene	380	U
95-48-7	2-Methylphenol	380	U
108-60-1	bis(2-Chloroisopropyl)ether	380	U
106-44-5	4-Methylphenol	380	U
621-64-7	N-Nitroso-di-n-propylamine	380	U
67-72-1	Hexachloroethane	380	U
98-95-3	Nitrobenzene	380	U
78-59-1	Isophorone	380	U
88-75-5	2-Nitrophenol	380	U
105-67-9	2,4-Dimethylphenol	380	U
65-85-0	Benzoic Acid	950	U
111-91-1	bis(2-Chloroethoxy)methane	380	U
120-83-2	2,4-Dichlorophenol	380	U
120-82-1	1,2,4-Trichlorobenzene	380	U
91-20-3	Naphthalene	380	U
106-47-8	4-Chloroaniline	380	U
87-68-3	Hexachlorobutadiene	380	U
59-50-7	4-Chloro-3-methylphenol	380	U
91-57-6	2-Methylnaphthalene	380	U
77-47-4	Hexachlorocyclopentadiene	380	U
88-06-2	2,4,6-Trichlorophenol	380	U
95-95-4	2,4,5-Trichlorophenol	950	U
91-58-7	2-Chloronaphthalene	380	U
88-74-4	2-Nitroaniline	950	U
131-11-3	Dimethylphthalate	380	U
208-96-8	Acenaphthylene	380	U
606-20-2	2,6-Dinitrotoluene	380	U

HH 4/8

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

004008FD1

) Name: SWL-TULSA Contract: LORADO AFB,

) Code: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38676

trix: (soil/water) SOIL Lab Sample ID: 38676.25

mple wt/vol: 32.4 (g/mL) G Lab File ID: P21334.D

vel: (low/med) LOW Date Received: 05/22/99

Moisture: not dec. 19 dec. Date Extracted: 05/29/99

traction: (SepF/Cont/Sonc) SONC Date Analyzed: 06/08/99

ncentrated Extract Volume: 1000(uL)

C Cleanup: (Y/N) N pH: 7.2 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
99-09-2	3-Nitroaniline	950	U
83-32-9	Acenaphthene	380	U
121-14-2	2,4-Dinitrotoluene	380	U
51-28-5	2,4-Dinitrophenol	950	U
100-02-7	4-Nitrophenol	950	U
132-64-9	Dibenzofuran	120	J
84-66-2	Diethylphthalate	380	U
7005-72-3	4-Chlorophenyl-phenylether	380	U
86-73-7	Fluorene	380	U
100-01-6	4-Nitroaniline	950	U
534-52-1	4,6-Dinitro-2-methylphenol	950	U
86-30-6	N-Nitrosodiphenylamine (1)	380	U
101-55-3	4-Bromophenylphenylether	380	U
118-74-1	Hexachlorobenzene	380	U
87-86-5	Pentachlorophenol	950	U
86-74-8	Carbazole	380	U
85-01-8	Phenanthrene	47	J
120-12-7	Anthracene	380	U
84-74-2	Di-n-butylphthalate	380	U
206-44-0	Fluoranthene	140	J
129-00-0	Pyrene	100	J
85-68-7	Butylbenzylphthalate	380	U
91-94-1	3,3'-Dichlorobenzidine	380	U
56-55-3	Benzo(a)anthracene	380	U
218-01-9	Chrysene	380	U
117-81-7	bis(2-Ethylhexyl)phthalate	380	U
117-84-0	Di-n-octylphthalate	380	U
205-99-2	Benzo(b)fluoranthene	380	U
207-08-9	Benzo(k)fluoranthene	27	J
50-32-8	Benzo(a)pyrene	380	U
193-39-5	Indeno(1,2,3-cd)pyrene	380	U
53-70-3	Dibenz(a,h)anthracene	380	U
191-24-2	Benzo(g,h,i)perylene	380	U

(1) - Cannot be separated from Diphenylamine

4/8

0277

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

004000EB1

o Name: SWL-TULSA Contract: LORADO AFB,

o Code: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38676

trix: (soil/water) WATER Lab Sample ID: 38676.26

mple wt/vol: 1000 (g/mL) ML Lab File ID: P21146.D

vel: (low/med) LOW Date Received: 05/22/99

Moisture: not dec. 0 dec. Date Extracted: 05/23/99

traction: (SepF/Cont/Sonc) CONT Date Analyzed: 05/27/99

ncentrated Extract Volume: 1000(uL)

C Cleanup: (Y/N) N pH: 6.2 Dilution Factor: 1.0

EB

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-95-2	Phenol	10	U
111-44-4	bis(2-Chloroethyl)ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
100-51-6	Benzyl alcohol	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	bis(2-Chloroisopropyl)ether	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-di-n-propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
65-85-0	Benzoic Acid	25	U
111-91-1	bis(2-Chloroethoxy)methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	25	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	25	U
131-11-3	Dimethylphthalate	10	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U

A/K 4/8

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

004000EB1

ɔ ame: SWL-TULSA Contract: LORADO AFB,

ɔ Code: SWOK Case No.: CH2M-OK SAS No.: SDG No.: 38676

trix: (soil/water) WATER Lab Sample ID: 38676.26

mple wt/vol: 1000 (g/mL) ML Lab File ID: P21146.D

vel: (low/med) LOW Date Received: 05/22/99

Moisture: not dec. 0 dec. Date Extracted: 05/23/99

traction: (SepF/Cont/Sonc) CONT Date Analyzed: 05/27/99

ncentrated Extract Volume: 1000(uL)

C Cleanup: (Y/N) N pH: 6.2 Dilution Factor: 1.0

EB

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
99-09-2	3-Nitroaniline	25	U
83-32-9	Acenaphthene	10	U
121-14-2	2,4-Dinitrotoluene	10	U
51-28-5	2,4-Dinitrophenol	25	U
100-02-7	4-Nitrophenol	25	U
132-64-9	Dibenzofuran	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	25	U
534-52-1	4,6-Dinitro-2-methylphenol	25	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenylphenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	25	U
86-74-8	Carbazole	10	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
84-74-2	Di-n-butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	10	U
56-55-3	Benzo(a)anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)phthalate	1	JB
117-84-0	Di-n-octylphthalate	10	U
205-99-2	Benzo(b)fluoranthene	10	U
207-08-9	Benzo(k)fluoranthene	10	U
50-32-8	Benzo(a)pyrene	10	U
193-39-5	Indeno(1,2,3-cd)pyrene	10	U
53-70-3	Dibenz(a,h)anthracene	10	U
191-24-2	Benzo(g,h,i)perylene	10	U

(1) - Cannot be separated from Diphenylamine

AK 4/8

Organochlorine Pesticides

Data Review and Validation for: GC Organochlorine Pesticides and / ~~or PCBs (as aroclors)~~

Project Name & Task:	LAREDO AFB	IWTP
Project # & Case/SDG:	147436.DV.ZZ	38706
Methods:	☐ OLM03.2 ☑ SW-846 8081A ☐ SW846 8082 (aroclors) ☐ EPA 608 ☐ Other:	
Program:	☐ AFCEE ☐ NFESC ☐ Other	**Number of Samples:** 1 Hal
Field QC Samples:	1/2-FOUP, 3/4/5 - NATIVE/MS/MSD, 7-EB	
Reviewed by & Date:	H. Kelly	4/12/2000
Matrix:	☑ Water ☐ Soil ☐ Other	

Quality Control	Form #	Requirements	Check (If No* checked, see comments)	Flags Applied (see comments)
Data Pkg Complete (DP)	Pkg	All required deliverables in pkg.	☑ OK ☐ No* ☐ Not provided	☐ Flags Applied
	COC	All samples on COC reported	☑ OK ☐ No*	☐ Flags Applied
Holding Times (HT)	1,	Extraction HT (water 7d, soil 14d)	☑ OK ☐ No*	☐ Flags Applied
	COC	Analysis HT (40d from extraction)	☑ OK ☐ No*	☐ Flags Applied
			☐ OK ☐ No*	☐ Flags Applied
Surrogates (SS)	2	Method surrogates used	☑ OK ☐ No* ☐ Not provided	☐ Flags Applied
		Recovery Limits: ☑ Lab ☐ Meth	☐ OK ☑ No* ☐ Diluted out	
MS/MSD or MS/LD	3	Matrix Spikes Provided	☑ MS/MSD ☐ MS/LD ☐ None*	☐ Flags Applied
		Correct Spike Used	☑ OK ☐ No*	
		Acceptance Limits: ☑ Lab ☐ Meth	☑ OK ☐ No* ☐ Diluted out	
LCS (BS) ☐ LCS only ☑ LCS/LCSD	3	LCS per prep. batch	☑ OK ☐ No*	☐ Flags Applied
		Acceptance criteria met	☐ OK ☑ No*	
Blanks (MB,TB,EB, FB/AB)	1	Detects (> MDL or RL/CRQL)	☑ All ND ☐ see blnk wksht	☐ Flags Applied
Method/Lab Blank (MB)	4	MB per prep batch or 20 samples	☑ OK ☐ No*	
Resolution	6/raw	Resolution met for IC	☐ OK ☐ No* ☐ N/A	☐ Flags Applied
	7/raw	Resolution met for CC	☐ OK ☐ No* ☐ N/A	
Initial Calibration (IC) (primary & confirmation)	6, 8	Minimum levels per method	☑ OK ☐ No*	☐ Flags Applied
	6	Linearity criteria met	☑ OK ☐ No* ☐ see cal wksht	
	"7"	Degradation criteria met	☑ OK ☐ No* ☐ N/A	
Continuing Calib. Verif. (CC) including degradation (primary & confirmation)	8	Analyzed at proper frequency	☑ OK ☐ No*	☐ Flags Applied
	7	%diff or %drift criteria met	☑ OK ☐ No* ☐ see cal wksht	
	"7"	Degradation criteria met	☑ OK ☐ No* ☐ N/A	
	"8"	Int. Std. RT/Area criteria met	☐ OK ☐ No* ☑ N/A	
Cleanup Criteria	9	All cleanup criteria met	☐ OK ☐ No* ☑ N/A	☐ Flags Applied
Internal Standards (IS)		Internal Standards used	☐ Yes ☑ No ☐ see comments	☐ Flags Applied
	"8"	Sample IS area criteria met	☐ OK ☐ No* ☐ N/A	
Sample Evaluation	1	All hits within cal. Range	☑ OK ☐ No* ☐ All ND	☐ Flags Applied
	8	Samples bracketed by CCV & Deg.	☑ OK ☐ No*	
	10	Hits w/in RT windows	☑ OK ☐ No* ☐ N/A	
	10	Confirmation %D criteria met	☑ OK ☐ No* ☐ N/A	
	raw	Manual Integration performed	☐ No ☐ N/A ☐ see comments	
Field Duplicate (FD)	1	Precision of native vs Field Dup	☑ OK ☐ No* ☐ N/A	☐ Flags Applied

This sheet is applicable to multiple methods. All requirement items may not apply to every analytical method.

Case Narrative Comments:

NO EXCEPTIONS NOTED

QC Item	Comments
SS	Sample #2 (FD) TCMX = 223% cal #1 / 82% cal #2 (26-104 limits)
	#3 (MS) TCMX = 163 / 119
	#6 (3000NI) TCMX = 108 / 131 NO Flags applied.
	LCSD TCMX = 106 / 139

Data Review and Validation for: GC Organochlorine Pesticides and/or PCBs (as aroclors)

Project Name & Task:	LAREDO AFB	IWTP
Project # & Case/SDG:	147436.DV.ZZ	38706
Methods:	☐ OLM03.2 ☑ SW-846 8081A ☐ SW846 8082 (aroclors) ☐ EPA 608 ☐ Other:	
Program:	☐ AFCEE ☐ NFESC ☐ Other	**Number of Samples:** 7
Field QC Samples:	1/2-Rinse, 3/4/5- MS/MSD, 7-EB	
Reviewed by & Date:	A. Kelly	4/12/2000
Matrix:	☑ Water ☐ Soil ☐ Other	

LCS — LCSD — Alpha-BHC — 103% (27-102 limit)
No Flags Applied

02381

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPMWWG001000N1

Lab Name: SWL-TULSA

Lab Code: SWOK Case No.: CH2M- SDG No.: 38706

Matrix: (soil/water) WATER Lab Sample ID: 38706.01

Sample wt/vol: 1000 (g/mL) ML Lab File ID:_____

% Moisture: _____ decanted: (Y/N) __ Date Received: 05/25/99

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted:05/27/99

Concentrated Extract Volume: 10000(uL) Date Analyzed: 06/03/99

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 6.6 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
319-84-6	alpha-BHC	0.040	U
319-85-7	beta-BHC	0.040	U
319-86-8	delta-BHC	0.040	U
58-89-9	gamma-BHC (Lindane)	0.040	U
76-44-8	Heptachlor	0.040	U
309-00-2	Aldrin	0.040	U
1024-57-3	Heptachlor epoxide	0.040	U
959-98-8	Endosulfan I	0.040	U
60-57-1	Dieldrin	0.080	U
72-55-9	4,4'-DDE	0.080	U
72-20-8	Endrin	0.080	U
33213-65-9	Endosulfan II	0.080	U
72-54-8	4,4'-DDD	0.080	U
1031-07-8	Endosulfan sulfate	0.080	U
50-29-3	4,4'-DDT	0.080	U
72-43-5	Methoxychlor	0.38	U
53494-70-5	Endrin ketone	0.080	U
7421-93-4	Endrin aldehyde	0.080	U
5103-71-9	alpha-Chlordane	0.040	U
5103-74-2	gamma-Chlordane	0.040	U
8001-35-2	Toxaphene	2.5	U
	Surrogate amount spiked	0.20	

4/12/2000

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

WTPMWWG001000FD1

Lab Name: SWL-TULSA

Lab Code: SWOK Case No.: CH2M- SDG No.: 38706

Matrix: (soil/water) WATER Lab Sample ID: 38706.02

Sample wt/vol: 1000 (g/mL) ML Lab File ID:_____

% Moisture: _____ decanted: (Y/N) __ Date Received: 05/25/99

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted:05/27/99

Concentrated Extract Volume: 10000(uL) Date Analyzed: 06/03/99

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.1 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
319-84-6	alpha-BHC	0.040	U
319-85-7	beta-BHC	0.040	U
319-86-8	delta-BHC	0.040	U
58-89-9	gamma-BHC (Lindane)	0.040	U
76-44-8	Heptachlor	0.040	U
309-00-2	Aldrin	0.040	U
1024-57-3	Heptachlor epoxide	0.040	U
959-98-8	Endosulfan I	0.040	U
60-57-1	Dieldrin	0.080	U
72-55-9	4,4'-DDE	0.080	U
72-20-8	Endrin	0.080	U
33213-65-9	Endosulfan II	0.080	U
72-54-8	4,4'-DDD	0.080	U
1031-07-8	Endosulfan sulfate	0.080	U
50-29-3	4,4'-DDT	0.080	U
72-43-5	Methoxychlor	0.38	U
53494-70-5	Endrin ketone	0.080	U
7421-93-4	Endrin aldehyde	0.080	U
5103-71-9	alpha-Chlordane	0.040	U
5103-74-2	gamma-Chlordane	0.040	U
8001-35-2	Toxaphene	2.5	U
	Surrogate amount spiked	0.20	

FORM I PEST

4/12

02383

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPMWWG002000N1

Lab Name: SWL-TULSA

Lab Code: SWOK Case No.: CH2M- SDG No.: 38706

Matrix: (soil/water) WATER Lab Sample ID: 38706.03

Sample wt/vol: 1000 (g/mL) ML Lab File ID:_____

% Moisture: _____ decanted: (Y/N) __ Date Received: 05/25/99

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted:05/27/99

Concentrated Extract Volume: 10000(uL) Date Analyzed: 06/03/99

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 6.8 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
319-84-6	alpha-BHC	0.040	U
319-85-7	beta-BHC	0.040	U
319-86-8	delta-BHC	0.040	U
58-89-9	gamma-BHC (Lindane)	0.040	U
76-44-8	Heptachlor	0.040	U
309-00-2	Aldrin	0.040	U
1024-57-3	Heptachlor epoxide	0.040	U
959-98-8	Endosulfan I	0.040	U
60-57-1	Dieldrin	0.080	U
72-55-9	4,4'-DDE	0.080	U
72-20-8	Endrin	0.080	U
33213-65-9	Endosulfan II	0.080	U
72-54-8	4,4'-DDD	0.080	U
1031-07-8	Endosulfan sulfate	0.080	U
50-29-3	4,4'-DDT	0.080	U
72-43-5	Methoxychlor	0.38	U
53494-70-5	Endrin ketone	0.080	U
7421-93-4	Endrin aldehyde	0.080	U
5103-71-9	alpha-Chlordane	0.040	U
5103-74-2	gamma-Chlordane	0.040	U
8001-35-2	Toxaphene	2.5	U
	Surrogate amount spiked	0.20	

FORM I PEST

4/12

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPMWWG003000N1

Lab Name: SWL-TULSA

Lab Code: SWOK Case No.: CH2M- SDG No.: 38706

Matrix: (soil/water) WATER Lab Sample ID: 38706.06

Sample wt/vol: 1000 (g/mL) ML Lab File ID:_____

% Moisture: _____ decanted: (Y/N) __ Date Received: 05/25/99

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted:05/27/99

Concentrated Extract Volume: 10000(uL) Date Analyzed: 06/03/99

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 6.1 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
319-84-6	alpha-BHC	0.040	U
319-85-7	beta-BHC	0.040	U
319-86-8	delta-BHC	0.040	U
58-89-9	gamma-BHC (Lindane)	0.040	U
76-44-8	Heptachlor	0.093	
309-00-2	Aldrin	0.040	U
1024-57-3	Heptachlor epoxide	0.040	U
959-98-8	Endosulfan I	0.040	U
60-57-1	Dieldrin	0.080	U
72-55-9	4,4'-DDE	0.080	U
72-20-8	Endrin	0.080	U
33213-65-9	Endosulfan II	0.080	U
72-54-8	4,4'-DDD	0.080	U
1031-07-8	Endosulfan sulfate	0.080	U
50-29-3	4,4'-DDT	0.080	U
72-43-5	Methoxychlor	0.38	U
53494-70-5	Endrin ketone	0.080	U
7421-93-4	Endrin aldehyde	0.080	U
5103-71-9	alpha-Chlordane	0.040	U
5103-74-2	gamma-Chlordane	0.040	U
8001-35-2	Toxaphene	2.5	U
	Surrogate amount spiked	0.20	

FORM I PEST

4/12

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

WTPMWWQ002000EB1

Lab Name: SWL-TULSA

Lab Code: SWOK Case No.: CH2M- SDG No.: 38706

Matrix: (soil/water) WATER Lab Sample ID: 38706.07

Sample wt/vol: 1000 (g/mL) ML Lab File ID:_____

% Moisture: _____ decanted: (Y/N) __ Date Received: 05/25/99

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted:05/27/99

Concentrated Extract Volume: 10000(uL) Date Analyzed: 06/03/99

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.7 Sulfur Cleanup: (Y/N) N

EB

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
319-84-6	alpha-BHC	0.040	U
319-85-7	beta-BHC	0.040	U
319-86-8	delta-BHC	0.040	U
58-89-9	gamma-BHC (Lindane)	0.040	U
76-44-8	Heptachlor	0.040	U
309-00-2	Aldrin	0.040	U
1024-57-3	Heptachlor epoxide	0.040	U
959-98-8	Endosulfan I	0.040	U
60-57-1	Dieldrin	0.080	U
72-55-9	4,4'-DDE	0.080	U
72-20-8	Endrin	0.080	U
33213-65-9	Endosulfan II	0.080	U
72-54-8	4,4'-DDD	0.080	U
1031-07-8	Endosulfan sulfate	0.080	U
50-29-3	4,4'-DDT	0.080	U
72-43-5	Methoxychlor	0.38	U
53494-70-5	Endrin ketone	0.080	U
7421-93-4	Endrin aldehyde	0.080	U
5103-71-9	alpha-Chlordane	0.040	U
5103-74-2	gamma-Chlordane	0.040	U
8001-35-2	Toxaphene	2.5	U
Surrogate amount spiked		0.20	

NA 4/12

Data Review and Validation for: GC Organochlorine Pesticides ~~and/or PCBs (as aroclors)~~

Project Name & Task:	LAREDO AFB	IWTP
Project # & Case/SDG:	147436.DV.ZZ	38676
Methods:	☐ OLM03.2 ☑ SW-846 8081A ☐ SW846 8082 (aroclors) ☐ EPA 608 ☐ Other:	
Program:	☐ AFCEE ☐ NFESC ☐ Other	**Number of Samples:** 26 total
Field QC Samples:	10/11 + 24/25 FDUP, 26-EB, 20/21/22-NAT/MS/MSD, 24-MS/MSD, 26-MS/MSD	
Reviewed by & Date:	H. Kelly	4/9/2000
Matrix:	☑ Water ☑ Soil ☐ Other	

Quality Control	Form #	Requirements	Check (If No* checked, see comments)	Flags Applied (see comments)
Data Pkg Complete (DP)	Pkg	All required deliverables in pkg.	☑ OK ☐ No* ☐ Not provided	☐ Flags Applied
	COC	All samples on COC reported	☑ OK ☐ No*	☐ Flags Applied
Holding Times (HT)	1,	Extraction HT (water 7d, soil 14d)	☑ OK ☐ No*	☐ Flags Applied
	COC	Analysis HT (40d from extraction)	☑ OK ☐ No*	☐ Flags Applied
			☐ OK ☐ No*	☐ Flags Applied
Surrogates (SS)	2	Method surrogates used	☑ OK ☐ No* ☐ Not provided	☐ Flags Applied
		Recovery Limits: ☑ Lab ☐ Meth	☐ OK ☑ No* ☐ Diluted out	
MS/MSD or MS/LD	3	Matrix Spikes Provided	☑ MS/MSD ☐ MS/LD ☐ None*	☐ Flags Applied
		Correct Spike Used	☑ OK ☐ No*	
		Acceptance Limits: ☑ Lab ☐ Meth	☐ OK ☑ No* ☐ Diluted out	
LCS (BS) ☐ LCS only ☐ LCS/LCSD	3	LCS per prep. batch	☑ OK ☐ No*	☐ Flags Applied
		Acceptance criteria met	☐ OK ☑ No*	
Blanks (MB,TB,EB, FB/AB)	1	Detects (> MDL or RL/CRQL)	☑ All ND ☐ see blnk wksht	☐ Flags Applied
Method/Lab Blank (MB)	4	MB per prep batch or 20 samples	☑ OK ☐ No*	
Resolution	6/raw	Resolution met for IC	☐ OK ☐ No* ☑ N/A	☐ Flags Applied
	7/raw	Resolution met for CC	☐ OK ☐ No* ☑ N/A	
Initial Calibration (IC) (primary & confirmation)	6, 8	Minimum levels per method	☑ OK ☐ No*	☐ Flags Applied
	6	Linearity criteria met	☑ OK ☐ No* ☐ see cal wksht	
	"7"	Degradation criteria met	☑ OK ☐ No* ☐ N/A	
Continuing Calib. Verif. (CC) including degradation (primary & confirmation)	8	Analyzed at proper frequency	☑ OK ☐ No*	☐ Flags Applied
	7	%diff or %drift criteria met	☐ OK ☑ No* ☐ see cal wksht	
	"7"	Degradation criteria met	☐ OK ☑ No* ☐ N/A	
	"8"	Int. Std. RT/Area criteria met	☐ OK ☐ No* ☑ N/A	
Cleanup Criteria	9	All cleanup criteria met	☐ OK ☐ No* ☑ N/A	☐ Flags Applied
Internal Standards (IS)		Internal Standards used	☐ Yes ☑ No ☐ see comments	☐ Flags Applied
	"8"	Sample IS area criteria met	☐ OK ☐ No* ☑ N/A	
Sample Evaluation	1	All hits within cal. Range	☑ OK ☐ No* ☐ All ND	☐ Flags Applied
	8	Samples bracketed by CCV & Deg.	☑ OK ☐ No*	
	10	Hits w/in RT windows	☑ OK ☐ No* ☐ N/A	
	10	Confirmation %D criteria met	☐ OK ☑ No* ☐ N/A	
	raw	Manual Integration performed	☐ No ☐ N/A ☐ see comments	
Field Duplicate (FD)	1	Precision of native vs Field Dup	☑ OK ☐ No* ☐ N/A	☐ Flags Applied

This sheet is applicable to multiple methods. All requirement items may not apply to every analytical method.

Case Narrative Comments: LCS, MS/MSD, all samples analyzed at DF=1 and DF=10

QC Item	Comments
SS	several samples (listed in report) with surrogate recoveries out on one column. With the exception of one sample, all OK on 2nd column. NO FLAGS APPLIED

Data Review and Validation for: GC Organochlorine Pesticides ~~and/or PCBs (as aroclors)~~

Project Name & Task:	LAREDO AFB	IWTP
Project # & Case/SDG:	147436.DV.ZZ	38676
Methods:	☐ OLM03.2 ☑ SW-846 8081A ☐ SW846 8082 (aroclors) ☐ EPA 608 ☐ Other:	
Program:	☐ AFCEE ☐ NFESC ☐ Other	**Number of Samples:** 26 total
Field QC Samples:	10/11 + 24/25 - FDUP, 26-EB, 20/21/22 - NAT/MS/MSD	24 - MS/MSD
Reviewed by & Date:	H. Kelly 4/9/2000	26 - MS/MSD
Matrix:	☑ Water ☑ Soil ☐ Other	

MS/MSD (#26) 4000EB1 - 4,4'-DDT = 88/168 (28-117 Limit)
RPD = 62 (34 - Limit)

#24 (4008N1) MS/MSD set
9 high recoveries (99-128%)
All <10% above limits, All RPD OK

20/21/22 ~19 Recoveries high 91-151
except for one, All within 20% of limit

4 Low - MS - DDT = 0% RPD
MSD - DDT = Ø % 91 (29 Limit)
DDE = Ø % 65 (31 Limit)
DDD = Ø % 55 (29 Limit)

LCS Soil - Several Recoveries high 45 out of 120
97-143%

29.8 26.6 (2nd col)

DDT/ENDRIN 6/9 - 2000 DDT = 32.4 / ENDRIN = 24.8 Samples 1-13
Breakdown 6/10 - 1552 DDT = 39.2 / ENDRIN = 15.2 "
" 42.3 / " 19.5 (2nd col) "

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPMWSO001000N1

Name: SWL-TULSA

Code: SWOK Case No.: CH2M- SDG No.: 38676

rix: (soil/water) SOIL Lab Sample ID: 38676.01

ple wt/vol: 32.0 (g/mL) G Lab File ID:_____

loisture: 13 decanted: (Y/N) __ Date Received: 05/22/99

raction: (SepF/Cont/Sonc) SONC Date Extracted:05/29/99

ncentrated Extract Volume: 5000(uL) Date Analyzed: 06/10/99

jection Volume: 1.0(uL) Dilution Factor: 1.0

Cleanup: (Y/N) Y pH: 7.5 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q	
319-84-6	alpha-BHC	1.4	U	
319-85-7	beta-BHC	1.4	U	
319-86-8	delta-BHC	1.4	U	
58-89-9	gamma-BHC (Lindane)	1.4	U	
76-44-8	Heptachlor	1.4	U	
309-00-2	Aldrin	1.4	U	
1024-57-3	Heptachlor epoxide	1.4	U	
959-98-8	Endosulfan I	1.4	U	
60-57-1	Dieldrin	7.9		J SS
72-55-9	4,4'-DDE	2.7	U	
72-20-8	Endrin	2.7	~~U~~ UJ	PD
33213-65-9	Endosulfan II	2.7	U	
72-54-8	4,4'-DDD	2.7	U	
1031-07-8	Endosulfan sulfate	2.7	U	
50-29-3	4,4'-DDT	18		J PD
72-43-5	Methoxychlor	14	U	
53494-70-5	Endrin ketone	2.7	U	
7421-93-4	Endrin aldehyde	2.7	U	
5103-71-9	alpha-Chlordane	29	~~PE~~ R	LR
5103-74-2	gamma-Chlordane	15	J	SS
8001-35-2	Toxaphene	89	U	
	Surrogate amount spiked	7.18		

NM 4/9/2000

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

TPMWSO001000N1DL

Lab Name: SWL-TULSA

Lab Code: SWOK Case No.: CH2M- SDG No.: 38676

Matrix: (soil/water) SOIL Lab Sample ID: 38676.01DL

Sample wt/vol: 32.0 (g/mL) G Lab File ID:_____

% Moisture: 13 decanted: (Y/N) __ Date Received: 05/22/99

Extraction: (SepF/Cont/Sonc) SONC Date Extracted:05/29/99

Concentrated Extract Volume: 5000(uL) Date Analyzed: 06/10/99

Injection Volume: 1.0(uL) Dilution Factor: 10.0

GPC Cleanup: (Y/N) Y pH: 7.5 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	14	U
319-85-7	beta-BHC	14	U
319-86-8	delta-BHC	14	U
58-89-9	gamma-BHC (Lindane)	14	U
76-44-8	Heptachlor	14	U
309-00-2	Aldrin	14	U
1024-57-3	Heptachlor epoxide	14	U
959-98-8	Endosulfan I	14	U
60-57-1	Dieldrin	4.7	DPJ
72-55-9	4,4'-DDE	27	U
72-20-8	Endrin	27	U
33213-65-9	Endosulfan II	27	U
72-54-8	4,4'-DDD	27	U
1031-07-8	Endosulfan sulfate	27	U
50-29-3	4,4'-DDT	16	DPJ
72-43-5	Methoxychlor	140	U
53494-70-5	Endrin ketone	27	U
7421-93-4	Endrin aldehyde	7.0	DPJ
5103-71-9	alpha-Chlordane	24	DP
5103-74-2	gamma-Chlordane	14	DP
8001-35-2	Toxaphene	890	U
	Surrogate amount spiked	7.18	

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FORM I PEST

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPMWSO001005N1

› Name: SWL-TULSA

› Code: SWOK Case No.: CH2M- SDG No.: 38676

:rix: (soil/water) SOIL Lab Sample ID: 38676.02

ıple wt/vol: 30.2 (g/mL) G Lab File ID:_____

Ioisture: 16 decanted: (Y/N) __ Date Received: 05/22/99

:raction: (SepF/Cont/Sonc) SONC Date Extracted:05/29/99

ıcentrated Extract Volume: 5000(uL) Date Analyzed: 06/10/99

jection Volume: 1.0(uL) Dilution Factor: 1.0

C Cleanup: (Y/N) Y pH: 8.1 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q	
319-84-6	alpha-BHC	1.5	U	
319-85-7	beta-BHC	1.5	U	
319-86-8	delta-BHC	1.5	U	
58-89-9	gamma-BHC (Lindane)	1.5	U	
76-44-8	Heptachlor	1.5	U	
309-00-2	Aldrin	1.5	U	
1024-57-3	Heptachlor epoxide	1.5	U	
959-98-8	Endosulfan I	1.5	U	
60-57-1	Dieldrin	3.0	U	
72-55-9	4,4'-DDE	3.0	U	
72-20-8	Endrin	3.0	~~U~~ UJ	PD
33213-65-9	Endosulfan II	3.0	U	
72-54-8	4,4'-DDD	3.0	U	
1031-07-8	Endosulfan sulfate	3.0	U	
50-29-3	4,4'-DDT	3.0	~~U~~ UJ	PD
72-43-5	Methoxychlor	15	U	
53494-70-5	Endrin ketone	3.0	U	
7421-93-4	Endrin aldehyde	3.0	U	
5103-71-9	alpha-Chlordane	3.1	P	J 2C
5103-74-2	gamma-Chlordane	1.5	U	
8001-35-2	Toxaphene	98	U	
	Surrogate amount spiked	7.88		

HK 4/9

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

TPMWSO001005N1DL

› Name: SWL-TULSA

› Code: SWOK Case No.: CH2M- SDG No.: 38676

rix: (soil/water) SOIL Lab Sample ID: 38676.02DL

ple wt/vol: 30.2 (g/mL) G Lab File ID:_____

loisture: 16 decanted: (Y/N) __ Date Received: 05/22/99

raction: (SepF/Cont/Sonc) SONC Date Extracted:05/29/99

icentrated Extract Volume: 5000(uL) Date Analyzed: 06/10/99

jection Volume: 1.0(uL) Dilution Factor: 10.0

C Cleanup: (Y/N) Y pH: 8.1 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	15	U
319-85-7	beta-BHC	15	U
319-86-8	delta-BHC	15	U
58-89-9	gamma-BHC (Lindane)	15	U
76-44-8	Heptachlor	15	U
309-00-2	Aldrin	15	U
1024-57-3	Heptachlor epoxide	15	U
959-98-8	Endosulfan I	15	U
60-57-1	Dieldrin	30	U
72-55-9	4,4'-DDE	30	U
72-20-8	Endrin	30	U
33213-65-9	Endosulfan II	30	U
72-54-8	4,4'-DDD	30	U
1031-07-8	Endosulfan sulfate	30	U
50-29-3	4,4'-DDT	30	U
72-43-5	Methoxychlor	150	U
53494-70-5	Endrin ketone	30	U
7421-93-4	Endrin aldehyde	30	U
5103-71-9	alpha-Chlordane	15	U
5103-74-2	gamma-Chlordane	15	U
8001-35-2	Toxaphene	980	U
	Surrogate amount spiked	7.88	

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPMWSO001007N1

› Name: SWL-TULSA

› Code: SWOK Case No.: CH2M- SDG No.: 38676

:rix: (soil/water) SOIL Lab Sample ID: 38676.03

ıple wt/vol: 30.1 (g/mL) G Lab File ID:_____

ioisture: 21 decanted: (Y/N) __ Date Received: 05/22/99

:raction: (SepF/Cont/Sonc) SONC Date Extracted:05/29/99

ıcentrated Extract Volume: 5000(uL) Date Analyzed: 06/10/99

jection Volume: 1.0(uL) Dilution Factor: 1.0

: Cleanup: (Y/N) Y pH: 8.3 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q	
319-84-6	alpha-BHC	1.6	U	
319-85-7	beta-BHC	1.6	U	
319-86-8	delta-BHC	1.6	U	
58-89-9	gamma-BHC (Lindane)	1.6	U	
76-44-8	Heptachlor	1.6	U	
309-00-2	Aldrin	1.6	U	
1024-57-3	Heptachlor epoxide	1.6	U	
959-98-8	Endosulfan I	1.6	U	
60-57-1	Dieldrin	3.2	U	
72-55-9	4,4'-DDE	3.2	U	
72-20-8	Endrin	3.2	~~U~~	UJ PD
33213-65-9	Endosulfan II	3.2	U	
72-54-8	4,4'-DDD	3.2	U	
1031-07-8	Endosulfan sulfate	3.2	U	
50-29-3	4,4'-DDT	3.2	~~U~~	UJ PD
72-43-5	Methoxychlor	16	U	
53494-70-5	Endrin ketone	3.2	U	
7421-93-4	Endrin aldehyde	3.2	U	
5103-71-9	alpha-Chlordane	1.6	U	
5103-74-2	gamma-Chlordane	1.6	U	
8001-35-2	Toxaphene	100	U	
	Surrogate amount spiked	8.41		

HL 4/9

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

TPMWSO001007N1DL

Name: SWL-TULSA

Code: SWOK Case No.: CH2M- SDG No.: 38676

rix: (soil/water) SOIL Lab Sample ID: 38676.03DL

ple wt/vol: 30.1 (g/mL) G Lab File ID:_____

oisture: 21 decanted: (Y/N) __ Date Received: 05/22/99

raction: (SepF/Cont/Sonc) SONC Date Extracted:05/29/99

centrated Extract Volume: 5000(uL) Date Analyzed: 06/10/99

ection Volume: 1.0(uL) Dilution Factor: 10.0

Cleanup: (Y/N) Y pH: 8.3 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	16	U
319-85-7	beta-BHC	16	U
319-86-8	delta-BHC	16	U
58-89-9	gamma-BHC (Lindane)	16	U
76-44-8	Heptachlor	16	U
309-00-2	Aldrin	16	U
1024-57-3	Heptachlor epoxide	16	U
959-98-8	Endosulfan I	16	U
60-57-1	Dieldrin	32	U
72-55-9	4,4'-DDE	32	U
72-20-8	Endrin	32	U
33213-65-9	Endosulfan II	32	U
72-54-8	4,4'-DDD	32	U
1031-07-8	Endosulfan sulfate	32	U
50-29-3	4,4'-DDT	32	U
72-43-5	Methoxychlor	160	U
53494-70-5	Endrin ketone	32	U
7421-93-4	Endrin aldehyde	32	U
5103-71-9	alpha-Chlordane	16	U
5103-74-2	gamma-Chlordane	16	U
8001-35-2	Toxaphene	1000	U
	Surrogate amount spiked	8.41	

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPMWSO002000N1

) Name: SWL-TULSA

) Code: SWOK Case No.: CH2M- SDG No.: 38676

:rix: (soil/water) SOIL Lab Sample ID: 38676.04

ıple wt/vol: 30.0 (g/mL) G Lab File ID:_____

ıoisture: 7 decanted: (Y/N) __ Date Received: 05/22/99

:raction: (SepF/Cont/Sonc) SONC Date Extracted:05/29/99

ıcentrated Extract Volume: 5000(uL) Date Analyzed: 06/10/99

jection Volume: 1.0(uL) Dilution Factor: 1.0

: Cleanup: (Y/N) Y pH: 8.2 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q	
319-84-6	alpha-BHC	1.4	U	
319-85-7	beta-BHC	1.4	U	
319-86-8	delta-BHC	1.4	U	
58-89-9	gamma-BHC (Lindane)	1.4	U	
76-44-8	Heptachlor	1.4	U	
309-00-2	Aldrin	1.4	U	
1024-57-3	Heptachlor epoxide	1.4	U	
959-98-8	Endosulfan I	1.4	U	
60-57-1	Dieldrin	2.7	U	
72-55-9	4,4'-DDE	2.7	U	
72-20-8	Endrin	2.7	U	UJ PD
33213-65-9	Endosulfan II	2.7	U	
72-54-8	4,4'-DDD	2.7	U	
1031-07-8	Endosulfan sulfate	2.7	U	
50-29-3	4,4'-DDT	4.8	~~P~~	J ZC
72-43-5	Methoxychlor	14	U	
53494-70-5	Endrin ketone	2.7	U	
7421-93-4	Endrin aldehyde	2.7	U	
5103-71-9	alpha-Chlordane	1.5	~~P~~	J ZC
5103-74-2	gamma-Chlordane	1.4	U	
8001-35-2	Toxaphene	89	U	
	Surrogate amount spiked	7.17		

4/9

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PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

TPMWSO002000N1DL

Name: SWL-TULSA

Code: SWOK Case No.: CH2M- SDG No.: 38676

rix: (soil/water) SOIL Lab Sample ID: 38676.04DL

ple wt/vol: 30.0 (g/mL) G Lab File ID:_____

oisture: 7 decanted: (Y/N) __ Date Received: 05/22/99

raction: (SepF/Cont/Sonc) SONC Date Extracted:05/29/99

centrated Extract Volume: 5000(uL) Date Analyzed: 06/10/99

ection Volume: 1.0(uL) Dilution Factor: 10.0

Cleanup: (Y/N) Y pH: 8.2 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	14	U
319-85-7	beta-BHC	14	U
319-86-8	delta-BHC	14	U
58-89-9	gamma-BHC (Lindane)	14	U
76-44-8	Heptachlor	14	U
309-00-2	Aldrin	14	U
1024-57-3	Heptachlor epoxide	14	U
959-98-8	Endosulfan I	14	U
60-57-1	Dieldrin	27	U
72-55-9	4,4'-DDE	27	U
72-20-8	Endrin	27	U
33213-65-9	Endosulfan II	27	U
72-54-8	4,4'-DDD	27	U
1031-07-8	Endosulfan sulfate	27	U
50-29-3	4,4'-DDT	27	U
72-43-5	Methoxychlor	140	U
53494-70-5	Endrin ketone	27	U
7421-93-4	Endrin aldehyde	27	U
5103-71-9	alpha-Chlordane	14	U
5103-74-2	gamma-Chlordane	14	U
8001-35-2	Toxaphene	890	U
	Surrogate amount spiked	7.17	

R DL

R DL

#2 4/9

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPMWSO002004N1

Name: SWL-TULSA

Code: SWOK Case No.: CH2M- SDG No.: 38676

rix: (soil/water) SOIL Lab Sample ID: 38676.05

ple wt/vol: 30.0 (g/mL) G Lab File ID:_____

loisture: 16 decanted: (Y/N) __ Date Received: 05/22/99

raction: (SepF/Cont/Sonc) SONC Date Extracted:05/29/99

centrated Extract Volume: 5000(uL) Date Analyzed: 06/10/99

ection Volume: 1.0(uL) Dilution Factor: 1.0

Cleanup: (Y/N) Y pH: 8.2 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	1.5	U
319-85-7	beta-BHC	1.5	U
319-86-8	delta-BHC	1.5	U
58-89-9	gamma-BHC (Lindane)	1.5	U
76-44-8	Heptachlor	1.5	U
309-00-2	Aldrin	1.5	U
1024-57-3	Heptachlor epoxide	1.5	U
959-98-8	Endosulfan I	1.5	U
60-57-1	Dieldrin	3.0	U
72-55-9	4,4'-DDE	3.0	U
72-20-8	Endrin	3.0	~~U~~ UJ PD
33213-65-9	Endosulfan II	3.0	U
72-54-8	4,4'-DDD	3.0	U
1031-07-8	Endosulfan sulfate	3.0	U
50-29-3	4,4'-DDT	10	J PD
72-43-5	Methoxychlor	15	U
53494-70-5	Endrin ketone	3.0	U
7421-93-4	Endrin aldehyde	3.0	U
5103-71-9	alpha-Chlordane	1.5	U
5103-74-2	gamma-Chlordane	1.5	U
8001-35-2	Toxaphene	99	U
	Surrogate amount spiked	7.94	

HH 4/9

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

TPMWSO002004N1DL

› Name: SWL-TULSA

› Code: SWOK Case No.: CH2M- SDG No.: 38676

:rix: (soil/water) SOIL Lab Sample ID: 38676.05DL

ıple wt/vol: 30.0 (g/mL) G Lab File ID:_____

Moisture: 16 decanted: (Y/N) __ Date Received: 05/22/99

:raction: (SepF/Cont/Sonc) SONC Date Extracted:05/29/99

ıcentrated Extract Volume: 5000(uL) Date Analyzed: 06/10/99

jection Volume: 1.0(uL) Dilution Factor: 10.0

C Cleanup: (Y/N) Y pH: 8.2 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	15	U
319-85-7	beta-BHC	15	U
319-86-8	delta-BHC	15	U
58-89-9	gamma-BHC (Lindane)	15	U
76-44-8	Heptachlor	15	U
309-00-2	Aldrin	15	U
1024-57-3	Heptachlor epoxide	15	U
959-98-8	Endosulfan I	15	U
60-57-1	Dieldrin	30	U
72-55-9	4,4'-DDE	30	U
72-20-8	Endrin	30	U
33213-65-9	Endosulfan II	30	U
72-54-8	4,4'-DDD	30	U
1031-07-8	Endosulfan sulfate	30	U
50-29-3	4,4'-DDT	30	U
72-43-5	Methoxychlor	150	U
53494-70-5	Endrin ketone	30	U
7421-93-4	Endrin aldehyde	30	U
5103-71-9	alpha-Chlordane	15	U
5103-74-2	gamma-Chlordane	15	U
8001-35-2	Toxaphene	990	U
	Surrogate amount spiked	7.94	

R DL

R DL

HL 4/9

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPMWSO002007N1

Name: SWL-TULSA

Code: SWOK Case No.: CH2M- SDG No.: 38676

rix: (soil/water) SOIL Lab Sample ID: 38676.06

ple wt/vol: 32.0 (g/mL) G Lab File ID:_____

loisture: 21 decanted: (Y/N) __ Date Received: 05/22/99

raction: (SepF/Cont/Sonc) SONC Date Extracted:05/29/99

ncentrated Extract Volume: 5000(uL) Date Analyzed: 06/10/99

jection Volume: 1.0(uL) Dilution Factor: 1.0

Cleanup: (Y/N) Y pH: 8.4 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q	
319-84-6	alpha-BHC	1.5	U	
319-85-7	beta-BHC	1.5	U	
319-86-8	delta-BHC	1.5	U	
58-89-9	gamma-BHC (Lindane)	1.5	U	
76-44-8	Heptachlor	1.5	U	
309-00-2	Aldrin	1.5	U	
1024-57-3	Heptachlor epoxide	1.5	U	
959-98-8	Endosulfan I	1.5	U	
60-57-1	Dieldrin	3.0	U	
72-55-9	4,4'-DDE	3.0	U	
72-20-8	Endrin	3.0	~~U~~ UJ	PD
33213-65-9	Endosulfan II	3.0	U	
72-54-8	4,4'-DDD	3.0	U	
1031-07-8	Endosulfan sulfate	3.0	U	
50-29-3	4,4'-DDT	3.0	~~U~~ UJ	PD
72-43-5	Methoxychlor	15	U	
53494-70-5	Endrin ketone	3.0	U	
7421-93-4	Endrin aldehyde	3.0	U	
5103-71-9	alpha-Chlordane	1.5	U	
5103-74-2	gamma-Chlordane	1.5	U	
8001-35-2	Toxaphene	98	U	
	Surrogate amount spiked	7.91		

AK 4/9

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

TPMWSO002007N1DL

Name: SWL-TULSA

Code: SWOK Case No.: CH2M- SDG No.: 38676

rix: (soil/water) SOIL Lab Sample ID: 38676.06DL

ple wt/vol: 30.0 (g/mL) G Lab File ID:_____

oisture: 21 decanted: (Y/N) __ Date Received: 05/22/99

raction: (SepF/Cont/Sonc) SONC Date Extracted:05/29/99

.centrated Extract Volume: 5000(uL) Date Analyzed: 06/10/99

ection Volume: 1.0(uL) Dilution Factor: 10.0

: Cleanup: (Y/N) Y pH: 8.4 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	16	U
319-85-7	beta-BHC	16	U
319-86-8	delta-BHC	16	U
58-89-9	gamma-BHC (Lindane)	16	U
76-44-8	Heptachlor	16	U
309-00-2	Aldrin	16	U
1024-57-3	Heptachlor epoxide	16	U
959-98-8	Endosulfan I	16	U
60-57-1	Dieldrin	32	U
72-55-9	4,4'-DDE	32	U
72-20-8	Endrin	32	U
33213-65-9	Endosulfan II	32	U
72-54-8	4,4'-DDD	32	U
1031-07-8	Endosulfan sulfate	32	U
50-29-3	4,4'-DDT	32	U
72-43-5	Methoxychlor	160	U
53494-70-5	Endrin ketone	32	U
7421-93-4	Endrin aldehyde	32	U
5103-71-9	alpha-Chlordane	16	U
5103-74-2	gamma-Chlordane	16	U
8001-35-2	Toxaphene	1000	U
Surrogate amount spiked		8.44	

R DC

R DL

4/9

Data Review and Validation for: ~~CC Organochlorine Pesticides and/or~~ PCBs (as aroclors)

Project Name & Task:	LAREDO AFB	IWTP
Project # & Case/SDG:	147436.DV.ZZ	38706
Methods:	☐ OLM03.2 ☐ SW-846 8081A ☑ SW846 8082 (aroclors) ☐ EPA 608 ☐ Other:	
Program:	☐ AFCEE ☐ NFESC ☐ Other	**Number of Samples:** 7 total
Field QC Samples:	1/2-FRB, 3/4/5- MATRIX/MS/MSD, 7-EB	
Reviewed by & Date:	H. Kelly	4/12/2000
Matrix:	☑ Water ☐ Soil ☐ Other	

Quality Control	Form #	Requirements	Check (If No* checked, see comments)	Flags Applied (see comments)
Data Pkg Complete (DP)	Pkg	All required deliverables in pkg.	☑ OK ☐ No* ☐ Not provided	☐ Flags Applied
	COC	All samples on COC reported	☑ OK ☐ No*	☐ Flags Applied
Holding Times (HT)	1,	Extraction HT (water 7d, soil 14d)	☑ OK ☐ No*	☐ Flags Applied
	COC	Analysis HT (40d from extraction)	☑ OK ☐ No*	☐ Flags Applied
			☐ OK ☐ No*	☐ Flags Applied
Surrogates (SS)	2	Method surrogates used	☑ OK ☐ No* ☐ Not provided	☐ Flags Applied
		Recovery Limits: ☑ Lab ☐ Meth	☑ OK ☐ No* ☐ Diluted out	
MS/MSD or MS/LD	3	Matrix Spikes Provided	☑ MS/MSD ☐ MS/LD ☐ None*	☐ Flags Applied
		Correct Spike Used	☑ OK ☐ No*	
		Acceptance Limits: ☑ Lab ☐ Meth	☑ OK ☐ No* ☐ Diluted out	
LCS (BS) ☐ LCS only ☑ LCS/LCSD	3	LCS per prep. batch	☑ OK ☐ No*	☐ Flags Applied
		Acceptance criteria met	☑ OK ☐ No*	
Blanks (MB,TB,EB, FB/AB)	1	Detects (> MDL or RL/CRQL)	☑ All ND ☐ see blnk wksht	☐ Flags Applied
Method/Lab Blank (MB)	4	MB per prep batch or 20 samples	☑ OK ☐ No*	
Resolution	6/raw	Resolution met for IC	☐ OK ☐ No* ☑ N/A	☐ Flags Applied
	7/raw	Resolution met for CC	☐ OK ☐ No* ☑ N/A	
Initial Calibration (IC) (primary & confirmation)	6, 8	Minimum levels per method	☑ OK ☐ No*	☐ Flags Applied
	6	Linearity criteria met	☑ OK ☐ No* ☐ see cal wksht	
	"7"	Degradation criteria met	☐ OK ☐ No* ☑ N/A	
Continuing Calib. Verif. (CC) including degradation (primary & confirmation)	8	Analyzed at proper frequency	☑ OK ☐ No*	☐ Flags Applied
	7	%diff or %drift criteria met	☑ OK ☐ No* ☐ see cal wksht	
	"7"	Degradation criteria met	☐ OK ☐ No* ☑ N/A	
	"8"	Int. Std. RT/Area criteria met	☐ OK ☐ No* ☑ N/A	
Cleanup Criteria	9	All cleanup criteria met	☐ OK ☐ No* ☑ N/A	☐ Flags Applied
Internal Standards (IS)		Internal Standards used	☐ Yes ☑ No ☐ see comments	☐ Flags Applied
	"8"	Sample IS area criteria met	☐ OK ☐ No* ☐ N/A	
Sample Evaluation	1	All hits within cal. Range	☐ OK ☐ No* ☑ All ND	☐ Flags Applied
	8	Samples bracketed by CCV & Deg.	☑ OK ☐ No*	
	10	Hits w/in RT windows	☐ OK ☐ No* ☑ N/A	
	10	Confirmation %D criteria met	☐ OK ☐ No* ☑ N/A	
	raw	Manual Integration performed	☐ No ☑ N/A ☐ see comments	
Field Duplicate (FD)	1	Precision of native vs Field Dup	☑ OK ☐ No* ☐ N/A	☐ Flags Applied

This sheet is applicable to multiple methods. All requirement items may not apply to every analytical method.

Case Narrative Comments: NO EXCEPTIONS NOTED

QC Item	Comments
	NO FLAGS APPLIED

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

PMWWG001000N1

Name: SWL-TULSA

Code: SWOK Case No.: CH2M- SDG No.: 38706

rix: (soil/water) WATER Lab Sample ID: 38706.01

ple wt/vol: 1000 (g/mL) ML Lab File ID:_____

oisture: _____ decanted: (Y/N) __ Date Received: 05/25/99

raction: (SepF/Cont/Sonc) SEPF Date Extracted:05/27/99

centrated Extract Volume: 10000(uL) Date Analyzed: 06/02/99

ection Volume: 1.0(uL) Dilution Factor: 1.0

Cleanup: (Y/N) N pH: 6.6 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
12674-11-2	Aroclor-1016	1.0	U
11104-28-2	Aroclor-1221	1.0	U
11141-16-5	Aroclor-1232	1.0	U
53469-21-9	Aroclor-1242	1.0	U
12672-29-6	Aroclor-1248	1.0	U
11097-69-1	Aroclor-1254	1.0	U
11096-82-5	Aroclor-1260	1.0	U
	Surrogate amount spiked	0.20	

4/12/2000

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

PMWWG001000FD1

Name: SWL-TULSA

Code: SWOK Case No.: CH2M- SDG No.: 38706

rix: (soil/water) WATER Lab Sample ID: 38706.02

ple wt/vol: 1000 (g/mL) ML Lab File ID:_____

oisture: _____ decanted: (Y/N) __ Date Received: 05/25/99

raction: (SepF/Cont/Sonc) SEPF Date Extracted:05/27/99

centrated Extract Volume: 10000(uL) Date Analyzed: 06/02/99

ection Volume: 1.0(uL) Dilution Factor: 1.0

Cleanup: (Y/N) N pH: 7.1 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
12674-11-2	Aroclor-1016	1.0	U
11104-28-2	Aroclor-1221	1.0	U
11141-16-5	Aroclor-1232	1.0	U
53469-21-9	Aroclor-1242	1.0	U
12672-29-6	Aroclor-1248	1.0	U
11097-69-1	Aroclor-1254	1.0	U
11096-82-5	Aroclor-1260	1.0	U
	Surrogate amount spiked	0.20	

FORM I PEST

4/12/2000

02482

1D

PESTICIDE_ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

PMWWG002000N1

Name: SWL-TULSA

Code: SWOK Case No.: CH2M- SDG No.: 38706

rix: (soil/water) WATER Lab Sample ID: 38706.03

ple wt/vol: 1000 (g/mL) ML Lab File ID:_____

oisture: _____ decanted: (Y/N) __ Date Received: 05/25/99

raction: (SepF/Cont/Sonc) SEPF Date Extracted:05/27/99

centrated Extract Volume: 10000(uL) Date Analyzed: 06/02/99

ection Volume: 1.0(uL) Dilution Factor: 1.0

: Cleanup: (Y/N) N pH: 6.8 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
12674-11-2	Aroclor-1016	1.0	U
11104-28-2	Aroclor-1221	1.0	U
11141-16-5	Aroclor-1232	1.0	U
53469-21-9	Aroclor-1242	1.0	U
12672-29-6	Aroclor-1248	1.0	U
11097-69-1	Aroclor-1254	1.0	U
11096-82-5	Aroclor-1260	1.0	U
	Surrogate amount spiked	0.20	

HH 4/12

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

PMWWG003000N1

Name: SWL-TULSA

Code: SWOK Case No.: CH2M- SDG No.: 38706

rix: (soil/water) WATER Lab Sample ID: 38706.06

ple wt/vol: 1000 (g/mL) ML Lab File ID:_____

oisture: _____ decanted: (Y/N) __ Date Received: 05/25/99

raction: (SepF/Cont/Sonc) SEPF Date Extracted:05/27/99

centrated Extract Volume: 10000(uL) Date Analyzed: 06/02/99

ection Volume: 1.0(uL) Dilution Factor: 1.0

Cleanup: (Y/N) N pH: 6.1 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
12674-11-2	Aroclor-1016	1.0	U
11104-28-2	Aroclor-1221	1.0	U
11141-16-5	Aroclor-1232	1.0	U
53469-21-9	Aroclor-1242	1.0	U
12672-29-6	Aroclor-1248	1.0	U
11097-69-1	Aroclor-1254	1.0	U
11096-82-5	Aroclor-1260	1.0	U
	Surrogate amount spiked	0.20	

FORM I PEST

02484

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

PMWWQ002000EB1

Name: SWL-TULSA

Code: SWOK Case No.: CH2M- SDG No.: 38706

Matrix: (soil/water) WATER Lab Sample ID: 38706.07

Sample wt/vol: 1000 (g/mL) ML Lab File ID:_____

Moisture: _____ decanted: (Y/N) __ Date Received: 05/25/99

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted:05/27/99

Concentrated Extract Volume: 10000(uL) Date Analyzed: 06/02/99

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.7 Sulfur Cleanup: (Y/N) N

EB

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
12674-11-2	Aroclor-1016	1.0	U
11104-28-2	Aroclor-1221	1.0	U
11141-16-5	Aroclor-1232	1.0	U
53469-21-9	Aroclor-1242	1.0	U
12672-29-6	Aroclor-1248	1.0	U
11097-69-1	Aroclor-1254	1.0	U
11096-82-5	Aroclor-1260	1.0	U
	Surrogate amount spiked	0.20	

6/11/12

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

TPMWSO003000N1DL

› Name: SWL-TULSA

› Code: SWOK Case No.: CH2M- SDG No.: 38676

rix: (soil/water) SOIL Lab Sample ID: 38676.07DL

ıple wt/vol: 30.0 (g/mL) G Lab File ID:_____

loisture: 5 decanted: (Y/N) __ Date Received: 05/22/99

:raction: (SepF/Cont/Sonc) SONC Date Extracted:05/29/99

ıcentrated Extract Volume: 5000(uL) Date Analyzed: 06/10/99

jection Volume: 1.0(uL) Dilution Factor: 10.0

: Cleanup: (Y/N) Y pH: 7.2 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	14	U
319-85-7	beta-BHC	14	U
319-86-8	delta-BHC	14	U
58-89-9	gamma-BHC (Lindane)	14	U
76-44-8	Heptachlor	14	U
309-00-2	Aldrin	14	U
1024-57-3	Heptachlor epoxide	14	U
959-98-8	Endosulfan I	14	U
60-57-1	Dieldrin	26	U
72-55-9	4,4'-DDE	26	U
72-20-8	Endrin	26	U
33213-65-9	Endosulfan II	26	U
72-54-8	4,4'-DDD	26	U
1031-07-8	Endosulfan sulfate	26	U
50-29-3	4,4'-DDT	3.6	DPJ
72-43-5	Methoxychlor	140	U
53494-70-5	Endrin ketone	26	U
7421-93-4	Endrin aldehyde	26	U
5103-71-9	alpha-Chlordane	12	DPJ
5103-74-2	gamma-Chlordane	8.2	DJ
8001-35-2	Toxaphene	870	U
	Surrogate amount spiked	7.02	

R DL

R DL

02402

HL 4/9

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPMWSO003006N1

Name: SWL-TULSA

Code: SWOK Case No.: CH2M- SDG No.: 38676

rix: (soil/water) SOIL Lab Sample ID: 38676.08

ple wt/vol: 31.3 (g/mL) G Lab File ID:_____

oisture: 19 decanted: (Y/N) __ Date Received: 05/22/99

raction: (SepF/Cont/Sonc) SONC Date Extracted:05/29/99

centrated Extract Volume: 5000(uL) Date Analyzed: 06/10/99

ection Volume: 1.0(uL) Dilution Factor: 1.0

Cleanup: (Y/N) Y pH: 7.3 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q	
319-84-6	alpha-BHC	1.5	U	
319-85-7	beta-BHC	1.5	U	
319-86-8	delta-BHC	1.5	U	
58-89-9	gamma-BHC (Lindane)	1.5	U	
76-44-8	Heptachlor	1.5	U	
309-00-2	Aldrin	1.5	U	
1024-57-3	Heptachlor epoxide	1.5	U	
959-98-8	Endosulfan I	1.5	U	
60-57-1	Dieldrin	3.0	U	
72-55-9	4,4'-DDE	3.0	U	
72-20-8	Endrin	3.0	~~U~~ UJ	PD
33213-65-9	Endosulfan II	3.0	U	
72-54-8	4,4'-DDD	3.0	U	
1031-07-8	Endosulfan sulfate	3.0	U	
50-29-3	4,4'-DDT	3.0	~~U~~ UJ	PD
72-43-5	Methoxychlor	15	U	
53494-70-5	Endrin ketone	3.0	U	
7421-93-4	Endrin aldehyde	3.0	U	
5103-71-9	alpha-Chlordane	1.5	U	
5103-74-2	gamma-Chlordane	1.5	U	
8001-35-2	Toxaphene	98	U	
	Surrogate amount spiked	7.89		

4/9

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

TPMWSO003006N1DL

› Name: SWL-TULSA

› Code: SWOK Case No.: CH2M- SDG No.: 38676

:rix: (soil/water) SOIL Lab Sample ID: 38676.08DL

ıple wt/vol: 31.3 (g/mL) G Lab File ID:_____

Moisture: 19 decanted: (Y/N) __ Date Received: 05/22/99

:raction: (SepF/Cont/Sonc) SONC Date Extracted:05/29/99

ıcentrated Extract Volume: 5000(uL) Date Analyzed: 06/10/99

jection Volume: 1.0(uL) Dilution Factor: 10.0

C Cleanup: (Y/N) Y pH: 7.3 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	15	U
319-85-7	beta-BHC	15	U
319-86-8	delta-BHC	15	U
58-89-9	gamma-BHC (Lindane)	15	U
76-44-8	Heptachlor	15	U
309-00-2	Aldrin	15	U
1024-57-3	Heptachlor epoxide	15	U
959-98-8	Endosulfan I	15	U
60-57-1	Dieldrin	30	U
72-55-9	4,4'-DDE	30	U
72-20-8	Endrin	30	U
33213-65-9	Endosulfan II	30	U
72-54-8	4,4'-DDD	30	U
1031-07-8	Endosulfan sulfate	30	U
50-29-3	4,4'-DDT	30	U
72-43-5	Methoxychlor	150	U
53494-70-5	Endrin ketone	30	U
7421-93-4	Endrin aldehyde	30	U
5103-71-9	alpha-Chlordane	15	U
5103-74-2	gamma-Chlordane	15	U
8001-35-2	Toxaphene	980	U
	Surrogate amount spiked	7.89	

A D2

R D2

HL 4/9

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPMWSO003012N1

) Name: SWL-TULSA

) Code: SWOK Case No.: CH2M- SDG No.: 38676

:rix: (soil/water) SOIL Lab Sample ID: 38676.09

ıple wt/vol: 30.1 (g/mL) G Lab File ID:_____

Ioisture: 12 decanted: (Y/N) __ Date Received: 05/22/99

:raction: (SepF/Cont/Sonc) SONC Date Extracted:05/29/99

ıcentrated Extract Volume: 5000(uL) Date Analyzed: 06/10/99

jection Volume: 1.0(uL) Dilution Factor: 1.0

: Cleanup: (Y/N) Y pH: 7.3 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q	
319-84-6	alpha-BHC	1.5	U	
319-85-7	beta-BHC	1.5	U	
319-86-8	delta-BHC	1.5	U	
58-89-9	gamma-BHC (Lindane)	1.5	U	
76-44-8	Heptachlor	1.5	U	
309-00-2	Aldrin	1.5	U	
1024-57-3	Heptachlor epoxide	1.5	U	
959-98-8	Endosulfan I	1.5	U	
60-57-1	Dieldrin	2.8	U	
72-55-9	4,4'-DDE	2.8	U	
72-20-8	Endrin	2.8	~~U~~	UJ PD
33213-65-9	Endosulfan II	2.8	U	
72-54-8	4,4'-DDD	2.8	U	
1031-07-8	Endosulfan sulfate	2.8	U	
50-29-3	4,4'-DDT	2.8	~~U~~	UJ PD
72-43-5	Methoxychlor	15	U	
53494-70-5	Endrin ketone	2.8	U	
7421-93-4	Endrin aldehyde	2.8	U	
5103-71-9	alpha-Chlordane	1.5	U	
5103-74-2	gamma-Chlordane	1.5	U	
8001-35-2	Toxaphene	94	U	
	Surrogate amount spiked	7.55		

4/9

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

TPMWSO0003012N1DL

Name: SWL-TULSA

Code: SWOK Case No.: CH2M- SDG No.: 38676

rix: (soil/water) SOIL Lab Sample ID: 38676.09DL

ple wt/vol: 30.1 (g/mL) G Lab File ID:_____

loisture: 12 decanted: (Y/N) __ Date Received: 05/22/99

raction: (SepF/Cont/Sonc) SONC Date Extracted:05/29/99

ncentrated Extract Volume: 5000(uL) Date Analyzed: 06/10/99

jection Volume: 1.0(uL) Dilution Factor: 10.0

C Cleanup: (Y/N) Y pH: 7.3 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	15	U
319-85-7	beta-BHC	15	U
319-86-8	delta-BHC	15	U
58-89-9	gamma-BHC (Lindane)	15	U
76-44-8	Heptachlor	15	U
309-00-2	Aldrin	15	U
1024-57-3	Heptachlor epoxide	15	U
959-98-8	Endosulfan I	15	U
60-57-1	Dieldrin	28	U
72-55-9	4,4'-DDE	28	U
72-20-8	Endrin	28	U
33213-65-9	Endosulfan II	28	U
72-54-8	4,4'-DDD	28	U
1031-07-8	Endosulfan sulfate	28	U
50-29-3	4,4'-DDT	28	U
72-43-5	Methoxychlor	150	U
53494-70-5	Endrin ketone	28	U
7421-93-4	Endrin aldehyde	28	U
5103-71-9	alpha-Chlordane	15	U
5103-74-2	gamma-Chlordane	15	U
8001-35-2	Toxaphene	940	U
	Surrogate amount spiked	7.55	

E DL

R DL

FORM I PEST

4/9

02406

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPSBSO001000N1

Name: SWL-TULSA

Code: SWOK Case No.: CH2M- SDG No.: 38676

rix: (soil/water) SOIL Lab Sample ID: 38676.10

ple wt/vol: 31.1 (g/mL) G Lab File ID:_____

oisture: 11 decanted: (Y/N) __ Date Received: 05/22/99

raction: (SepF/Cont/Sonc) SONC Date Extracted:05/29/99

centrated Extract Volume: 5000(uL) Date Analyzed: 06/10/99

ection Volume: 1.0(uL) Dilution Factor: 1.0

Cleanup: (Y/N) Y pH: 7.3 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q	
319-84-6	alpha-BHC	1.4	U	
319-85-7	beta-BHC	1.4	U	
319-86-8	delta-BHC	1.4	U	
58-89-9	gamma-BHC (Lindane)	1.4	U	
76-44-8	Heptachlor	1.4	U	
309-00-2	Aldrin	1.4	U	
1024-57-3	Heptachlor epoxide	1.4	U	
959-98-8	Endosulfan I	1.4	U	
60-57-1	Dieldrin	2.7	U	
72-55-9	4,4'-DDE	2.7	U	
72-20-8	Endrin	2.7	~~U~~	UJ PD
33213-65-9	Endosulfan II	2.7	U	
72-54-8	4,4'-DDD	2.7	U	
1031-07-8	Endosulfan sulfate	2.7	U	
50-29-3	4,4'-DDT	2.7	~~U~~	UJ PD
72-43-5	Methoxychlor	14	U	
53494-70-5	Endrin ketone	2.7	U	
7421-93-4	Endrin aldehyde	2.7	U	
5103-71-9	alpha-Chlordane	1.4	U	
5103-74-2	gamma-Chlordane	1.4	U	
8001-35-2	Toxaphene	90	U	
	Surrogate amount spiked	7.23		

HA 4/9

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

TPSBSO001000N1DL

Name: SWL-TULSA

Code: SWOK Case No.: CH2M- SDG No.: 38676

rix: (soil/water) SOIL Lab Sample ID: 38676.10DL

ple wt/vol: 31.1 (g/mL) G Lab File ID:_____

loisture: 11 decanted: (Y/N) __ Date Received: 05/22/99

raction: (SepF/Cont/Sonc) SONC Date Extracted:05/29/99

ncentrated Extract Volume: 5000(uL) Date Analyzed: 06/10/99

jection Volume: 1.0(uL) Dilution Factor: 10.0

Cleanup: (Y/N) Y pH: 7.3 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	14	U
319-85-7	beta-BHC	14	U
319-86-8	delta-BHC	14	U
58-89-9	gamma-BHC (Lindane)	14	U
76-44-8	Heptachlor	14	U
309-00-2	Aldrin	14	U
1024-57-3	Heptachlor epoxide	14	U
959-98-8	Endosulfan I	14	U
60-57-1	Dieldrin	27	U
72-55-9	4,4'-DDE	27	U
72-20-8	Endrin	27	U
33213-65-9	Endosulfan II	27	U
72-54-8	4,4'-DDD	27	U
1031-07-8	Endosulfan sulfate	27	U
50-29-3	4,4'-DDT	27	U
72-43-5	Methoxychlor	140	U
53494-70-5	Endrin ketone	27	U
7421-93-4	Endrin aldehyde	27	U
5103-71-9	alpha-Chlordane	14	U
5103-74-2	gamma-Chlordane	14	U
8001-35-2	Toxaphene	900	U
	Surrogate amount spiked	7.23	

R DL

R DL

HL 4/9

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

WTPSBSO001000FD1

Name: SWL-TULSA

Code: SWOK Case No.: CH2M- SDG No.: 38676

rix: (soil/water) SOIL Lab Sample ID: 38676.11

ple wt/vol: 30.4 (g/mL) G Lab File ID:_____

loisture: 11 decanted: (Y/N) __ Date Received: 05/22/99

raction: (SepF/Cont/Sonc) SONC Date Extracted: 05/29/99

icentrated Extract Volume: 5000 (uL) Date Analyzed: 06/10/99

ection Volume: 1.0 (uL) Dilution Factor: 1.0

Cleanup: (Y/N) Y pH: 7.3 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q	
319-84-6	alpha-BHC	1.4	U	
319-85-7	beta-BHC	1.4	U	
319-86-8	delta-BHC	1.4	U	
58-89-9	gamma-BHC (Lindane)	1.4	U	
76-44-8	Heptachlor	1.4	U	
309-00-2	Aldrin	1.4	U	
1024-57-3	Heptachlor epoxide	1.4	U	
959-98-8	Endosulfan I	1.4	U	
60-57-1	Dieldrin	2.8	U	
72-55-9	4,4'-DDE	2.8	U	
72-20-8	Endrin	2.8	~~U~~	UJ PD
33213-65-9	Endosulfan II	2.8	U	
72-54-8	4,4'-DDD	2.8	U	
1031-07-8	Endosulfan sulfate	2.8	U	
50-29-3	4,4'-DDT	2.8	~~U~~	UJ PV
72-43-5	Methoxychlor	14	U	
53494-70-5	Endrin ketone	2.8	U	
7421-93-4	Endrin aldehyde	2.8	U	
5103-71-9	alpha-Chlordane	1.4	U	
5103-74-2	gamma-Chlordane	1.4	U	
8001-35-2	Toxaphene	92	U	
	Surrogate amount spiked	7.39		

6/9

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

PSBSO001000FD1DL

ame: SWL-TULSA

Code: SWOK Case No.: CH2M- SDG No.: 38676

rix: (soil/water) SOIL Lab Sample ID: 38676.11DL

ple wt/vol: 30.4 (g/mL) G Lab File ID:_____

oisture: 11 decanted: (Y/N) __ Date Received: 05/22/99

raction: (SepF/Cont/Sonc) SONC Date Extracted:05/29/99

centrated Extract Volume: 5000(uL) Date Analyzed: 06/10/99

ection Volume: 1.0(uL) Dilution Factor: 10.0

Cleanup: (Y/N) Y pH: 7.3 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	14	U
319-85-7	beta-BHC	14	U
319-86-8	delta-BHC	14	U
58-89-9	gamma-BHC (Lindane)	14	U
76-44-8	Heptachlor	14	U
309-00-2	Aldrin	14	U
1024-57-3	Heptachlor epoxide	14	U
959-98-8	Endosulfan I	14	U
60-57-1	Dieldrin	28	U
72-55-9	4,4'-DDE	28	U
72-20-8	Endrin	28	U
33213-65-9	Endosulfan II	28	U
72-54-8	4,4'-DDD	28	U
1031-07-8	Endosulfan sulfate	28	U
50-29-3	4,4'-DDT	28	U
72-43-5	Methoxychlor	140	U
53494-70-5	Endrin ketone	28	U
7421-93-4	Endrin aldehyde	28	U
5103-71-9	alpha-Chlordane	14	U
5103-74-2	gamma-Chlordane	14	U
8001-35-2	Toxaphene	920	U
	Surrogate amount spiked	7.39	

R DL

R DL

4/9

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPSBSO001004N1

Name: SWL-TULSA

Code: SWOK Case No.: CH2M- SDG No.: 38676

rix: (soil/water) SOIL Lab Sample ID: 38676.12

ple wt/vol: 30.5 (g/mL) G Lab File ID:_____

oisture: 19 decanted: (Y/N) __ Date Received: 05/22/99

raction: (SepF/Cont/Sonc) SONC Date Extracted:05/29/99

centrated Extract Volume: 5000(uL) Date Analyzed: 06/10/99

ection Volume: 1.0(uL) Dilution Factor: 1.0

Cleanup: (Y/N) Y pH: 7.3 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	1.6	U
319-85-7	beta-BHC	1.6	U
319-86-8	delta-BHC	1.6	U
58-89-9	gamma-BHC (Lindane)	1.6	U
76-44-8	Heptachlor	1.6	U
309-00-2	Aldrin	1.6	U
1024-57-3	Heptachlor epoxide	1.6	U
959-98-8	Endosulfan I	1.6	U
60-57-1	Dieldrin	3.0	U
72-55-9	4,4'-DDE	3.0	U
72-20-8	Endrin	3.0	~~U~~ UJ PD
33213-65-9	Endosulfan II	3.0	U
72-54-8	4,4'-DDD	3.0	U
1031-07-8	Endosulfan sulfate	3.0	U
50-29-3	4,4'-DDT	3.0	~~U~~ UJ PD
72-43-5	Methoxychlor	16	U
53494-70-5	Endrin ketone	3.0	U
7421-93-4	Endrin aldehyde	3.0	U
5103-71-9	alpha-Chlordane	1.6	U
5103-74-2	gamma-Chlordane	1.6	U
8001-35-2	Toxaphene	100	U
	Surrogate amount spiked	8.10	

HK 4/9

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

TPSBSO001004N1DL

Name: SWL-TULSA

Code: SWOK Case No.: CH2M- SDG No.: 38676

rix: (soil/water) SOIL Lab Sample ID: 38676.12DL

ple wt/vol: 30.5 (g/mL) G Lab File ID:_____

loisture: 19 decanted: (Y/N) __ Date Received: 05/22/99

raction: (SepF/Cont/Sonc) SONC Date Extracted:05/29/99

centrated Extract Volume: 5000(uL) Date Analyzed: 06/10/99

ection Volume: 1.0(uL) Dilution Factor: 10.0

Cleanup: (Y/N) Y pH: 7.3 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	16	U
319-85-7	beta-BHC	16	U
319-86-8	delta-BHC	16	U
58-89-9	gamma-BHC (Lindane)	16	U
76-44-8	Heptachlor	16	U
309-00-2	Aldrin	16	U
1024-57-3	Heptachlor epoxide	16	U
959-98-8	Endosulfan I	16	U
60-57-1	Dieldrin	30	U
72-55-9	4,4'-DDE	30	U
72-20-8	Endrin	30	U
33213-65-9	Endosulfan II	30	U
72-54-8	4,4'-DDD	30	U
1031-07-8	Endosulfan sulfate	30	U
50-29-3	4,4'-DDT	30	U
72-43-5	Methoxychlor	160	U
53494-70-5	Endrin ketone	30	U
7421-93-4	Endrin aldehyde	30	U
5103-71-9	alpha-Chlordane	16	U
5103-74-2	gamma-Chlordane	16	U
8001-35-2	Toxaphene	1000	U
	Surrogate amount spiked	8.10	

R DL

R DL

4/9

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPSBSO001006N1

Name: SWL-TULSA

Code: SWOK Case No.: CH2M- SDG No.: 38676

rix: (soil/water) SOIL Lab Sample ID: 38676.13

ple wt/vol: 30.9 (g/mL) G Lab File ID:_____

oisture: 21 decanted: (Y/N) __ Date Received: 05/22/99

raction: (SepF/Cont/Sonc) SONC Date Extracted:05/29/99

centrated Extract Volume: 5000(uL) Date Analyzed: 06/10/99

ection Volume: 1.0(uL) Dilution Factor: 1.0

Cleanup: (Y/N) Y pH: 7.3 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	1.6	U
319-85-7	beta-BHC	1.6	U
319-86-8	delta-BHC	1.6	U
58-89-9	gamma-BHC (Lindane)	1.6	U
76-44-8	Heptachlor	1.6	U
309-00-2	Aldrin	1.6	U
1024-57-3	Heptachlor epoxide	1.6	U
959-98-8	Endosulfan I	1.6	U
60-57-1	Dieldrin	3.1	U
72-55-9	4,4'-DDE	3.1	U
72-20-8	Endrin	3.1	~~U~~ UJ PD
33213-65-9	Endosulfan II	3.1	U
72-54-8	4,4'-DDD	3.1	U
1031-07-8	Endosulfan sulfate	3.1	U
50-29-3	4,4'-DDT	3.1	~~U~~ UJ PD
72-43-5	Methoxychlor	16	U
53494-70-5	Endrin ketone	3.1	U
7421-93-4	Endrin aldehyde	3.1	U
5103-71-9	alpha-Chlordane	1.6	U
5103-74-2	gamma-Chlordane	1.6	U
8001-35-2	Toxaphene	100	U
	Surrogate amount spiked	8.19	

HK 4/9

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

TPSBSO001006N1DL

) Name: SWL-TULSA

) Code: SWOK Case No.: CH2M- SDG No.: 38676

:rix: (soil/water) SOIL Lab Sample ID: 38676.13DL

ıple wt/vol: 30.9 (g/mL) G Lab File ID:_____

loisture: 21 decanted: (Y/N) __ Date Received: 05/22/99

:raction: (SepF/Cont/Sonc) SONC Date Extracted:05/29/99

ıcentrated Extract Volume: 5000(uL) Date Analyzed: 06/10/99

jection Volume: 1.0(uL) Dilution Factor: 10.0

C Cleanup: (Y/N) Y pH: 7.3 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	16	U
319-85-7	beta-BHC	16	U
319-86-8	delta-BHC	16	U
58-89-9	gamma-BHC (Lindane)	16	U
76-44-8	Heptachlor	16	U
309-00-2	Aldrin	16	U
1024-57-3	Heptachlor epoxide	16	U
959-98-8	Endosulfan I	16	U
60-57-1	Dieldrin	31	U
72-55-9	4,4'-DDE	31	U
72-20-8	Endrin	31	U
33213-65-9	Endosulfan II	31	U
72-54-8	4,4'-DDD	31	U
1031-07-8	Endosulfan sulfate	31	U
50-29-3	4,4'-DDT	31	U
72-43-5	Methoxychlor	160	U
53494-70-5	Endrin ketone	31	U
7421-93-4	Endrin aldehyde	31	U
5103-71-9	alpha-Chlordane	16	U
5103-74-2	gamma-Chlordane	16	U
8001-35-2	Toxaphene	1000	U
	Surrogate amount spiked	8.19	

R DL

R DL

HH 4/9

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPSBSO002000N1

Name: SWL-TULSA

Code: SWOK Case No.: CH2M- SDG No.: 38676

rix: (soil/water) SOIL Lab Sample ID: 38676.14

ple wt/vol: 30.9 (g/mL) G Lab File ID:_____

loisture: 8 decanted: (Y/N) __ Date Received: 05/22/99

raction: (SepF/Cont/Sonc) SONC Date Extracted:05/29/99

centrated Extract Volume: 5000(uL) Date Analyzed: 06/09/99

ection Volume: 0.5(uL) Dilution Factor: 1.0

Cleanup: (Y/N) Y pH: 7.2 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	1.4	U
319-85-7	beta-BHC	1.4	U
319-86-8	delta-BHC	1.4	U
58-89-9	gamma-BHC (Lindane)	1.4	U
76-44-8	Heptachlor	1.4	U
309-00-2	Aldrin	1.4	U
1024-57-3	Heptachlor epoxide	1.4	U
959-98-8	Endosulfan I	1.4	U
60-57-1	Dieldrin	2.6	U
72-55-9	4,4'-DDE	2.6	U
72-20-8	Endrin	2.6	~~U~~ UJ PD
33213-65-9	Endosulfan II	2.6	U
72-54-8	4,4'-DDD	2.6	U
1031-07-8	Endosulfan sulfate	2.6	U
50-29-3	4,4'-DDT	2.6	~~U~~ UJ PD
72-43-5	Methoxychlor	14	U
53494-70-5	Endrin ketone	2.6	U
7421-93-4	Endrin aldehyde	2.6	U
5103-71-9	alpha-Chlordane	1.4	U
5103-74-2	gamma-Chlordane	1.4	U
8001-35-2	Toxaphene	88	U
Surrogate amount spiked		7.04	

HH 4/9

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

TPSBSO002000N1DL

Name: SWL-TULSA

Code: SWOK Case No.: CH2M- SDG No.: 38676

rix: (soil/water) SOIL Lab Sample ID: 38676.14DL

ple wt/vol: 30.9 (g/mL) G Lab File ID:_____

oisture: 8 decanted: (Y/N) __ Date Received: 05/22/99

raction: (SepF/Cont/Sonc) SONC Date Extracted:05/29/99

centrated Extract Volume: 5000(uL) Date Analyzed: 06/09/99

ection Volume: 0.5(uL) Dilution Factor: 10.0

Cleanup: (Y/N) Y pH: 7.2 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	14	U
319-85-7	beta-BHC	14	U
319-86-8	delta-BHC	14	U
58-89-9	gamma-BHC (Lindane)	14	U
76-44-8	Heptachlor	14	U
309-00-2	Aldrin	14	U
1024-57-3	Heptachlor epoxide	14	U
959-98-8	Endosulfan I	14	U
60-57-1	Dieldrin	26	U
72-55-9	4,4'-DDE	26	U
72-20-8	Endrin	26	U
33213-65-9	Endosulfan II	26	U
72-54-8	4,4'-DDD	26	U
1031-07-8	Endosulfan sulfate	26	U
50-29-3	4,4'-DDT	26	U
72-43-5	Methoxychlor	140	U
53494-70-5	Endrin ketone	26	U
7421-93-4	Endrin aldehyde	26	U
5103-71-9	alpha-Chlordane	14	U
5103-74-2	gamma-Chlordane	14	U
8001-35-2	Toxaphene	880	U
	Surrogate amount spiked	7.04	

R DL

R DL

4/9

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPSBSO002004N1

Name: SWL-TULSA

Code: SWOK Case No.: CH2M- SDG No.: 38676

rix: (soil/water) SOIL Lab Sample ID: 38676.15

ple wt/vol: 31.1 (g/mL) G Lab File ID:_____

oisture: 15 decanted: (Y/N) __ Date Received: 05/22/99

raction: (SepF/Cont/Sonc) SONC Date Extracted:05/29/99

centrated Extract Volume: 5000(uL) Date Analyzed: 06/09/99

ection Volume: 0.5(uL) Dilution Factor: 1.0

: Cleanup: (Y/N) Y pH: 7.2 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	1.5	U
319-85-7	beta-BHC	1.5	U
319-86-8	delta-BHC	1.5	U
58-89-9	gamma-BHC (Lindane)	1.5	U
76-44-8	Heptachlor	1.5	U
309-00-2	Aldrin	1.5	U
1024-57-3	Heptachlor epoxide	1.5	U
959-98-8	Endosulfan I	1.5	U
60-57-1	Dieldrin	2.8	U
72-55-9	4,4'-DDE	2.8	U
72-20-8	Endrin	2.8	~~U~~ UJ PD
33213-65-9	Endosulfan II	2.8	U
72-54-8	4,4'-DDD	2.8	U
1031-07-8	Endosulfan sulfate	2.8	U
50-29-3	4,4'-DDT	2.8	~~U~~ UJ PD
72-43-5	Methoxychlor	15	U
53494-70-5	Endrin ketone	2.8	U
7421-93-4	Endrin aldehyde	2.8	U
5103-71-9	alpha-Chlordane	1.5	U
5103-74-2	gamma-Chlordane	1.5	U
8001-35-2	Toxaphene	94	U
	Surrogate amount spiked	7.57	

HL 4/9

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

TPSBSO002004N1DL

Name: SWL-TULSA

Code: SWOK Case No.: CH2M- SDG No.: 38676

rix: (soil/water) SOIL Lab Sample ID: 38676.15DL

ple wt/vol: 31.1 (g/mL) G Lab File ID:_____

oisture: 15 decanted: (Y/N) __ Date Received: 05/22/99

raction: (SepF/Cont/Sonc) SONC Date Extracted:05/29/99

centrated Extract Volume: 5000(uL) Date Analyzed: 06/09/99

ection Volume: 0.5(uL) Dilution Factor: 10.0

Cleanup: (Y/N) Y pH: 7.2 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	15	U
319-85-7	beta-BHC	15	U
319-86-8	delta-BHC	15	U
58-89-9	gamma-BHC (Lindane)	15	U
76-44-8	Heptachlor	15	U
309-00-2	Aldrin	15	U
1024-57-3	Heptachlor epoxide	15	U
959-98-8	Endosulfan I	15	U
60-57-1	Dieldrin	28	U
72-55-9	4,4'-DDE	28	U
72-20-8	Endrin	28	U
33213-65-9	Endosulfan II	28	U
72-54-8	4,4'-DDD	28	U
1031-07-8	Endosulfan sulfate	28	U
50-29-3	4,4'-DDT	28	U
72-43-5	Methoxychlor	150	U
53494-70-5	Endrin ketone	28	U
7421-93-4	Endrin aldehyde	28	U
5103-71-9	alpha-Chlordane	15	U
5103-74-2	gamma-Chlordane	15	U
8001-35-2	Toxaphene	940	U
	Surrogate amount spiked	7.57	

P DL R DL

AK 9/9

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPSBSO002006N1

Name: SWL-TULSA

Code: SWOK Case No.: CH2M- SDG No.: 38676

rix: (soil/water) SOIL Lab Sample ID: 38676.16

ple wt/vol: 32.5 (g/mL) G Lab File ID:_____

oisture: 12 decanted: (Y/N) __ Date Received: 05/22/99

raction: (SepF/Cont/Sonc) SONC Date Extracted:05/29/99

centrated Extract Volume: 5000(uL) Date Analyzed: 06/09/99

ection Volume: 0.5(uL) Dilution Factor: 1.0

Cleanup: (Y/N) Y pH: 7.2 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q	
319-84-6	alpha-BHC	1.4	U	
319-85-7	beta-BHC	1.4	U	
319-86-8	delta-BHC	1.4	U	
58-89-9	gamma-BHC (Lindane)	1.4	U	
76-44-8	Heptachlor	1.4	U	
309-00-2	Aldrin	1.4	U	
1024-57-3	Heptachlor epoxide	1.4	U	
959-98-8	Endosulfan I	1.4	U	
60-57-1	Dieldrin	2.6	U	
72-55-9	4,4'-DDE	2.6	U	
72-20-8	Endrin	2.6	~~U~~	UJ PD
33213-65-9	Endosulfan II	2.6	U	
72-54-8	4,4'-DDD	2.6	U	
1031-07-8	Endosulfan sulfate	2.6	U	
50-29-3	4,4'-DDT	2.6	~~U~~	UJ PD
72-43-5	Methoxychlor	14	U	
53494-70-5	Endrin ketone	2.6	U	
7421-93-4	Endrin aldehyde	2.6	U	
5103-71-9	alpha-Chlordane	1.4	U	
5103-74-2	gamma-Chlordane	1.4	U	
8001-35-2	Toxaphene	87	U	
	Surrogate amount spiked	6.99		

4/9

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

TPSBSO002006N1DL

Name: SWL-TULSA

Code: SWOK Case No.: CH2M- SDG No.: 38676

rix: (soil/water) SOIL Lab Sample ID: 38676.16DL

ple wt/vol: 32.5 (g/mL) G Lab File ID:_____

loisture: 12 decanted: (Y/N) __ Date Received: 05/22/99

raction: (SepF/Cont/Sonc) SONC Date Extracted:05/29/99

centrated Extract Volume: 5000(uL) Date Analyzed: 06/09/99

jection Volume: 0.5(uL) Dilution Factor: 10.0

Cleanup: (Y/N) Y pH: 7.2 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	14	U
319-85-7	beta-BHC	14	U
319-86-8	delta-BHC	14	U
58-89-9	gamma-BHC (Lindane)	14	U
76-44-8	Heptachlor	14	U
309-00-2	Aldrin	14	U
1024-57-3	Heptachlor epoxide	14	U
959-98-8	Endosulfan I	14	U
60-57-1	Dieldrin	26	U
72-55-9	4,4'-DDE	26	U
72-20-8	Endrin	26	U
33213-65-9	Endosulfan II	26	U
72-54-8	4,4'-DDD	26	U
1031-07-8	Endosulfan sulfate	26	U
50-29-3	4,4'-DDT	26	U
72-43-5	Methoxychlor	140	U
53494-70-5	Endrin ketone	26	U
7421-93-4	Endrin aldehyde	26	U
5103-71-9	alpha-Chlordane	14	U
5103-74-2	gamma-Chlordane	14	U
8001-35-2	Toxaphene	870	U
	Surrogate amount spiked	6.99	

R DL

R DL

4/9

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPSBSO003000N1

Name: SWL-TULSA

Code: SWOK Case No.: CH2M- SDG No.: 38676

rix: (soil/water) SOIL Lab Sample ID: 38676.17

ple wt/vol: 31.8 (g/mL) G Lab File ID:_____

loisture: 7 decanted: (Y/N) __ Date Received: 05/22/99

raction: (SepF/Cont/Sonc) SONC Date Extracted: 05/29/99

ncentrated Extract Volume: 5000 (uL) Date Analyzed: 06/09/99

jection Volume: 0.5 (uL) Dilution Factor: 1.0

Cleanup: (Y/N) Y pH: 7.2 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	1.3	U
319-85-7	beta-BHC	1.3	U
319-86-8	delta-BHC	1.3	U
58-89-9	gamma-BHC (Lindane)	1.3	U
76-44-8	Heptachlor	1.3	U
309-00-2	Aldrin	1.3	U
1024-57-3	Heptachlor epoxide	1.3	U
959-98-8	Endosulfan I	1.3	U
60-57-1	Dieldrin	2.5	U
72-55-9	4,4'-DDE	2.5	U
72-20-8	Endrin	2.5	~~U~~ UJ PD
33213-65-9	Endosulfan II	2.5	U
72-54-8	4,4'-DDD	2.5	U
1031-07-8	Endosulfan sulfate	2.5	U
50-29-3	4,4'-DDT	2.5	~~U~~ UJ PD
72-43-5	Methoxychlor	13	U
53494-70-5	Endrin ketone	2.5	U
7421-93-4	Endrin aldehyde	2.5	U
5103-71-9	alpha-Chlordane	1.3	U
5103-74-2	gamma-Chlordane	1.3	U
8001-35-2	Toxaphene	84	U
	Surrogate amount spiked	6.76	

HK 4/9

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

TPSBSO003000N1DL

..ame: SWL-TULSA

Code: SWOK Case No.: CH2M- SDG No.: 38676

rix: (soil/water) SOIL Lab Sample ID: 38676.17DL

ple wt/vol: 31.8 (g/mL) G Lab File ID:_____

oisture: 7 decanted: (Y/N) __ Date Received: 05/22/99

raction: (SepF/Cont/Sonc) SONC Date Extracted:05/29/99

centrated Extract Volume: 5000(uL) Date Analyzed: 06/09/99

ection Volume: 0.5(uL) Dilution Factor: 10.0

Cleanup: (Y/N) Y pH: 7.2 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	13	U
319-85-7	beta-BHC	13	U
319-86-8	delta-BHC	13	U
58-89-9	gamma-BHC (Lindane)	13	U
76-44-8	Heptachlor	13	U
309-00-2	Aldrin	13	U
1024-57-3	Heptachlor epoxide	13	U
959-98-8	Endosulfan I	13	U
60-57-1	Dieldrin	25	U
72-55-9	4,4'-DDE	25	U
72-20-8	Endrin	25	U
33213-65-9	Endosulfan II	25	U
72-54-8	4,4'-DDD	25	U
1031-07-8	Endosulfan sulfate	25	U
50-29-3	4,4'-DDT	25	U
72-43-5	Methoxychlor	130	U
53494-70-5	Endrin ketone	25	U
7421-93-4	Endrin aldehyde	25	U
5103-71-9	alpha-Chlordane	13	U
5103-74-2	gamma-Chlordane	13	U
8001-35-2	Toxaphene	840	U
Surrogate amount spiked		6.76	

R DL

R DL

4/9

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPSBSO003004N1

Name: SWL-TULSA

Code: SWOK Case No.: CH2M- SDG No.: 38676

Matrix: (soil/water) SOIL Lab Sample ID: 38676.18

Sample wt/vol: 31.8 (g/mL) G Lab File ID:_____

Moisture: 18 decanted: (Y/N) __ Date Received: 05/22/99

Extraction: (SepF/Cont/Sonc) SONC Date Extracted:05/29/99

Concentrated Extract Volume: 5000(uL) Date Analyzed: 06/09/99

Injection Volume: 0.5(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.2 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q	
319-84-6	alpha-BHC	1.5	U	
319-85-7	beta-BHC	1.5	U	
319-86-8	delta-BHC	1.5	U	
58-89-9	gamma-BHC (Lindane)	1.5	U	
76-44-8	Heptachlor	1.5	U	
309-00-2	Aldrin	1.5	U	
1024-57-3	Heptachlor epoxide	1.5	U	
959-98-8	Endosulfan I	1.5	U	
60-57-1	Dieldrin	2.9	U	
72-55-9	4,4'-DDE	2.9	U	
72-20-8	Endrin	2.9	~~U~~	UJ PD
33213-65-9	Endosulfan II	2.9	U	
72-54-8	4,4'-DDD	2.9	U	
1031-07-8	Endosulfan sulfate	2.9	U	
50-29-3	4,4'-DDT	2.9	~~U~~	UJ PD
72-43-5	Methoxychlor	15	U	
53494-70-5	Endrin ketone	2.9	U	
7421-93-4	Endrin aldehyde	2.9	U	
5103-71-9	alpha-Chlordane	1.5	U	
5103-74-2	gamma-Chlordane	1.5	U	
8001-35-2	Toxaphene	95	U	
	Surrogate amount spiked	7.67		

4/9

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

TPSBSO003004N1DL

ame: SWL-TULSA

Code: SWOK Case No.: CH2M- SDG No.: 38676

rix: (soil/water) SOIL Lab Sample ID: 38676.18DL

ple wt/vol: 31.8 (g/mL) G Lab File ID:_____

loisture: 18 decanted: (Y/N) __ Date Received: 05/22/99

raction: (SepF/Cont/Sonc) SONC Date Extracted:05/29/99

ncentrated Extract Volume: 5000(uL) Date Analyzed: 06/09/99

jection Volume: 0.5(uL) Dilution Factor: 10.0

Cleanup: (Y/N) Y pH: 7.2 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	15	U
319-85-7	beta-BHC	15	U
319-86-8	delta-BHC	15	U
58-89-9	gamma-BHC (Lindane)	15	U
76-44-8	Heptachlor	15	U
309-00-2	Aldrin	15	U
1024-57-3	Heptachlor epoxide	15	U
959-98-8	Endosulfan I	15	U
60-57-1	Dieldrin	29	U
72-55-9	4,4'-DDE	29	U
72-20-8	Endrin	29	U
33213-65-9	Endosulfan II	29	U
72-54-8	4,4'-DDD	29	U
1031-07-8	Endosulfan sulfate	29	U
50-29-3	4,4'-DDT	29	U
72-43-5	Methoxychlor	150	U
53494-70-5	Endrin ketone	29	U
7421-93-4	Endrin aldehyde	29	U
5103-71-9	alpha-Chlordane	15	U
5103-74-2	gamma-Chlordane	15	U
8001-35-2	Toxaphene	950	U
	Surrogate amount spiked	7.67	

R DL

R DL

HH 4/9

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPSBSO003006N1

...ame: SWL-TULSA

Code: SWOK Case No.: CH2M- SDG No.: 38676

rix: (soil/water) SOIL Lab Sample ID: 38676.19

ple wt/vol: 30.4 (g/mL) G Lab File ID:_____

loisture: 19 decanted: (Y/N) __ Date Received: 05/22/99

raction: (SepF/Cont/Sonc) SONC Date Extracted:05/29/99

icentrated Extract Volume: 5000(uL) Date Analyzed: 06/09/99

jection Volume: 0.5(uL) Dilution Factor: 1.0

Cleanup: (Y/N) Y pH: 7.2 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q	
319-84-6	alpha-BHC	1.6	U	
319-85-7	beta-BHC	1.6	U	
319-86-8	delta-BHC	1.6	U	
58-89-9	gamma-BHC (Lindane)	1.6	U	
76-44-8	Heptachlor	1.6	U	
309-00-2	Aldrin	1.6	U	
1024-57-3	Heptachlor epoxide	1.6	U	
959-98-8	Endosulfan I	1.6	U	
60-57-1	Dieldrin	3.0	U	
72-55-9	4,4'-DDE	3.0	U	
72-20-8	Endrin	3.0	~~U~~ UJ	PD
33213-65-9	Endosulfan II	3.0	U	
72-54-8	4,4'-DDD	3.0	U	
1031-07-8	Endosulfan sulfate	3.0	U	
50-29-3	4,4'-DDT	3.0	~~U~~ UJ	PD
72-43-5	Methoxychlor	16	U	
53494-70-5	Endrin ketone	3.0	U	
7421-93-4	Endrin aldehyde	3.0	U	
5103-71-9	alpha-Chlordane	1.6	U	
5103-74-2	gamma-Chlordane	1.6	U	
8001-35-2	Toxaphene	100	U	
	Surrogate amount spiked	8.12		

4/9

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

TPSBSO003006N1DL

Name: SWL-TULSA

Code: SWOK Case No.: CH2M- SDG No.: 38676

rix: (soil/water) SOIL Lab Sample ID: 38676.19DL

ple wt/vol: 30.4 (g/mL) G Lab File ID:_____

loisture: 19 decanted: (Y/N) __ Date Received: 05/22/99

raction: (SepF/Cont/Sonc) SONC Date Extracted:05/29/99

centrated Extract Volume: 5000(uL) Date Analyzed: 06/09/99

ection Volume: 0.5(uL) Dilution Factor: 10.0

Cleanup: (Y/N) Y pH: 7.2 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	16	U
319-85-7	beta-BHC	16	U
319-86-8	delta-BHC	16	U
58-89-9	gamma-BHC (Lindane)	16	U
76-44-8	Heptachlor	16	U
309-00-2	Aldrin	16	U
1024-57-3	Heptachlor epoxide	16	U
959-98-8	Endosulfan I	16	U
60-57-1	Dieldrin	30	U
72-55-9	4,4'-DDE	30	U
72-20-8	Endrin	30	U
33213-65-9	Endosulfan II	30	U
72-54-8	4,4'-DDD	30	U
1031-07-8	Endosulfan sulfate	30	U
50-29-3	4,4'-DDT	30	U
72-43-5	Methoxychlor	160	U
53494-70-5	Endrin ketone	30	U
7421-93-4	Endrin aldehyde	30	U
5103-71-9	alpha-Chlordane	16	U
5103-74-2	gamma-Chlordane	16	U
8001-35-2	Toxaphene	1000	U
	Surrogate amount spiked	8.12	

R DL

R DL

4/9

02426

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPSBSO004000N1

) Name: SWL-TULSA

) Code: SWOK Case No.: CH2M- SDG No.: 38676

:rix: (soil/water) SOIL Lab Sample ID: 38676.20

ıple wt/vol: 30.8 (g/mL) G Lab File ID:_____

Ioisture: 6 decanted: (Y/N) __ Date Received: 05/22/99

:raction: (SepF/Cont/Sonc) SONC Date Extracted:05/29/99

ıcentrated Extract Volume: 5000(uL) Date Analyzed: 06/09/99

jection Volume: 0.5(uL) Dilution Factor: 1.0

: Cleanup: (Y/N) Y pH: 7.2 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q	
319-84-6	alpha-BHC	1.3	U	
319-85-7	beta-BHC	1.3	U	
319-86-8	delta-BHC	1.3	U	
58-89-9	gamma-BHC (Lindane)	1.3	U	
76-44-8	Heptachlor	1.3	U	
309-00-2	Aldrin	1.3	U	
1024-57-3	Heptachlor epoxide	1.3	U	
959-98-8	Endosulfan I	1.3	U	
60-57-1	Dieldrin	2.6	U	
72-55-9	4,4'-DDE	31		J PD
72-20-8	Endrin	2.6	U	
33213-65-9	Endosulfan II	2.6	U	J PD
72-54-8	4,4'-DDD	16		
1031-07-8	Endosulfan sulfate	2.6	U	
50-29-3	4,4'-DDT	200	~~E~~	R LR
72-43-5	Methoxychlor	13	U	
53494-70-5	Endrin ketone	2.6	U	
7421-93-4	Endrin aldehyde	2.6	U	
5103-71-9	alpha-Chlordane	1.8	P	J ZC
5103-74-2	gamma-Chlordane	1.3	U	
8001-35-2	Toxaphene	86	U	
	Surrogate amount spiked	6.91		

HK 4/9

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

TPSBSO004000N1DL

Name: SWL-TULSA

Code: SWOK Case No.: CH2M- SDG No.: 38676

rix: (soil/water) SOIL Lab Sample ID: 38676.20DL

ple wt/vol: 30.8 (g/mL) G Lab File ID:_____

loisture: 6 decanted: (Y/N) __ Date Received: 05/22/99

raction: (SepF/Cont/Sonc) SONC Date Extracted:05/29/99

centrated Extract Volume: 5000(uL) Date Analyzed: 06/09/99

ection Volume: 0.5(uL) Dilution Factor: 10.0

Cleanup: (Y/N) Y pH: 7.2 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	13	U
319-85-7	beta-BHC	13	U
319-86-8	delta-BHC	13	U
58-89-9	gamma-BHC (Lindane)	13	U
76-44-8	Heptachlor	13	U
309-00-2	Aldrin	13	U
1024-57-3	Heptachlor epoxide	13	U
959-98-8	Endosulfan I	13	U
60-57-1	Dieldrin	26	U
72-55-9	4,4'-DDE	25	DJ
72-20-8	Endrin	26	U
33213-65-9	Endosulfan II	26	U
72-54-8	4,4'-DDD	2.8	DPJ
1031-07-8	Endosulfan sulfate	26	U
50-29-3	4,4'-DDT	240	D
72-43-5	Methoxychlor	130	U
53494-70-5	Endrin ketone	26	U
7421-93-4	Endrin aldehyde	26	U
5103-71-9	alpha-Chlordane	13	U
5103-74-2	gamma-Chlordane	13	U
8001-35-2	Toxaphene	860	U
	Surrogate amount spiked	6.91	

R DL

R DL

J PD

R DL

R DL

FORM I PEST

4/9

02428

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPSBSO004004N1

Name: SWL-TULSA

Code: SWOK Case No.: CH2M- SDG No.: 38676

rix: (soil/water) SOIL Lab Sample ID: 38676.23

ple wt/vol: 32.7 (g/mL) G Lab File ID:_____

oisture: 16 decanted: (Y/N) __ Date Received: 05/22/99

raction: (SepF/Cont/Sonc) SONC Date Extracted:05/29/99

centrated Extract Volume: 5000(uL) Date Analyzed: 06/09/99

ection Volume: 0.5(uL) Dilution Factor: 1.0

Cleanup: (Y/N) Y pH: 7.2 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q	
319-84-6	alpha-BHC	1.4	U	
319-85-7	beta-BHC	1.4	U	
319-86-8	delta-BHC	1.4	U	
58-89-9	gamma-BHC (Lindane)	1.4	U	
76-44-8	Heptachlor	1.4	U	
309-00-2	Aldrin	1.4	U	
1024-57-3	Heptachlor epoxide	1.4	U	
959-98-8	Endosulfan I	1.4	U	
60-57-1	Dieldrin	2.7	U	
72-55-9	4,4'-DDE	2.7	U	
72-20-8	Endrin	2.7	~~U~~	UJ PD
33213-65-9	Endosulfan II	2.7	U	
72-54-8	4,4'-DDD	2.7	U	
1031-07-8	Endosulfan sulfate	2.7	U	
50-29-3	4,4'-DDT	2.7	~~U~~	UJ PD
72-43-5	Methoxychlor	14	U	
53494-70-5	Endrin ketone	2.7	U	
7421-93-4	Endrin aldehyde	2.7	U	
5103-71-9	alpha-Chlordane	1.4	U	
5103-74-2	gamma-Chlordane	1.4	U	
8001-35-2	Toxaphene	91	U	
	Surrogate amount spiked	7.28		

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

TPSBSO004004N1DL

Name: SWL-TULSA

Code: SWOK Case No.: CH2M- SDG No.: 38676

Matrix: (soil/water) SOIL Lab Sample ID: 38676.23DL

Sample wt/vol: 32.7 (g/mL) G Lab File ID:_____

Moisture: 16 decanted: (Y/N) __ Date Received: 05/22/99

Extraction: (SepF/Cont/Sonc) SONC Date Extracted:05/29/99

Concentrated Extract Volume: 5000(uL) Date Analyzed: 06/09/99

Injection Volume: 0.5(uL) Dilution Factor: 10.0

GPC Cleanup: (Y/N) Y pH: 7.2 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	14	U
319-85-7	beta-BHC	14	U
319-86-8	delta-BHC	14	U
58-89-9	gamma-BHC (Lindane)	14	U
76-44-8	Heptachlor	14	U
309-00-2	Aldrin	14	U
1024-57-3	Heptachlor epoxide	14	U
959-98-8	Endosulfan I	14	U
60-57-1	Dieldrin	27	U
72-55-9	4,4'-DDE	27	U
72-20-8	Endrin	27	U
33213-65-9	Endosulfan II	27	U
72-54-8	4,4'-DDD	27	U
1031-07-8	Endosulfan sulfate	27	U
50-29-3	4,4'-DDT	27	U
72-43-5	Methoxychlor	140	U
53494-70-5	Endrin ketone	27	U
7421-93-4	Endrin aldehyde	27	U
5103-71-9	alpha-Chlordane	14	U
5103-74-2	gamma-Chlordane	14	U
8001-35-2	Toxaphene	910	U
	Surrogate amount spiked	7.28	

R DL

R DL

FORM I PEST

HK 4/9

0243D

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPSBSO004008N1

) Name: SWL-TULSA

) Code: SWOK Case No.: CH2M- SDG No.: 38676

:rix: (soil/water) SOIL Lab Sample ID: 38676.24

ıple wt/vol: 30.4 (g/mL) G Lab File ID:_____

ioisture: 21 decanted: (Y/N) __ Date Received: 05/22/99

:raction: (SepF/Cont/Sonc) SONC Date Extracted:05/29/99

ıcentrated Extract Volume: 5000(uL) Date Analyzed: 06/09/99

jection Volume: 0.5(uL) Dilution Factor: 1.0

: Cleanup: (Y/N) Y pH: 7.2 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q	
319-84-6	alpha-BHC	1.6	U	
319-85-7	beta-BHC	1.6	U	
319-86-8	delta-BHC	1.6	U	
58-89-9	gamma-BHC (Lindane)	1.6	U	
76-44-8	Heptachlor	1.6	U	
309-00-2	Aldrin	1.6	U	
1024-57-3	Heptachlor epoxide	1.6	U	
959-98-8	Endosulfan I	1.6	U	
60-57-1	Dieldrin	3.1	U	
72-55-9	4,4'-DDE	3.1	U	
72-20-8	Endrin	3.1	~~U~~	UT PD
33213-65-9	Endosulfan II	3.1	U	
72-54-8	4,4'-DDD	3.1	U	
1031-07-8	Endosulfan sulfate	3.1	U	
50-29-3	4,4'-DDT	3.1	~~U~~	UJ PD
72-43-5	Methoxychlor	16	U	
53494-70-5	Endrin ketone	3.1	U	
7421-93-4	Endrin aldehyde	3.1	U	
5103-71-9	alpha-Chlordane	1.6	U	
5103-74-2	gamma-Chlordane	1.6	U	
8001-35-2	Toxaphene	100	U	
	Surrogate amount spiked	8.33		

4/9

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

TPSBSO004008N1DL

Name: SWL-TULSA

Code: SWOK Case No.: CH2M- SDG No.: 38676

rix: (soil/water) SOIL Lab Sample ID: 38676.24DL

ple wt/vol: 30.4 (g/mL) G Lab File ID:_____

loisture: 21 decanted: (Y/N) __ Date Received: 05/22/99

raction: (SepF/Cont/Sonc) SONC Date Extracted:05/29/99

centrated Extract Volume: 5000(uL) Date Analyzed: 06/09/99

ection Volume: 0.5(uL) Dilution Factor: 10.0

Cleanup: (Y/N) Y pH: 7.2 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	16	U
319-85-7	beta-BHC	16	U
319-86-8	delta-BHC	16	U
58-89-9	gamma-BHC (Lindane)	16	U
76-44-8	Heptachlor	16	U
309-00-2	Aldrin	16	U
1024-57-3	Heptachlor epoxide	16	U
959-98-8	Endosulfan I	16	U
60-57-1	Dieldrin	31	U
72-55-9	4,4'-DDE	31	U
72-20-8	Endrin	31	U
33213-65-9	Endosulfan II	31	U
72-54-8	4,4'-DDD	31	U
1031-07-8	Endosulfan sulfate	31	U
50-29-3	4,4'-DDT	31	U
72-43-5	Methoxychlor	160	U
53494-70-5	Endrin ketone	31	U
7421-93-4	Endrin aldehyde	31	U
5103-71-9	alpha-Chlordane	16	U
5103-74-2	gamma-Chlordane	16	U
8001-35-2	Toxaphene	1000	U
	Surrogate amount spiked	8.33	

R DL

R DL

HR 4/9

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

WTPSBSO004008FD1

Name: SWL-TULSA

Code: SWOK Case No.: CH2M- SDG No.: 38676

rix: (soil/water) SOIL Lab Sample ID: 38676.25

ple wt/vol: 32.2 (g/mL) G Lab File ID:_____

oisture: 19 decanted: (Y/N) __ Date Received: 05/22/99

raction: (SepF/Cont/Sonc) SONC Date Extracted:05/29/99

centrated Extract Volume: 5000(uL) Date Analyzed: 06/09/99

ection Volume: 0.5(uL) Dilution Factor: 1.0

Cleanup: (Y/N) Y pH: 7.2 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	1.5	U
319-85-7	beta-BHC	1.5	U
319-86-8	delta-BHC	1.5	U
58-89-9	gamma-BHC (Lindane)	1.5	U
76-44-8	Heptachlor	1.5	U
309-00-2	Aldrin	1.5	U
1024-57-3	Heptachlor epoxide	1.5	U
959-98-8	Endosulfan I	1.5	U
60-57-1	Dieldrin	2.9	U
72-55-9	4,4'-DDE	2.9	U
72-20-8	Endrin	2.9	U
33213-65-9	Endosulfan II	2.9	U
72-54-8	4,4'-DDD	2.9	U
1031-07-8	Endosulfan sulfate	2.9	U
50-29-3	4,4'-DDT	2.9	U
72-43-5	Methoxychlor	15	U
53494-70-5	Endrin ketone	2.9	U
7421-93-4	Endrin aldehyde	2.9	U
5103-71-9	alpha-Chlordane	1.5	U
5103-74-2	gamma-Chlordane	1.5	U
8001-35-2	Toxaphene	95	U
	Surrogate amount spiked	7.67	

4/19

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

PSBSO004008FD1DL

Name: SWL-TULSA

Code: SWOK Case No.: CH2M- SDG No.: 38676

rix: (soil/water) SOIL Lab Sample ID: 38676.25DL

ple wt/vol: 32.2 (g/mL) G Lab File ID:_____

oisture: 19 decanted: (Y/N) __ Date Received: 05/22/99

raction: (SepF/Cont/Sonc) SONC Date Extracted:05/29/99

centrated Extract Volume: 5000(uL) Date Analyzed: 06/09/99

ection Volume: 0.5(uL) Dilution Factor: 10.0

Cleanup: (Y/N) Y pH: 7.2 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	15	U
319-85-7	beta-BHC	15	U
319-86-8	delta-BHC	15	U
58-89-9	gamma-BHC (Lindane)	15	U
76-44-8	Heptachlor	15	U
309-00-2	Aldrin	15	U
1024-57-3	Heptachlor epoxide	15	U
959-98-8	Endosulfan I	15	U
60-57-1	Dieldrin	29	U
72-55-9	4,4'-DDE	29	U
72-20-8	Endrin	29	U
33213-65-9	Endosulfan II	29	U
72-54-8	4,4'-DDD	29	U
1031-07-8	Endosulfan sulfate	29	U
50-29-3	4,4'-DDT	29	U
72-43-5	Methoxychlor	150	U
53494-70-5	Endrin ketone	29	U
7421-93-4	Endrin aldehyde	29	U
5103-71-9	alpha-Chlordane	15	U
5103-74-2	gamma-Chlordane	15	U
8001-35-2	Toxaphene	950	U
	Surrogate amount spiked	7.67	

R DL

R DL

FORM I PEST

4/9

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

WTPSBWQ004000EB1

Name: SWL-TULSA

Code: SWOK Case No.: CH2M- SDG No.: 38676

rix: (soil/water) WATER Lab Sample ID: 38676.26

ple wt/vol: 1000 (g/mL) ML Lab File ID:_____

oisture: _____ decanted: (Y/N) __ Date Received: 05/22/99

raction: (SepF/Cont/Sonc) SEPF Date Extracted:05/22/99

centrated Extract Volume: 10000(uL) Date Analyzed: 05/26/99

ection Volume: 0.5(uL) Dilution Factor: 1.0

: Cleanup: (Y/N) N pH: 6.8 Sulfur Cleanup: (Y/N) N

EB

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
319-84-6	alpha-BHC	0.040	U
319-85-7	beta-BHC	0.040	U
319-86-8	delta-BHC	0.040	U
58-89-9	gamma-BHC (Lindane)	0.040	U
76-44-8	Heptachlor	0.040	U
309-00-2	Aldrin	0.040	U
1024-57-3	Heptachlor epoxide	0.040	U
959-98-8	Endosulfan I	0.040	U
60-57-1	Dieldrin	0.080	U
72-55-9	4,4'-DDE	0.080	U
72-20-8	Endrin	0.080	U
33213-65-9	Endosulfan II	0.080	U
72-54-8	4,4'-DDD	0.080	U
1031-07-8	Endosulfan sulfate	0.080	U
50-29-3	4,4'-DDT	0.080	U
72-43-5	Methoxychlor	0.38	U
53494-70-5	Endrin ketone	0.080	U
7421-93-4	Endrin aldehyde	0.080	U
5103-71-9	alpha-Chlordane	0.040	U
5103-74-2	gamma-Chlordane	0.040	U
8001-35-2	Toxaphene	2.5	U
Surrogate amount spiked		0.20	

HK 4/9

Data Review and Validation for: GC Herbicides

Project Name & Task:	LAREDO AFB	IWTP	
Project # & Case/SDG:	147436.DV.ZZ	38706	
Methods:	☐ SW-846 8150B ☑ SW846 8151/8151A ☐ EPA 615 ☐ Other:		
Program:	☐ AFCEE ☐ NFESC ☐ Other	**Number of Samples:**	7 total
Field QC Samples:	1/2-FD/MD, 3/4/5 - MATRIX/MS/MSD, 7-EB		
Reviewed by & Date:	H. Kelly	4/12/2000	
Matrix:	☑ Water ☐ Soil ☐ Other		

Quality Control	Form #	Requirements	Check (If No* checked, see comments)	Flags Applied (see comments)
Data Pkg Complete (DP)	Pkg	All required deliverables in pkg.	☑ OK ☐ No* ☐ Not provided	☐ Flags Applied
	COC	All samples on COC reported	☑ OK ☐ No*	☐ Flags Applied
Holding Times (HT)	1	Extraction HT (water 7d, soil 14d)	☑ OK ☐ No*	☐ Flags Applied
	COC	Analysis HT (40d from extraction)	☑ OK ☐ No*	☐ Flags Applied
Surrogates (SS)	2	Method surrogates used	☑ OK ☐ No* ☐ Not provided	☑ Flags Applied
		Recovery Limits: ☑ Lab ☐ Meth	☐ OK ☑ No* ☐ Diluted out	
MS/MSD or MS/LD	3	Matrix Spikes Provided	☑ MS/MSD ☐ MS/LD ☐ None*	☐ Flags Applied
		Correct Spike Used	☑ OK ☐ No*	
		Acceptance Limits: ☑ Lab ☐ Meth	☐ OK ☑ No* ☐ Diluted out	
LCS (BS) ☑ LCS only ☐ LCS/LCSD	3	LCS per prep. batch	☑ OK ☐ No*	☐ Flags Applied
		Acceptance criteria met	☑ OK ☐ No*	
Blanks (MB,TB,EB, FB/AB)	1	Detects (> MDL or RL/CRQL)	☑ All ND ☐ see blnk wksht	☐ Flags Applied
Method/Lab Blank (MB)	4	MB per prep batch or 20 samples	☐ OK ☐ No*	
Initial Calibration (IC) (primary & confirmation)	6	Minimum levels per method	☑ OK ☐ No*	☐ Flags Applied
		Linearity criteria met	☑ OK ☐ No* ☐ see cal wksht	
Continuing Calib. Verif. (CC) (primary & confirmation)	7	Analyzed at proper frequency	☑ OK ☐ No*	☐ Flags Applied
		%diff or %drift criteria met	☐ OK ☑ No* ☐ see cal wksht	
	8	Int. Std. RT/Area criteria met	☐ OK ☐ No* ☑ N/A	
Internal Standards (IS)	"8"	Internal Standards used	☐ Yes ☑ No ☐ see comments	☐ Flags Applied
	"8"	Sample IS area criteria met	☐ OK ☐ No* ☐ N/A	
Sample Evaluation	1	All hits within cal. Range	☐ OK ☐ No* ☑ All ND	☐ Flags Applied
	8	Samples bracketed by CCV	☐ OK ☐ No*	
	10	Hits w/in RT windows	☐ OK ☐ No* ☐ N/A	
	10	Confirmation %D criteria met	☐ OK ☐ No* ☐ N/A	
	raw	Manual Integration performed	☐ No ☐ N/A ☐ see comments	
Field Duplicate (FD)	1	Precision of native vs Field Dup	☑ OK ☐ No* ☐ N/A	☐ Flags Applied

This sheet is applicable to multiple methods. All requirement items may not apply to every analytical method.

Case Narrative Comments: SURROGATES, MS/MSD

QC Item	Comments
SS	#3 - SURROGATE = 38/44 (49-130 limit)
	#4 MS - 41/63 (2nd column OK)
	#5 MSD 46/69 (2nd column OK)
	#6 - 93/142 (1st column OK)
	#7 - 98/162 (1st column OK)
	7/DG SAMPLE #3 J detects, UJ - non-detects

Data Review and Validation for: GC Herbicides

Project Name & Task:	LAREDO AFB	IWTP	
Project # & Case/SDG:	147436.DV.ZZ	38706	
Methods:	☐ SW-846 8150B ☑ ~~SW846~~ 8151/8151A ☐ EPA 615 ☐ Other:		
Program:	☐ AFCEE ☐ NFESC ☐ Other	**Number of Samples:**	7 total
Field QC Samples:			
Reviewed by & Date:	H. Kelly	4/12/2000	
Matrix:	☑ ~~Water~~ ☐ Soil ☐ Other		

MS/MSD — 2,4,5-TP (Silvex) recoveries low
MS = 24%, MSD = 15% (28-157 limits)
RPD = 42% (limit = 40)

PC — CCV 6/3/99 1121 - column #1 - OK (<15%)
2,4-D = 36.4
2,4,5-TP = 39.0
DCAA (surr) = 42.8
} on 2nd column

NO FLAGS Applied

1D

HERBICIDE ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPMWWG001000N1

Lab Name: SWL-TULSA

Lab Code: SWOK Case No.: CH2M-OKC SDG No.: 38706

Matrix: (soil/water) WATER Lab Sample ID: 38706.01

Sample wt/vol: 1000 (g/mL) ML Lab File ID:_____

% Moisture: _____ decanted: (Y/N) __ Date Received: 05/25/99

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted:05/26/99

Concentrated Extract Volume: 10000(uL) Date Analyzed: 06/03/99

Injection Volume: 0.5(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 6.6 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: UG/L	Q
94-75-7	2,4-D	2.5	U
93-72-1	2,4,5-TP(Silvex)	0.50	U MS
	Surrogate amount spiked	7.50	

FORM I

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1D

HERBICIDE ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

WTPMWWG001000FD1

Lab Name: SWL-TULSA

Lab Code: SWOK Case No.: CH2M-OKC SDG No.: 38706

Matrix: (soil/water) WATER Lab Sample ID: 38706.02

Sample wt/vol: 1000 (g/mL) ML Lab File ID:_____

% Moisture: _____ decanted: (Y/N) __ Date Received: 05/25/99

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted:05/26/99

Concentrated Extract Volume: 10000(uL) Date Analyzed: 06/03/99

Injection Volume: 0.5(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.1 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: UG/L	Q
94-75-7	2,4-D	2.5	U
93-72-1	2,4,5-TP(Silvex)	0.50	U
	Surrogate amount spiked	7.50	

FORM I

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1D

HERBICIDE ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPMWWG002000N1

Name: SWL-TULSA

Lab Code: SWOK Case No.: CH2M-OKC SDG No.: 38706

Matrix: (soil/water) WATER Lab Sample ID: 38706.03

Sample wt/vol: 1000 (g/mL) ML Lab File ID:_____

% Moisture: _____ decanted: (Y/N) __ Date Received: 05/25/99

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted:05/26/99

Concentrated Extract Volume: 10000(uL) Date Analyzed: 06/03/99

Injection Volume: 0.5(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 6.8 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: UG/L	Q	
94-75-7	2,4-D	2.5	~~U~~	UJ SS
93-72-1	2,4,5-TP(Silvex)	0.50	~~U~~	UJ SS
	Surrogate amount spiked	7.50		

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1D
HERBICIDE ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPMWWG003000N1

Lab Name: SWL-TULSA

Lab Code: SWOK Case No.: CH2M-OKC SDG No.: 38706

Matrix: (soil/water) WATER Lab Sample ID: 38706.06

Sample wt/vol: 1000 (g/mL) ML Lab File ID:_____

% Moisture: _____ decanted: (Y/N) __ Date Received: 05/25/99

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted:05/26/99

Concentrated Extract Volume: 10000(uL) Date Analyzed: 06/03/99

Injection Volume: 0.5(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 6.1 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: UG/L	Q
94-75-7	2,4-D	2.5	U
93-72-1	2,4,5-TP(Silvex)	0.50	~~U~~ UJ MS
	Surrogate amount spiked	7.50	

FORM I

4/12

02442

1D

HERBICIDE ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

WTPMWWQ002000EB1

Lab Name: SWL-TULSA

Lab Code: SWOK Case No.: CH2M-OKC SDG No.: 38706

Matrix: (soil/water) WATER Lab Sample ID: 38706.07

Sample wt/vol: 1000 (g/mL) ML Lab File ID: _____

% Moisture: _____ decanted: (Y/N) __ Date Received: 05/25/99

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted: 05/26/99

Concentrated Extract Volume: 10000(uL) Date Analyzed: 06/03/99

Injection Volume: 0.5(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.7 Sulfur Cleanup: (Y/N) N

EB

CAS NO.	COMPOUND	CONCENTRATION UNITS: UG/L	Q
94-75-7	2,4-D	2.5	U
93-72-1	2,4,5-TP(Silvex)	0.50	U
	Surrogate amount spiked	7.50	

FORM I

HL 4/12

Data Review and Validation for: GC Herbicides

Project Name & Task:	LAREDO AFB	IWTP
Project # & Case/SDG:	147436.DV.ZZ	38676
Methods:	☐ SW-846 8150B ☑ SW846 8151/8151A ☐ EPA 615 ☐ Other:	
Program:	☐ AFCEE ☐ NFESC ☐ Other	**Number of Samples:** 26 total
Field QC Samples:	10/11 + 24/25 - FDUP, 26-EB, 20/21/22 - NAT/MS/MSD, 1-MS/MSD	
Reviewed by & Date:	H. Kelly	4/9/2000
Matrix:	☑ Water ☑ Soil ☐ Other	

Quality Control	Form #	Requirements	Check (If No* checked, see comments)	Flags Applied (see comments)
Data Pkg Complete (DP)	Pkg	All required deliverables in pkg.	☑ OK ☐ No* ☐ Not provided	☐ Flags Applied
	COC	All samples on COC reported	☑ OK ☐ No*	☐ Flags Applied
Holding Times (HT)	1	Extraction HT (water 7d, soil 14d)	☐ OK ☑ No*	☑ Flags Applied
	COC	Analysis HT (40d from extraction)	☑ OK ☐ No*	☐ Flags Applied
Surrogates (SS)	2	Method surrogates used	☑ OK ☐ No* ☐ Not provided	☑ Flags Applied
		Recovery Limits: ☑ Lab ☐ Meth	☐ OK ☑ No* ☐ Diluted out	
MS/MSD or MS/LD	3	Matrix Spikes Provided	☑ MS/MSD ☐ MS/LD ☐ None*	☐ Flags Applied
		Correct Spike Used	☑ OK ☐ No*	
		Acceptance Limits: ☑ Lab ☐ Meth	☐ OK ☑ No* ☐ Diluted out	
LCS (BS) ☑ LCS only ☐ LCS/LCSD	3	LCS per prep. batch	☑ OK ☐ No*	☐ Flags Applied
		Acceptance criteria met	☐ OK ☑ No*	
Blanks (MB,TB,EB, FB/AB)	1	Detects (> MDL or RL/CRQL)	☑ All ND ☐ see blnk wksht	☐ Flags Applied
Method/Lab Blank (MB)	4	MB per prep batch or 20 samples	☑ OK ☐ No*	
Initial Calibration (IC) (primary & confirmation)	6	Minimum levels per method	☑ OK ☐ No*	☐ Flags Applied
		Linearity criteria met	☑ OK ☐ No* ☐ see cal wksht	
Continuing Calib. Verif. (CC) (primary & confirmation)	7	Analyzed at proper frequency	☑ OK ☐ No*	☐ Flags Applied
		%diff or %drift criteria met	☑ OK ☐ No* ☐ see cal wksht	
	8	Int. Std. RT/Area criteria met	☐ OK ☐ No* ☑ N/A	
Internal Standards (IS)	"8"	Internal Standards used	☐ Yes ☑ No ☐ see comments	☐ Flags Applied
	"8"	Sample IS area criteria met	☐ OK ☐ No* ☑ N/A	
Sample Evaluation	1	All hits within cal. Range	☐ OK ☐ No* ☑ All ND	☐ Flags Applied
	8	Samples bracketed by CCV	☐ OK ☐ No*	
	10	Hits w/in RT windows	☐ OK ☐ No* ☐ N/A	
	10	Confirmation %D criteria met	☐ OK ☐ No* ☐ N/A	
	raw	Manual Integration performed	☐ No ☐ N/A ☐ see comments	
Field Duplicate (FD)	1	Precision of native vs Field Dup	☑ OK ☐ No* ☐ N/A	☐ Flags Applied

This sheet is applicable to multiple methods. All requirement items may not apply to every analytical method.

Case Narrative Comments: SURROGATE / SPIKE Recoveries
- Re-extractions out of HT

QC Item	Comments
SS	Several samples (listed in Report) with 0%
MS	surrogate recoveries + others with recoveries
HT	< 30%. Also, MS/MSD + LCS on same day
	with low recoveries. All re-extractions
	OK, except for 2 samples with high recoveries.
	- Flag original extraction "R", flag re-ext. J/UJ due to HT

1D

HERBICIDE ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPMWS0001005N1

› Name: SWL-TULSA

› Code: SWOK Case No.: CH2M-OKC SDG No.: 38676

:rix: (soil/water) SOIL Lab Sample ID: 38676.02

ıple wt/vol: 50.1 (g/mL) G Lab File ID:_____

Moisture: 16 decanted: (Y/N) N Date Received: 05/22/99

:raction: (SepF/Cont/Sonc) SHAKER Date Extracted:05/26/99

ıcentrated Extract Volume: 10000(uL) Date Analyzed: 06/05/99

jection Volume: 0.5(uL) Dilution Factor: 1.0

: Cleanup: (Y/N) N pH: 8.1 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: UG/KG	Q
94-75-7	2,4-D	83	U
93-72-1	2,4,5-TP(Silvex)	12	U
	Surrogate amount spiked	178.21	

FORM I

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1D

HERBICIDE ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPMWS0001007N1

) Name: SWL-TULSA

) Code: SWOK Case No.: CH2M-OKC SDG No.: 38676

:rix: (soil/water) SOIL Lab Sample ID: 38676.03

ıple wt/vol: 50.0 (g/mL) G Lab File ID:_____

Moisture: 21 decanted: (Y/N) N Date Received: 05/22/99

:raction: (SepF/Cont/Sonc) SHAKER Date Extracted:05/26/99

ıcentrated Extract Volume: 10000(uL) Date Analyzed: 06/05/99

jection Volume: 0.5(uL) Dilution Factor: 1.0

C Cleanup: (Y/N) N pH: 8.3 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: UG/KG	Q
94-75-7	2,4-D	89	U
93-72-1	2,4,5-TP(Silvex)	13	U
	Surrogate amount spiked	189.87	

FORM I

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1D

HERBICIDE ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPMWS0002000N1

) ..ame: SWL-TULSA

) Code: SWOK Case No.: CH2M-OKC SDG No.: 38676

:rix: (soil/water) SOIL Lab Sample ID: 38676.04

ıple wt/vol: 50.2 (g/mL) G Lab File ID:_____

Moisture: 7 decanted: (Y/N) N Date Received: 05/22/99

:raction: (SepF/Cont/Sonc) SHAKER Date Extracted:05/26/99

ıcentrated Extract Volume: 10000(uL) Date Analyzed: 06/05/99

jection Volume: 0.5(uL) Dilution Factor: 1.0

C Cleanup: (Y/N) N pH: 8.2 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: UG/KG	Q
94-75-7	2,4-D	75	U
93-72-1	2,4,5-TP(Silvex)	11	U
	Surrogate amount spiked	160.65	

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1D

HERBICIDE ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPMWS0002004N1

Name: SWL-TULSA

Code: SWOK Case No.: CH2M-OKC SDG No.: 38676

rix: (soil/water) SOIL Lab Sample ID: 38676.05

ple wt/vol: 50.1 (g/mL) G Lab File ID:_____

loisture: 16 decanted: (Y/N) N Date Received: 05/22/99

raction: (SepF/Cont/Sonc) SHAKER Date Extracted:05/26/99

ıcentrated Extract Volume: 10000(uL) Date Analyzed: 06/05/99

ection Volume: 0.5(uL) Dilution Factor: 1.0

Cleanup: (Y/N) N pH: 8.2 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: UG/KG	Q
94-75-7	2,4-D	83	U
93-72-1	2,4,5-TP(Silvex)	12	U
	Surrogate amount spiked	178.21	

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1D

HERBICIDE ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPMWS0002007N1

Name: SWL-TULSA

Code: SWOK Case No.: CH2M-OKC SDG No.: 38676

rix: (soil/water) SOIL Lab Sample ID: 38676.06

ple wt/vol: 50.0 (g/mL) G Lab File ID:_____

loisture: 21 decanted: (Y/N) N Date Received: 05/22/99

raction: (SepF/Cont/Sonc) SHAKER Date Extracted:05/26/99

icentrated Extract Volume: 10000(uL) Date Analyzed: 06/05/99

ection Volume: 0.5(uL) Dilution Factor: 1.0

Cleanup: (Y/N) N pH: 8.4 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: UG/KG	Q
94-75-7	2,4-D	89	U
93-72-1	2,4,5-TP(Silvex)	13	U
	Surrogate amount spiked	189.87	

FORM I

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1D

HERBICIDE ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPMWS0003000N1

› Name: SWL-TULSA

› Code: SWOK Case No.: CH2M-OKC SDG No.: 38676

:rix: (soil/water) SOIL Lab Sample ID: 38676.07

ıple wt/vol: 50.2 (g/mL) G Lab File ID:_____

Ioisture: 5 decanted: (Y/N) N Date Received: 05/22/99

:raction: (SepF/Cont/Sonc) SHAKER Date Extracted:05/26/99

ıcentrated Extract Volume: 10000(uL) Date Analyzed: 06/05/99

jection Volume: 0.5(uL) Dilution Factor: 1.0

: Cleanup: (Y/N) N pH: 7.2 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: UG/KG	Q
94-75-7	2,4-D	73	U
93-72-1	2,4,5-TP(Silvex)	10	U
	Surrogate amount spiked	157.27	

FORM I

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02451

1D

HERBICIDE ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPMWS0003006N1

) Name: SWL-TULSA

) Code: SWOK Case No.: CH2M-OKC SDG No.: 38676

rix: (soil/water) SOIL Lab Sample ID: 38676.08

ıple wt/vol: 50.0 (g/mL) G Lab File ID:_____

loisture: 19 decanted: (Y/N) N Date Received: 05/22/99

:raction: (SepF/Cont/Sonc) SHAKER Date Extracted:05/26/99

ıcentrated Extract Volume: 10000(uL) Date Analyzed: 06/05/99

jection Volume: 0.5(uL) Dilution Factor: 1.0

: Cleanup: (Y/N) N pH: 7.3 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: UG/KG	Q
94-75-7	2,4-D	86	U
93-72-1	2,4,5-TP(Silvex)	12	U
	Surrogate amount spiked	185.19	

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1D

HERBICIDE ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPMWS0003012N1

Name: SWL-TULSA

Code: SWOK Case No.: CH2M-OKC SDG No.: 38676

rix: (soil/water) SOIL Lab Sample ID: 38676.09

ple wt/vol: 50.0 (g/mL) G Lab File ID:_____

loisture: 12 decanted: (Y/N) N Date Received: 05/22/99

raction: (SepF/Cont/Sonc) SHAKER Date Extracted:05/26/99

ncentrated Extract Volume: 10000(uL) Date Analyzed: 06/05/99

jection Volume: 0.5(uL) Dilution Factor: 1.0

Cleanup: (Y/N) N pH: 7.3 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: UG/KG	Q
94-75-7	2,4-D	80	U
93-72-1	2,4,5-TP(Silvex)	11	U
	Surrogate amount spiked	170.45	

FORM I

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1D

HERBICIDE ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPSBS0001000N1

Name: SWL-TULSA

Code: SWOK Case No.: CH2M-OKC SDG No.: 38676

rix: (soil/water) SOIL Lab Sample ID: 38676.10

ple wt/vol: 50.2 (g/mL) G Lab File ID:_____

loisture: 11 decanted: (Y/N) N Date Received: 05/22/99

raction: (SepF/Cont/Sonc) SHAKER Date Extracted:05/26/99

ncentrated Extract Volume: 10000(uL) Date Analyzed: 06/05/99

jection Volume: 0.5(uL) Dilution Factor: 1.0

C Cleanup: (Y/N) N pH: 7.3 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: UG/KG	Q
94-75-7	2,4-D	78	U
93-72-1	2,4,5-TP(Silvex)	11	U
	Surrogate amount spiked	167.87	

FORM I

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1D

HERBICIDE ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

WTPSBS0001000FD1

Name: SWL-TULSA

Code: SWOK Case No.: CH2M-OKC SDG No.: 38676

rix: (soil/water) SOIL Lab Sample ID: 38676.11

ple wt/vol: 50.1 (g/mL) G Lab File ID:_____

loisture: 11 decanted: (Y/N) N Date Received: 05/22/99

raction: (SepF/Cont/Sonc) SHAKER Date Extracted:05/26/99

ncentrated Extract Volume: 10000(uL) Date Analyzed: 06/05/99

jection Volume: 0.5(uL) Dilution Factor: 1.0

Cleanup: (Y/N) N pH: 7.3 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: UG/KG	Q
94-75-7	2,4-D	78	U
93-72-1	2,4,5-TP(Silvex)	11	U
	Surrogate amount spiked	168.20	

FORM I

4/4/9

02455

1D
HERBICIDE ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPSBS0001004N1

› Name: SWL-TULSA

› Code: SWOK Case No.: CH2M-OKC SDG No.: 38676

:rix: (soil/water) SOIL Lab Sample ID: 38676.12

ıple wt/vol: 50.0 (g/mL) G Lab File ID:_____

Ioisture: 19 decanted: (Y/N) N Date Received: 05/22/99

:raction: (SepF/Cont/Sonc) SHAKER Date Extracted:05/26/99

ıcentrated Extract Volume: 10000(uL) Date Analyzed: 06/05/99

jection Volume: 0.5(uL) Dilution Factor: 1.0

: Cleanup: (Y/N) N pH: 7.3 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: UG/KG	Q
94-75-7	2,4-D	86	U
93-72-1	2,4,5-TP(Silvex)	12	U
	Surrogate amount spiked	185.19	

FORM I

4/9

1D

HERBICIDE ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPSBSO001006N1

) Name: SWL-TULSA

) Code: SWOK Case No.: CH2M-OKC SDG No.: 38676

:rix: (soil/water) SOIL Lab Sample ID: 38676.13

ıple wt/vol: 50.1 (g/mL) G Lab File ID:_____

loisture: 21 decanted: (Y/N) N Date Received: 05/22/99

:raction: (SepF/Cont/Sonc) SHAKER Date Extracted:05/28/99

ıcentrated Extract Volume: 10000(uL) Date Analyzed: 06/08/99

jection Volume: 0.5(uL) Dilution Factor: 1.0

: Cleanup: (Y/N) N pH: 7.3 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: UG/KG	Q		
94-75-7	2,4-D	88	U	R	SS
93-72-1	2,4,5-TP(Silvex)	13	U	R	SS
	Surrogate amount spiked	189.49			

FORM I

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1D

HERBICIDE ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

TPSBSO001006N1RE

ame: SWL-TULSA

Code: SWOK Case No.: CH2M-OKC SDG No.: 38676

rix: (soil/water) SOIL Lab Sample ID: 38676.13RE

ple wt/vol: 50.0 (g/mL) G Lab File ID:_____

loisture: 21 decanted: (Y/N) N Date Received: 05/22/99

raction: (SepF/Cont/Sonc) SHAKER Date Extracted:06/16/99

ncentrated Extract Volume: 10000(uL) Date Analyzed: 06/19/99

jection Volume: 0.5(uL) Dilution Factor: 1.0

Cleanup: (Y/N) N pH: 7.3 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: UG/KG	Q	
94-75-7	2,4-D	89	U	UJ HT
93-72-1	2,4,5-TP(Silvex)	13	U	UJ HT
	Surrogate amount spiked	189.87		

FORM I

HH 4/9

1D

HERBICIDE ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPSBSO002000N1

) Name: SWL-TULSA

) Code: SWOK Case No.: CH2M-OKC SDG No.: 38676

:rix: (soil/water) SOIL Lab Sample ID: 38676.14

:ple wt/vol: 50.0 (g/mL) G Lab File ID:_____

Moisture: 8 decanted: (Y/N) N Date Received: 05/22/99

:raction: (SepF/Cont/Sonc) SHAKER Date Extracted:05/28/99

:centrated Extract Volume: 10000(uL) Date Analyzed: 06/08/99

jection Volume: 0.5(uL) Dilution Factor: 1.0

C Cleanup: (Y/N) N pH: 7.2 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: UG/KG	Q		
94-75-7	2,4-D	76	U	R	55
93-72-1	2,4,5-TP(Silvex)	11	U	R	55
	Surrogate amount spiked	163.04			

FORM I

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1D

HERBICIDE ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

TPSBSO002000N1RE

ame: SWL-TULSA

Code: SWOK Case No.: CH2M-OKC SDG No.: 38676

rix: (soil/water) SOIL Lab Sample ID: 38676.14RE

ple wt/vol: 50.1 (g/mL) G Lab File ID:_____

loisture: 8 decanted: (Y/N) N Date Received: 05/22/99

raction: (SepF/Cont/Sonc) SHAKER Date Extracted:06/16/99

centrated Extract Volume: 10000(uL) Date Analyzed: 06/19/99

ection Volume: 0.5(uL) Dilution Factor: 1.0

Cleanup: (Y/N) N pH: 7.2 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: UG/KG	Q	
94-75-7	2,4-D	76	U	UJ
93-72-1	2,4,5-TP(Silvex)	11	U	UJ
	Surrogate amount spiked	162.72		

FORM I

4/9

02460

1D

HERBICIDE ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPSBSO002004N1

› Name: SWL-TULSA

› Code: SWOK Case No.: CH2M-OKC SDG No.: 38676

:rix: (soil/water) SOIL Lab Sample ID: 38676.15

ıple wt/vol: 50.2 (g/mL) G Lab File ID:_____

Moisture: 15 decanted: (Y/N) N Date Received: 05/22/99

:raction: (SepF/Cont/Sonc) SHAKER Date Extracted:05/28/99

ıcentrated Extract Volume: 10000(uL) Date Analyzed: 06/08/99

jection Volume: 0.5(uL) Dilution Factor: 1.0

: Cleanup: (Y/N) N pH: 7.2 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: UG/KG	Q		
94-75-7	2,4-D	82	U	R	SS
93-72-1	2,4,5-TP(Silvex)	12	U	R	SS
	Surrogate amount spiked	175.77			

FORM I

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02461

1D

HERBICIDE ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

TPSBSO002004N1RE

Name: SWL-TULSA

Code: SWOK Case No.: CH2M-OKC SDG No.: 38676

rix: (soil/water) SOIL Lab Sample ID: 38676.15RE

ple wt/vol: 50.0 (g/mL) G Lab File ID:_____

loisture: 15 decanted: (Y/N) N Date Received: 05/22/99

raction: (SepF/Cont/Sonc) SHAKER Date Extracted:06/16/99

ıcentrated Extract Volume: 10000(uL) Date Analyzed: 06/19/99

jection Volume: 0.5(uL) Dilution Factor: 1.0

Cleanup: (Y/N) N pH: 7.2 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: UG/KG	Q	
94-75-7	2,4-D	82	U	UJ HT
93-72-1	2,4,5-TP(Silvex)	12	U	UJ HT
	Surrogate amount spiked	176.47		

FORM I

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02462

1D

HERBICIDE ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPSBSO002006N1

Name: SWL-TULSA

Code: SWOK Case No.: CH2M-OKC SDG No.: 38676

rix: (soil/water) SOIL Lab Sample ID: 38676.16

ple wt/vol: 50.1 (g/mL) G Lab File ID:_____

loisture: 12 decanted: (Y/N) N Date Received: 05/22/99

raction: (SepF/Cont/Sonc) SHAKER Date Extracted:05/28/99

ncentrated Extract Volume: 10000(uL) Date Analyzed: 06/08/99

jection Volume: 0.5(uL) Dilution Factor: 1.0

Cleanup: (Y/N) N pH: 7.2 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: UG/KG	Q		
94-75-7	2,4-D	79	U	R	SS
93-72-1	2,4,5-TP(Silvex)	11	U	R	SS
	Surrogate amount spiked	170.11			

FORM I

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1D
HERBICIDE ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

TPSBSO002006N1RE

Name: SWL-TULSA

Code: SWOK Case No.: CH2M-OKC SDG No.: 38676

rix: (soil/water) SOIL Lab Sample ID: 38676.16RE

ple wt/vol: 50.0 (g/mL) G Lab File ID:_____

oisture: 12 decanted: (Y/N) N Date Received: 05/22/99

raction: (SepF/Cont/Sonc) SHAKER Date Extracted:06/16/99

centrated Extract Volume: 10000(uL) Date Analyzed: 06/19/99

ection Volume: 0.5(uL) Dilution Factor: 1.0

Cleanup: (Y/N) N pH: 7.2 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: UG/KG	Q	
94-75-7	2,4-D	80	U	UJ HT
93-72-1	2,4,5-TP(Silvex)	11	U	UJ HT
	Surrogate amount spiked	170.45		

FORM I

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02464

1D
HERBICIDE ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPSBSO003000N1

› Name: SWL-TULSA

› Code: SWOK Case No.: CH2M-OKC SDG No.: 38676

:rix: (soil/water) SOIL Lab Sample ID: 38676.17

ıple wt/vol: 50.0 (g/mL) G Lab File ID:_____

Moisture: 7 decanted: (Y/N) N Date Received: 05/22/99

:raction: (SepF/Cont/Sonc) SHAKER Date Extracted:05/28/99

ıcentrated Extract Volume: 10000(uL) Date Analyzed: 06/08/99

jection Volume: 0.5(uL) Dilution Factor: 1.0

: Cleanup: (Y/N) N pH: 7.2 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: UG/KG	Q	
94-75-7	2,4-D	75	U	R 55
93-72-1	2,4,5-TP(Silvex)	11	U	R 55
	Surrogate amount spiked	161.29		

FORM I

4/9

1D

HERBICIDE ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

TPSBSO003000N1RE

) Name: SWL-TULSA

) Code: SWOK Case No.: CH2M-OKC SDG No.: 38676

:rix: (soil/water) SOIL Lab Sample ID: 38676.17RE

ıple wt/vol: 50.1 (g/mL) G Lab File ID:_____

Moisture: 7 decanted: (Y/N) N Date Received: 05/22/99

:raction: (SepF/Cont/Sonc) SHAKER Date Extracted:06/16/99

ıcentrated Extract Volume: 10000(uL) Date Analyzed: 06/19/99

jection Volume: 0.5(uL) Dilution Factor: 1.0

C Cleanup: (Y/N) N pH: 7.2 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: UG/KG	Q	
94-75-7	2,4-D	75	U	UJ HT
93-72-1	2,4,5-TP(Silvex)	11	U	UJ HT
	Surrogate amount spiked	160.97		

FORM I

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1D

HERBICIDE ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPSBSO003004N1

) Name: SWL-TULSA

) Code: SWOK Case No.: CH2M-OKC SDG No.: 38676

.rix: (soil/water) SOIL Lab Sample ID: 38676.18

ıple wt/vol: 50.0 (g/mL) G Lab File ID:_____

loisture: 18 decanted: (Y/N) N Date Received: 05/22/99

:raction: (SepF/Cont/Sonc) SHAKER Date Extracted:05/28/99

ıcentrated Extract Volume: 10000(uL) Date Analyzed: 06/08/99

jection Volume: 0.5(uL) Dilution Factor: 1.0

: Cleanup: (Y/N) N pH: 7.2 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: UG/KG	Q	
94-75-7	2,4-D	85	U	R 55
93-72-1	2,4,5-TP(Silvex)	12	U	R 55
	Surrogate amount spiked	182.93		

FORM I

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02467

1D

HERBICIDE ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

TPSBSO003004N1RE

Name: SWL-TULSA

Code: SWOK Case No.: CH2M-OKC SDG No.: 38676

rix: (soil/water) SOIL Lab Sample ID: 38676.18RE

ple wt/vol: 50.1 (g/mL) G Lab File ID:_____

loisture: 18 decanted: (Y/N) N Date Received: 05/22/99

raction: (SepF/Cont/Sonc) SHAKER Date Extracted:06/16/99

centrated Extract Volume: 10000(uL) Date Analyzed: 06/19/99

ection Volume: 0.5(uL) Dilution Factor: 1.0

Cleanup: (Y/N) N pH: 7.2 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: UG/KG	Q	
94-75-7	2,4-D	85	U	UJ HT
93-72-1	2,4,5-TP(Silvex)	12	U	UJ HT
	Surrogate amount spiked	182.56		

FORM I

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1D

HERBICIDE ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPSBSO003006N1

› Name: SWL-TULSA

› Code: SWOK Case No.: CH2M-OKC SDG No.: 38676

:rix: (soil/water) SOIL Lab Sample ID: 38676.19

ıple wt/vol: 50.0 (g/mL) G Lab File ID:_____

Moisture: 19 decanted: (Y/N) N Date Received: 05/22/99

:raction: (SepF/Cont/Sonc) SHAKER Date Extracted:05/28/99

ıcentrated Extract Volume: 10000(uL) Date Analyzed: 06/08/99

jection Volume: 0.5(uL) Dilution Factor: 1.0

C Cleanup: (Y/N) N pH: 7.2 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: UG/KG	Q		
94-75-7	2,4-D	86	U	P	55
93-72-1	2,4,5-TP(Silvex)	12	U	P	55
	Surrogate amount spiked	185.19			

FORM I

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1D

HERBICIDE ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

TPSBSO003006N1RE

Name: SWL-TULSA

Code: SWOK Case No.: CH2M-OKC SDG No.: 38676

rix: (soil/water) SOIL Lab Sample ID: 38676.19RE

ple wt/vol: 50.0 (g/mL) G Lab File ID:_____

oisture: 19 decanted: (Y/N) N Date Received: 05/22/99

raction: (SepF/Cont/Sonc) SHAKER Date Extracted:06/16/99

centrated Extract Volume: 10000(uL) Date Analyzed: 06/19/99

ection Volume: 0.5(uL) Dilution Factor: 1.0

Cleanup: (Y/N) N pH: 7.2 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: UG/KG	Q	
94-75-7	2,4-D	86	U	UJ HT
93-72-1	2,4,5-TP(Silvex)	12	U	UJ HT
	Surrogate amount spiked	185.19		

FORM I

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1D

HERBICIDE ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPSBSO004000N1

Name: SWL-TULSA

Code: SWOK Case No.: CH2M-OKC SDG No.: 38676

rix: (soil/water) SOIL Lab Sample ID: 38676.20

ıple wt/vol: 50.1 (g/mL) G Lab File ID:_____

Ioisture: 6 decanted: (Y/N) N Date Received: 05/22/99

:raction: (SepF/Cont/Sonc) SHAKER Date Extracted:05/28/99

ıcentrated Extract Volume: 10000(uL) Date Analyzed: 06/08/99

jection Volume: 0.5(uL) Dilution Factor: 1.0

: Cleanup: (Y/N) N pH: 7.2 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: UG/KG	Q	
94-75-7	2,4-D	74	U	R 55
93-72-1	2,4,5-TP(Silvex)	11	U	R 55
	Surrogate amount spiked	159.26		

FORM I

4/9

02471

1D

HERBICIDE ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

TPSBSO004000N1RE

Name: SWL-TULSA

Code: SWOK Case No.: CH2M-OKC SDG No.: 38676

rix: (soil/water) SOIL Lab Sample ID: 38676.20RE

ple wt/vol: 50.0 (g/mL) G Lab File ID:_____

Moisture: 6 decanted: (Y/N) N Date Received: 05/22/99

raction: (SepF/Cont/Sonc) SHAKER Date Extracted:06/16/99

ncentrated Extract Volume: 10000(uL) Date Analyzed: 06/19/99

jection Volume: 0.5(uL) Dilution Factor: 1.0

Cleanup: (Y/N) N pH: 7.2 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: UG/KG	Q	
94-75-7	2,4-D	74	U	UJ HT
93-72-1	2,4,5-TP(Silvex)	11	U	UJ HT
	Surrogate amount spiked	159.57		

FORM I

HH 4/9

1D

HERBICIDE ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPSBSO004004N1

Name: SWL-TULSA

Code: SWOK Case No.: CH2M-OKC SDG No.: 38676

rix: (soil/water) SOIL Lab Sample ID: 38676.23

ple wt/vol: 50.2 (g/mL) G Lab File ID:_____

loisture: 16 decanted: (Y/N) N Date Received: 05/22/99

raction: (SepF/Cont/Sonc) SHAKER Date Extracted:05/28/99

ıcentrated Extract Volume: 10000(uL) Date Analyzed: 06/08/99

ection Volume: 0.5(uL) Dilution Factor: 1.0

Cleanup: (Y/N) N pH: 7.2 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: UG/KG	Q	
94-75-7	2,4-D	83	U	R 55
93-72-1	2,4,5-TP(Silvex)	12	U	R 55
	Surrogate amount spiked	177.86		

FORM I

4/9

02473

1D

HERBICIDE ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

TPSBSO004004N1RE

Name: SWL-TULSA

Code: SWOK Case No.: CH2M-OKC SDG No.: 38676

rix: (soil/water) SOIL Lab Sample ID: 38676.23RE

ple wt/vol: 50.0 (g/mL) G Lab File ID:_____

oisture: 16 decanted: (Y/N) N Date Received: 05/22/99

raction: (SepF/Cont/Sonc) SHAKER Date Extracted:06/16/99

centrated Extract Volume: 10000(uL) Date Analyzed: 06/19/99

ection Volume: 0.5(uL) Dilution Factor: 1.0

Cleanup: (Y/N) N pH: 7.2 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: UG/KG	Q	
94-75-7	2,4-D	83	U	UJ HT
93-72-1	2,4,5-TP(Silvex)	12	U	UJ HT
	Surrogate amount spiked	178.57		

FORM I

4/19

02474

1D

HERBICIDE ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPSBSO004008N1

› Name: SWL-TULSA

› Code: SWOK Case No.: CH2M-OKC SDG No.: 38676

:rix: (soil/water) SOIL Lab Sample ID: 38676.24

ıple wt/vol: 50.1 (g/mL) G Lab File ID:_____

ioisture: 21 decanted: (Y/N) N Date Received: 05/22/99

:raction: (SepF/Cont/Sonc) SHAKER Date Extracted:05/28/99

ıcentrated Extract Volume: 10000(uL) Date Analyzed: 06/08/99

jection Volume: 0.5(uL) Dilution Factor: 1.0

: Cleanup: (Y/N) N pH: 7.2 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: UG/KG	Q		
94-75-7	2,4-D	88	U	R	SS
93-72-1	2,4,5-TP(Silvex)	13	U	R	SS
	Surrogate amount spiked	189.49			

FORM I

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02475

1D

HERBICIDE ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

TPSBSO004008N1RE

Name: SWL-TULSA

Code: SWOK Case No.: CH2M-OKC SDG No.: 38676

rix: (soil/water) SOIL Lab Sample ID: 38676.24RE

ple wt/vol: 50.1 (g/mL) G Lab File ID:_____

loisture: 21 decanted: (Y/N) N Date Received: 05/22/99

raction: (SepF/Cont/Sonc) SHAKER Date Extracted:06/16/99

ncentrated Extract Volume: 10000(uL) Date Analyzed: 06/19/99

jection Volume: 0.5(uL) Dilution Factor: 1.0

Cleanup: (Y/N) N pH: 7.2 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: UG/KG	Q	
94-75-7	2,4-D	88	U	UJ H1
93-72-1	2,4,5-TP(Silvex)	13	U	UJ H1
	Surrogate amount spiked	189.49		

FORM I

HK 4/9

02476

1D

HERBICIDE ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

WTPSBSO004008FD1

) Name: SWL-TULSA

) Code: SWOK Case No.: CH2M-OKC SDG No.: 38676

.rix: (soil/water) SOIL Lab Sample ID: 38676.25

ıple wt/vol: 50.2 (g/mL) G Lab File ID:_____

loisture: 19 decanted: (Y/N) N Date Received: 05/22/99

:raction: (SepF/Cont/Sonc) SHAKER Date Extracted:05/28/99

ıcentrated Extract Volume: 10000(uL) Date Analyzed: 06/08/99

jection Volume: 0.5(uL) Dilution Factor: 1.0

: Cleanup: (Y/N) N pH: 7.2 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: UG/KG	Q		
94-75-7	2,4-D	86	U	R	SS
93-72-1	2,4,5-TP(Silvex)	12	U	R	SS
	Surrogate amount spiked	184.45			

FORM I

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02477

1D
HERBICIDE ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

PSBSO004008FD1RE

Name: SWL-TULSA

Code: SWOK Case No.: CH2M-OKC SDG No.: 38676

rix: (soil/water) SOIL Lab Sample ID: 38676.25RE

ple wt/vol: 50.1 (g/mL) G Lab File ID:_____

oisture: 19 decanted: (Y/N) N Date Received: 05/22/99

raction: (SepF/Cont/Sonc) SHAKER Date Extracted:06/16/99

centrated Extract Volume: 10000(uL) Date Analyzed: 06/19/99

ection Volume: 0.5(uL) Dilution Factor: 1.0

Cleanup: (Y/N) N pH: 7.2 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: UG/KG	Q	
94-75-7	2,4-D	86	U	UJ HT
93-72-1	2,4,5-TP(Silvex)	12	U	UJ HT
	Surrogate amount spiked	184.82		

FORM I

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02478

1D

HERBICIDE ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

WTPSBWQ004000EB1

Name: SWL-TULSA

Code: SWOK Case No.: CH2M-OKC SDG No.: 38676

rix: (soil/water) WATER Lab Sample ID: 38676.26

ple wt/vol: 1000 (g/mL) ML Lab File ID:_____

loisture: _____ decanted: (Y/N) __ Date Received: 05/22/99

raction: (SepF/Cont/Sonc) SEPF Date Extracted:05/26/99

centrated Extract Volume: 10000(uL) Date Analyzed: 06/03/99

ection Volume: 0.5(uL) Dilution Factor: 1.0

Cleanup: (Y/N) N pH: 6.2 Sulfur Cleanup: (Y/N) N

EB

CAS NO.	COMPOUND	CONCENTRATION UNITS: UG/L	Q
94-75-7	2,4-D	2.5	U
93-72-1	2,4,5-TP(Silvex)	0.50	U
	Surrogate amount spiked	7.50	

FORM I

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Data Review and Validation for: ~~GC Organochlorine Pesticides and/or~~ PCBs (as aroclors)

Project Name & Task:	LAREDO AFB	IWTP
Project # & Case/SDG:	147436.DV.ZZ	38676
Methods:	☐ OLM03.2 ☐ SW-846 8081A ☑ SW846 8082 (aroclors) ☐ EPA 608 ☐ Other:	
Program:	☐ AFCEE ☐ NFESC ☐ Other	**Number of Samples:** 26 total
Field QC Samples:	10/11, 24/25 - FDUP, 20/21/22 - NAT/MS/MSD, 26 - EB	
Reviewed by & Date:	H. Kelly 23 - MS/MSD	4/9/2000
Matrix:	☑ Water ☑ Soil ☐ Other	

Quality Control	Form #	Requirements	Check (If No* checked, see comments)	Flags Applied (see comments)
Data Pkg Complete (DP)	Pkg	All required deliverables in pkg.	☑ OK ☐ No* ☐ Not provided	☐ Flags Applied
	COC	All samples on COC reported	☑ OK ☐ No*	☐ Flags Applied
Holding Times (HT)	1,	Extraction HT (water 7d, soil 14d)	☑ OK ☐ No*	☐ Flags Applied
	COC	Analysis HT (40d from extraction)	☑ OK ☐ No*	☐ Flags Applied
			☐ OK ☐ No*	☐ Flags Applied
Surrogates (SS)	2	Method surrogates used	☑ OK ☐ No* ☐ Not provided	☐ Flags Applied
		Recovery Limits: ☑ Lab ☐ Meth	☐ OK ☑ No* ☐ Diluted out	
MS/MSD or MS/LD	3	Matrix Spikes Provided	☑ MS/MSD ☐ MS/LD ☐ None*	☐ Flags Applied
		Correct Spike Used	☑ OK ☐ No*	
		Acceptance Limits: ☑ Lab ☐ Meth	☑ OK ☐ No* ☐ Diluted out	
LCS (BS) ☐ LCS only ☐ LCS/LCSD	3	LCS per prep. batch	☑ OK ☐ No*	☐ Flags Applied
		Acceptance criteria met	☑ OK ☐ No*	
Blanks (MB,TB,EB, FB/AB)	1	Detects (> MDL or RL/CRQL)	☑ All ND ☐ see blnk wksht	☐ Flags Applied
Method/Lab Blank (MB)	4	MB per prep batch or 20 samples	☑ OK ☐ No*	
Resolution	6/raw	Resolution met for IC	☐ OK ☐ No* ☑ N/A	☐ Flags Applied
	7/raw	Resolution met for CC	☐ OK ☐ No* ☑ N/A	
Initial Calibration (IC) (primary & confirmation)	6, 8	Minimum levels per method	☑ OK ☐ No*	☐ Flags Applied
	6	Linearity criteria met	☑ OK ☐ No* ☐ see cal wksht	
	"7"	Degradation criteria met	☐ OK ☐ No* ☑ N/A	
Continuing Calib. Verif. (CC) including degradation (primary & confirmation)	8	Analyzed at proper frequency	☑ OK ☐ No*	☐ Flags Applied
	7	%diff or %drift criteria met	☑ OK ☐ No* ☐ see cal wksht	
	"7"	Degradation criteria met	☐ OK ☐ No* ☑ N/A	
	"8"	Int. Std. RT/Area criteria met	☐ OK ☐ No* ☑ N/A	
Cleanup Criteria	9	All cleanup criteria met	☐ OK ☐ No* ☑ N/A	☐ Flags Applied
Internal Standards (IS)		Internal Standards used	☐ Yes ☑ No ☐ see comments	☐ Flags Applied
	"8"	Sample IS area criteria met	☐ OK ☐ No* ☐ N/A	
Sample Evaluation	1	All hits within cal. Range	☑ OK ☐ No* ☐ All ND	☐ Flags Applied
	8	Samples bracketed by CCV & Deg.	☑ OK ☐ No*	
	10	Hits w/in RT windows	☑ OK ☐ No* ☐ N/A	
	10	Confirmation %D criteria met	☑ OK ☐ No* ☐ N/A	
	raw	Manual Integration performed	☐ No ☐ N/A ☐ see comments	
Field Duplicate (FD)	1	Precision of native vs Field Dup	☑ OK ☐ No* ☐ N/A	☐ Flags Applied

This sheet is applicable to multiple methods. All requirement items may not apply to every analytical method.

Case Narrative Comments: NO EXCEPTIONS NOTED

QC Item	Comments
SS	Selected samples with high surrogate recoveries - Listed in Report. Flag detects "J".

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPMWSO001000N1

Name: SWL-TULSA

Code: SWOK Case No.: CH2M- SDG No.: 38676

rix: (soil/water) SOIL Lab Sample ID: 38676.01

ple wt/vol: 31.4 (g/mL) G Lab File ID:_____

oisture: 13 decanted: (Y/N) __ Date Received: 05/22/99

raction: (SepF/Cont/Sonc) SONC Date Extracted:05/29/99

centrated Extract Volume: 10000(uL) Date Analyzed: 06/05/99

ection Volume: 1.0(uL) Dilution Factor: 1.0

Cleanup: (Y/N) N pH: 7.5 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
12674-11-2	Aroclor-1016	36	U
11104-28-2	Aroclor-1221	36	U
11141-16-5	Aroclor-1232	36	U
53469-21-9	Aroclor-1242	36	U
12672-29-6	Aroclor-1248	36	U
11097-69-1	Aroclor-1254	36	U
11096-82-5	Aroclor-1260	240	J SS
	Surrogate amount spiked	7.32	

HK 4/9/2000

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPMWSO001005N1

Name: SWL-TULSA

Code: SWOK Case No.: CH2M- SDG No.: 38676

rix: (soil/water) SOIL Lab Sample ID: 38676.02

ple wt/vol: 31.4 (g/mL) G Lab File ID:_____

oisture: 16 decanted: (Y/N) __ Date Received: 05/22/99

raction: (SepF/Cont/Sonc) SONC Date Extracted:05/29/99

centrated Extract Volume: 10000(uL) Date Analyzed: 06/05/99

ection Volume: 1.0(uL) Dilution Factor: 1.0

Cleanup: (Y/N) N pH: 8.1 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
12674-11-2	Aroclor-1016	38	U
11104-28-2	Aroclor-1221	38	U
11141-16-5	Aroclor-1232	38	U
53469-21-9	Aroclor-1242	38	U
12672-29-6	Aroclor-1248	38	U
11097-69-1	Aroclor-1254	38	U
11096-82-5	Aroclor-1260	38	U
	Surrogate amount spiked	7.58	

AA 6/9

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPMWSO001007N1

Name: SWL-TULSA

Code: SWOK Case No.: CH2M- SDG No.: 38676

rix: (soil/water) SOIL Lab Sample ID: 38676.03

ple wt/vol: 31.9 (g/mL) G Lab File ID:_____

loisture: 21 decanted: (Y/N) __ Date Received: 05/22/99

raction: (SepF/Cont/Sonc) SONC Date Extracted:05/29/99

ncentrated Extract Volume: 10000(uL) Date Analyzed: 06/05/99

jection Volume: 1.0(uL) Dilution Factor: 1.0

Cleanup: (Y/N) N pH: 8.3 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
12674-11-2	Aroclor-1016	39	U
11104-28-2	Aroclor-1221	39	U
11141-16-5	Aroclor-1232	39	U
53469-21-9	Aroclor-1242	39	U
12672-29-6	Aroclor-1248	39	U
11097-69-1	Aroclor-1254	39	U
11096-82-5	Aroclor-1260	39	U
	Surrogate amount spiked	7.94	

HL 4/9

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPMWSO002000N1

Name: SWL-TULSA

Code: SWOK Case No.: CH2M- SDG No.: 38676

rix: (soil/water) SOIL Lab Sample ID: 38676.04

ple wt/vol: 30.3 (g/mL) G Lab File ID:_____

oisture: 7 decanted: (Y/N) __ Date Received: 05/22/99

raction: (SepF/Cont/Sonc) SONC Date Extracted:05/29/99

centrated Extract Volume: 10000(uL) Date Analyzed: 06/05/99

ection Volume: 1.0(uL) Dilution Factor: 1.0

Cleanup: (Y/N) N pH: 8.2 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
12674-11-2	Aroclor-1016	35	U
11104-28-2	Aroclor-1221	35	U
11141-16-5	Aroclor-1232	35	U
53469-21-9	Aroclor-1242	35	U
12672-29-6	Aroclor-1248	35	U
11097-69-1	Aroclor-1254	35	U
11096-82-5	Aroclor-1260	35	U
	Surrogate amount spiked	7.10	

HL 4/9

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPMWSO002004N1

Name: SWL-TULSA

Code: SWOK Case No.: CH2M- SDG No.: 38676

rix: (soil/water) SOIL Lab Sample ID: 38676.05

ple wt/vol: 30.6 (g/mL) G Lab File ID:_____

loisture: 16 decanted: (Y/N) __ Date Received: 05/22/99

raction: (SepF/Cont/Sonc) SONC Date Extracted:05/29/99

centrated Extract Volume: 10000(uL) Date Analyzed: 06/05/99

ection Volume: 1.0(uL) Dilution Factor: 1.0

Cleanup: (Y/N) N pH: 8.2 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
12674-11-2	Aroclor-1016	38	U
11104-28-2	Aroclor-1221	38	U
11141-16-5	Aroclor-1232	38	U
53469-21-9	Aroclor-1242	38	U
12672-29-6	Aroclor-1248	38	U
11097-69-1	Aroclor-1254	38	U
11096-82-5	Aroclor-1260	38	U
	Surrogate amount spiked	7.78	

HH 4/9

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPMWSO002007N1

Name: SWL-TULSA

Code: SWOK Case No.: CH2M- SDG No.: 38676

rix: (soil/water) SOIL Lab Sample ID: 38676.06

ple wt/vol: 31.4 (g/mL) G Lab File ID:_____

loisture: 21 decanted: (Y/N) __ Date Received: 05/22/99

raction: (SepF/Cont/Sonc) SONC Date Extracted:05/29/99

centrated Extract Volume: 10000(uL) Date Analyzed: 06/05/99

ection Volume: 1.0(uL) Dilution Factor: 1.0

Cleanup: (Y/N) N pH: 8.4 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
12674-11-2	Aroclor-1016	40	U
11104-28-2	Aroclor-1221	40	U
11141-16-5	Aroclor-1232	40	U
53469-21-9	Aroclor-1242	40	U
12672-29-6	Aroclor-1248	40	U
11097-69-1	Aroclor-1254	40	U
11096-82-5	Aroclor-1260	40	U
	Surrogate amount spiked	8.06	

4/4/9

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPMWSO003000N1

Name: SWL-TULSA

Code: SWOK Case No.: CH2M- SDG No.: 38676

rix: (soil/water) SOIL Lab Sample ID: 38676.07

ple wt/vol: 32.1 (g/mL) G Lab File ID:_____

loisture: 5 decanted: (Y/N) __ Date Received: 05/22/99

raction: (SepF/Cont/Sonc) SONC Date Extracted:05/29/99

ncentrated Extract Volume: 10000(uL) Date Analyzed: 06/05/99

jection Volume: 1.0(uL) Dilution Factor: 1.0

C Cleanup: (Y/N) N pH: 7.2 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
12674-11-2	Aroclor-1016	32	U
11104-28-2	Aroclor-1221	32	U
11141-16-5	Aroclor-1232	32	U
53469-21-9	Aroclor-1242	32	U
12672-29-6	Aroclor-1248	32	U
11097-69-1	Aroclor-1254	32	U
11096-82-5	Aroclor-1260	47	
	Surrogate amount spiked	6.56	

4/9

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPMWSO003006N1

Name: SWL-TULSA

Code: SWOK Case No.: CH2M- SDG No.: 38676

rix: (soil/water) SOIL Lab Sample ID: 38676.08

ple wt/vol: 31.4 (g/mL) G Lab File ID:_____

oisture: 19 decanted: (Y/N) __ Date Received: 05/22/99

raction: (SepF/Cont/Sonc) SONC Date Extracted:05/29/99

centrated Extract Volume: 10000(uL) Date Analyzed: 06/05/99

ection Volume: 1.0(uL) Dilution Factor: 1.0

: Cleanup: (Y/N) N pH: 7.3 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
12674-11-2	Aroclor-1016	39	U
11104-28-2	Aroclor-1221	39	U
11141-16-5	Aroclor-1232	39	U
53469-21-9	Aroclor-1242	39	U
12672-29-6	Aroclor-1248	39	U
11097-69-1	Aroclor-1254	39	U
11096-82-5	Aroclor-1260	39	U
	Surrogate amount spiked	7.86	

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1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPMWSO0003012N1

Name: SWL-TULSA

Code: SWOK Case No.: CH2M- SDG No.: 38676

rix: (soil/water) SOIL Lab Sample ID: 38676.09

ple wt/vol: 30.6 (g/mL) G Lab File ID:_____

oisture: 12 decanted: (Y/N) __ Date Received: 05/22/99

raction: (SepF/Cont/Sonc) SONC Date Extracted:05/29/99

centrated Extract Volume: 10000(uL) Date Analyzed: 06/05/99

ection Volume: 1.0(uL) Dilution Factor: 1.0

Cleanup: (Y/N) N pH: 7.3 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
12674-11-2	Aroclor-1016	37	U
11104-28-2	Aroclor-1221	37	U
11141-16-5	Aroclor-1232	37	U
53469-21-9	Aroclor-1242	37	U
12672-29-6	Aroclor-1248	37	U
11097-69-1	Aroclor-1254	37	U
11096-82-5	Aroclor-1260	37	U
	Surrogate amount spiked	7.43	

4/9

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPSBSO001000N1

› Name: SWL-TULSA

› Code: SWOK Case No.: CH2M- SDG No.: 38676

.rix: (soil/water) SOIL Lab Sample ID: 38676.10

ıple wt/vol: 30.4 (g/mL) G Lab File ID:_____

loisture: 11 decanted: (Y/N) __ Date Received: 05/22/99

:raction: (SepF/Cont/Sonc) SONC Date Extracted:05/29/99

ıcentrated Extract Volume: 10000(uL) Date Analyzed: 06/05/99

jection Volume: 1.0(uL) Dilution Factor: 1.0

: Cleanup: (Y/N) N pH: 7.3 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
12674-11-2	Aroclor-1016	36	U
11104-28-2	Aroclor-1221	36	U
11141-16-5	Aroclor-1232	36	U
53469-21-9	Aroclor-1242	36	U
12672-29-6	Aroclor-1248	36	U
11097-69-1	Aroclor-1254	36	U
11096-82-5	Aroclor-1260	36	U
	Surrogate amount spiked	7.39	

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1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

WTPSBSO001000FD1

› Name: SWL-TULSA

› Code: SWOK Case No.: CH2M- SDG No.: 38676

:rix: (soil/water) SOIL Lab Sample ID: 38676.11

ıple wt/vol: 30.4 (g/mL) G Lab File ID:_____

Moisture: 11 decanted: (Y/N) __ Date Received: 05/22/99

:raction: (SepF/Cont/Sonc) SONC Date Extracted:05/29/99

ıcentrated Extract Volume: 10000(uL) Date Analyzed: 06/05/99

jection Volume: 1.0(uL) Dilution Factor: 1.0

C Cleanup: (Y/N) N pH: 7.3 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
12674-11-2	Aroclor-1016	36	U
11104-28-2	Aroclor-1221	36	U
11141-16-5	Aroclor-1232	36	U
53469-21-9	Aroclor-1242	36	U
12672-29-6	Aroclor-1248	36	U
11097-69-1	Aroclor-1254	36	U
11096-82-5	Aroclor-1260	36	U
	Surrogate amount spiked	7.39	

4/9

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPSBSO001004N1

Name: SWL-TULSA

Code: SWOK Case No.: CH2M- SDG No.: 38676

rix: (soil/water) SOIL Lab Sample ID: 38676.12

ple wt/vol: 31.0 (g/mL) G Lab File ID:_____

oisture: 19 decanted: (Y/N) __ Date Received: 05/22/99

raction: (SepF/Cont/Sonc) SONC Date Extracted:05/29/99

centrated Extract Volume: 10000(uL) Date Analyzed: 06/05/99

ection Volume: 1.0(uL) Dilution Factor: 1.0

Cleanup: (Y/N) N pH: 7.3 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
12674-11-2	Aroclor-1016	39	U
11104-28-2	Aroclor-1221	39	U
11141-16-5	Aroclor-1232	39	U
53469-21-9	Aroclor-1242	39	U
12672-29-6	Aroclor-1248	39	U
11097-69-1	Aroclor-1254	39	U
11096-82-5	Aroclor-1260	39	U
	Surrogate amount spiked	7.96	

4/9

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPSBSO001006N1

) Name: SWL-TULSA

) Code: SWOK Case No.: CH2M- SDG No.: 38676

:rix: (soil/water) SOIL Lab Sample ID: 38676.13

ıple wt/vol: 30.9 (g/mL) G Lab File ID:_____

Ioisture: 21 decanted: (Y/N) __ Date Received: 05/22/99

:raction: (SepF/Cont/Sonc) SONC Date Extracted:05/29/99

ıcentrated Extract Volume: 10000(uL) Date Analyzed: 06/05/99

jection Volume: 1.0(uL) Dilution Factor: 1.0

C Cleanup: (Y/N) N pH: 7.3 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
12674-11-2	Aroclor-1016	40	U
11104-28-2	Aroclor-1221	40	U
11141-16-5	Aroclor-1232	40	U
53469-21-9	Aroclor-1242	40	U
12672-29-6	Aroclor-1248	40	U
11097-69-1	Aroclor-1254	40	U
11096-82-5	Aroclor-1260	40	U
	Surrogate amount spiked	8.19	

4/9

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPSBSO002000N1

) Name: SWL-TULSA

) Code: SWOK Case No.: CH2M- SDG No.: 38676

:rix: (soil/water) SOIL Lab Sample ID: 38676.14

ıple wt/vol: 32.7 (g/mL) G Lab File ID:_____

loisture: 8 decanted: (Y/N) __ Date Received: 05/22/99

:raction: (SepF/Cont/Sonc) SONC Date Extracted:05/29/99

ıcentrated Extract Volume: 10000(uL) Date Analyzed: 06/05/99

jection Volume: 1.0(uL) Dilution Factor: 1.0

: Cleanup: (Y/N) N pH: 7.2 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
12674-11-2	Aroclor-1016	33	U
11104-28-2	Aroclor-1221	33	U
11141-16-5	Aroclor-1232	33	U
53469-21-9	Aroclor-1242	33	U
12672-29-6	Aroclor-1248	33	U
11097-69-1	Aroclor-1254	33	U
11096-82-5	Aroclor-1260	33	U
Surrogate amount spiked		6.65	

4/9

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPSBSO002004N1

Name: SWL-TULSA

Code: SWOK Case No.: CH2M- SDG No.: 38676

rix: (soil/water) SOIL Lab Sample ID: 38676.15

ple wt/vol: 32.6 (g/mL) G Lab File ID:_____

loisture: 15 decanted: (Y/N) __ Date Received: 05/22/99

raction: (SepF/Cont/Sonc) SONC Date Extracted:05/29/99

ıcentrated Extract Volume: 10000(uL) Date Analyzed: 06/05/99

ection Volume: 1.0(uL) Dilution Factor: 1.0

Cleanup: (Y/N) N pH: 7.2 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
12674-11-2	Aroclor-1016	36	U
11104-28-2	Aroclor-1221	36	U
11141-16-5	Aroclor-1232	36	U
53469-21-9	Aroclor-1242	36	U
12672-29-6	Aroclor-1248	36	U
11097-69-1	Aroclor-1254	36	U
11096-82-5	Aroclor-1260	36	U
	Surrogate amount spiked	7.22	

HK 4/9

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPSBSO002006N1

Name: SWL-TULSA

Code: SWOK Case No.: CH2M- SDG No.: 38676

rix: (soil/water) SOIL Lab Sample ID: 38676.16

ple wt/vol: 32.8 (g/mL) G Lab File ID:_____

oisture: 12 decanted: (Y/N) __ Date Received: 05/22/99

raction: (SepF/Cont/Sonc) SONC Date Extracted:05/29/99

centrated Extract Volume: 10000(uL) Date Analyzed: 06/05/99

ection Volume: 1.0(uL) Dilution Factor: 1.0

Cleanup: (Y/N) N pH: 7.2 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
12674-11-2	Aroclor-1016	34	U
11104-28-2	Aroclor-1221	34	U
11141-16-5	Aroclor-1232	34	U
53469-21-9	Aroclor-1242	34	U
12672-29-6	Aroclor-1248	34	U
11097-69-1	Aroclor-1254	34	U
11096-82-5	Aroclor-1260	34	U
	Surrogate amount spiked	6.93	

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1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPSBSO003000N1

Name: SWL-TULSA

Code: SWOK Case No.: CH2M- SDG No.: 38676

rix: (soil/water) SOIL Lab Sample ID: 38676.17

ple wt/vol: 31.9 (g/mL) G Lab File ID:_____

loisture: 7 decanted: (Y/N) __ Date Received: 05/22/99

raction: (SepF/Cont/Sonc) SONC Date Extracted:05/29/99

ncentrated Extract Volume: 10000(uL) Date Analyzed: 06/05/99

jection Volume: 1.0(uL) Dilution Factor: 1.0

Cleanup: (Y/N) N pH: 7.2 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
12674-11-2	Aroclor-1016	33	U
11104-28-2	Aroclor-1221	33	U
11141-16-5	Aroclor-1232	33	U
53469-21-9	Aroclor-1242	33	U
12672-29-6	Aroclor-1248	33	U
11097-69-1	Aroclor-1254	33	U
11096-82-5	Aroclor-1260	33	U
	Surrogate amount spiked	6.74	

4/4/9

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPSBSO003004N1

Name: SWL-TULSA

Code: SWOK Case No.: CH2M- SDG No.: 38676

rix: (soil/water) SOIL Lab Sample ID: 38676.18

ple wt/vol: 31.5 (g/mL) G Lab File ID:_____

oisture: 18 decanted: (Y/N) __ Date Received: 05/22/99

raction: (SepF/Cont/Sonc) SONC Date Extracted:05/29/99

centrated Extract Volume: 10000(uL) Date Analyzed: 06/05/99

ection Volume: 1.0(uL) Dilution Factor: 1.0

: Cleanup: (Y/N) N pH: 7.2 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
12674-11-2	Aroclor-1016	38	U
11104-28-2	Aroclor-1221	38	U
11141-16-5	Aroclor-1232	38	U
53469-21-9	Aroclor-1242	38	U
12672-29-6	Aroclor-1248	38	U
11097-69-1	Aroclor-1254	38	U
11096-82-5	Aroclor-1260	38	U
	Surrogate amount spiked	7.74	

HL 4/9

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPSBSO003006N1

› Name: SWL-TULSA

› Code: SWOK Case No.: CH2M- SDG No.: 38676

:rix: (soil/water) SOIL Lab Sample ID: 38676.19

ıple wt/vol: 31.3 (g/mL) G Lab File ID:_____

Moisture: 19 decanted: (Y/N) __ Date Received: 05/22/99

:raction: (SepF/Cont/Sonc) SONC Date Extracted:05/29/99

ıcentrated Extract Volume: 10000(uL) Date Analyzed: 06/05/99

jection Volume: 1.0(uL) Dilution Factor: 1.0

: Cleanup: (Y/N) N pH: 7.2 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
12674-11-2	Aroclor-1016	39	U
11104-28-2	Aroclor-1221	39	U
11141-16-5	Aroclor-1232	39	U
53469-21-9	Aroclor-1242	39	U
12672-29-6	Aroclor-1248	39	U
11097-69-1	Aroclor-1254	39	U
11096-82-5	Aroclor-1260	39	U
	Surrogate amount spiked	7.89	

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1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPSBSO004000N1

Name: SWL-TULSA

Code: SWOK Case No.: CH2M- SDG No.: 38676

rix: (soil/water) SOIL Lab Sample ID: 38676.20

ple wt/vol: 31.9 (g/mL) G Lab File ID:_____

oisture: 6 decanted: (Y/N) __ Date Received: 05/22/99

raction: (SepF/Cont/Sonc) SONC Date Extracted:05/29/99

centrated Extract Volume: 10000(uL) Date Analyzed: 06/05/99

ection Volume: 1.0(uL) Dilution Factor: 1.0

Cleanup: (Y/N) N pH: 7.2 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
12674-11-2	Aroclor-1016	33	U
11104-28-2	Aroclor-1221	33	U
11141-16-5	Aroclor-1232	33	U
53469-21-9	Aroclor-1242	33	U
12672-29-6	Aroclor-1248	33	U
11097-69-1	Aroclor-1254	33	U
11096-82-5	Aroclor-1260	33	U
	Surrogate amount spiked	6.67	

FORM I PEST

4/9

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPSBSO004004N1

› Name: SWL-TULSA

› Code: SWOK Case No.: CH2M- SDG No.: 38676

:rix: (soil/water) SOIL Lab Sample ID: 38676.23

ıple wt/vol: 30.7 (g/mL) G Lab File ID:_____

Ioisture: 16 decanted: (Y/N) __ Date Received: 05/22/99

:raction: (SepF/Cont/Sonc) SONC Date Extracted:05/29/99

ıcentrated Extract Volume: 10000(uL) Date Analyzed: 06/05/99

jection Volume: 1.0(uL) Dilution Factor: 1.0

ɔ Cleanup: (Y/N) N pH: 7.2 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
12674-11-2	Aroclor-1016	38	U
11104-28-2	Aroclor-1221	38	U
11141-16-5	Aroclor-1232	38	U
53469-21-9	Aroclor-1242	38	U
12672-29-6	Aroclor-1248	38	U
11097-69-1	Aroclor-1254	38	U
11096-82-5	Aroclor-1260	38	U
	Surrogate amount spiked	7.76	

4/9

02507

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPSBSO004008N1

Name: SWL-TULSA

Code: SWOK Case No.: CH2M- SDG No.: 38676

rix: (soil/water) SOIL Lab Sample ID: 38676.24

ple wt/vol: 30.5 (g/mL) G Lab File ID:_____

oisture: 21 decanted: (Y/N) __ Date Received: 05/22/99

raction: (SepF/Cont/Sonc) SONC Date Extracted:05/29/99

centrated Extract Volume: 10000(uL) Date Analyzed: 06/05/99

ection Volume: 1.0(uL) Dilution Factor: 1.0

Cleanup: (Y/N) N pH: 7.2 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
12674-11-2	Aroclor-1016	41	U
11104-28-2	Aroclor-1221	41	U
11141-16-5	Aroclor-1232	41	U
53469-21-9	Aroclor-1242	41	U
12672-29-6	Aroclor-1248	41	U
11097-69-1	Aroclor-1254	41	U
11096-82-5	Aroclor-1260	41	U
	Surrogate amount spiked	8.30	

HK 4/9

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

WTPSBSO004008FD1

Name: SWL-TULSA

Code: SWOK Case No.: CH2M- SDG No.: 38676

rix: (soil/water) SOIL Lab Sample ID: 38676.25

ple wt/vol: 30.5 (g/mL) G Lab File ID:_____

oisture: 19 decanted: (Y/N) __ Date Received: 05/22/99

raction: (SepF/Cont/Sonc) SONC Date Extracted:05/29/99

centrated Extract Volume: 10000(uL) Date Analyzed: 06/05/99

ection Volume: 1.0(uL) Dilution Factor: 1.0

Cleanup: (Y/N) N pH: 7.2 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
12674-11-2	Aroclor-1016	40	U
11104-28-2	Aroclor-1221	40	U
11141-16-5	Aroclor-1232	40	U
53469-21-9	Aroclor-1242	40	U
12672-29-6	Aroclor-1248	40	U
11097-69-1	Aroclor-1254	40	U
11096-82-5	Aroclor-1260	40	U
	Surrogate amount spiked	8.10	

HK 4/9

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

WTPSBWQ004000EB1

Name: SWL-TULSA

Code: SWOK Case No.: CH2M- SDG No.: 38676

rix: (soil/water) WATER Lab Sample ID: 38676.26

ple wt/vol: 1000 (g/mL) ML Lab File ID:_____

oisture: _____ decanted: (Y/N) __ Date Received: 05/22/99

raction: (SepF/Cont/Sonc) SEPF Date Extracted:05/22/99

centrated Extract Volume: 10000(uL) Date Analyzed: 05/26/99

ection Volume: 1.0(uL) Dilution Factor: 1.0

Cleanup: (Y/N) N pH: 6.8 Sulfur Cleanup: (Y/N) N

EB

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
12674-11-2	Aroclor-1016	1.0	U
11104-28-2	Aroclor-1221	1.0	U
11141-16-5	Aroclor-1232	1.0	U
53469-21-9	Aroclor-1242	1.0	U
12672-29-6	Aroclor-1248	1.0	U
11097-69-1	Aroclor-1254	1.0	U
11096-82-5	Aroclor-1260	1.0	U
	Surrogate amount spiked	0.20	

AK 4/9

GRO

Data Review and Validation for: GC TPH/TRPH

Project Name & Task:	LAREDO AFB	IWTP
Project # & Case/SDG:	147436.DV.ZZ	38706
Methods:	☑ SW846 8015 (GRO/DRO) ☐ TNRCC 1005 ☐ TNRCC 1006 ☐ FL-PRO ☐ Other:	
Program:	☐ AFCEE ☐ NFESC ☐ Other	**Number of Samples:** 7 total
Field QC Samples:	1/2 - FDUP 3/4/5 - NAF/MS/MSD 7-EB	
Reviewed by & Date:	H. Kelly	4/12/2000
Matrix:	☑ Water ☐ Soil ☐ Other	

Quality Control	Form #	Requirements	Check (If No* checked, see comments)	Flags Applied (see comments)
Data Pkg Complete (DP)	Pkg	All required deliverables in pkg.	☑ OK ☐ No* ☐ Not provided	☐ Flags Applied
	COC	All samples on COC reported	☑ OK ☐ No*	☐ Flags Applied
Holding Times (HT)	1	Extraction method HT met	☐ OK ☐ No* ☑ N/A	☐ Flags Applied
	COC	Analysis method HT met	☐ OK ☑ No*	☐ Flags Applied
		Samples properly preserved	☑ OK ☐ No*	☐ Flags Applied
Surrogates (SS)	2	Method surrogates used	☑ OK ☐ No* ☐ N/A	☐ Flags Applied
		Recovery Limits: ☑ Lab ☐ Meth	☐ OK ☑ No* ☐ Diluted out	
MS/MSD or MS/LD	3	Matrix Spikes Provided	☑ MS/MSD ☐ MS/LD ☐ None*	☐ Flags Applied
		Correct Spike Used	☑ OK ☐ No*	
		Acceptance Limits: ☑ Lab ☐ Meth	☑ OK ☐ No* ☐ Diluted Out	☐ Flags Applied
LCS (BS)	3	LCS per prep. batch	☑ OK ☐ No*	☐ Flags Applied
☐ LCS only ☐ LCS/LCSD		Acceptance Limits: ☑ Lab ☐ Meth	☑ OK ☐ No*	☐ Flags Applied
Blanks (MB,TB,EB, FB/AB)	1	Detects (> MDL or RL/CRQL)	☐ All ND ☐ see ~~blnk wksht~~	☐ Flags Applied
Method/Lab Blank (MB)	4	MB at required frequency	☑ OK ☐ No* below	
Resolution	raw	Resolution met for IC	☐ OK ☐ No* ☑ N/A	☐ Flags Applied
	raw	Resolution met for CC	☐ OK ☐ No* ☑ N/A	
Initial Calibration (IC)	6	Minimum levels per method	☑ OK ☐ No*	☐ Flags Applied
	6	Linearity criteria met	☑ OK ☐ No* ☐ see cal wksht	
		Retention time criteria	☐ OK ☐ No* ☑ N/A	
Continuing Calib. Verif. (CC)	7	Analyzed at proper frequency	☑ OK ☐ No*	☐ Flags Applied
		%diff or %drift criteria met	☑ OK ☐ No* ☐ see cal wksht	
	8	Int. Std. RT/Area criteria met	☐ OK ☐ No* ☑ N/A	
Internal Standards (IS)	"8"	Internal Standards used	☐ Yes ☑ No ☐ see comments	☐ Flags Applied
		Sample IS area criteria met	☐ OK ☐ No* ☐ N/A	
Sample Evaluation	1	All hits within cal. Range	☑ OK ☐ No* ☐ All ND	☐ Flags Applied
	8	Samples bracketed by CCV	☑ OK ☐ No* (Dilutions)	
	raw	TPH baseline constructed properly	☐ OK ☐ No* ☐ N/A	
	raw	Manual Integration performed	☐ No ☐ N/A ☐ see comments	
Field Duplicate (FD)	1	Precision of native vs Field Dup	☑ OK ☐ No* ☐ N/A	☐ Flags Applied

This sheet is applicable to multiple methods. All requirement items may not apply to every analytical method.

Case Narrative Comments: SURROGATES, HT.

QC Item	Comments
SS	Sample #3 surrogate recovery = 12% (49-133 limit)
HT	# re-analysis - OK, but out of Holding time. Use results from re-analysis. Flag "J" due to HT
EB	#7-EB GRO = 100ug/L

1

GASOLINE ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPMWWG001000N1

Name: SWL-TULSA Contract:

Lab Code: SWOK Case No.: CH2M-OKC SDG No.: 38706B

Matrix: (soil/water) WATER Lab Sample ID: 38706.01

Sample wt/vol: 5 (g/mL) ML Lab File ID: q2972.d

Level: (low/med) LOW Date Received: 05/25/99

% Moisture: not dec. _____ Date Analyzed: 05/28/99

GC Column: DB624 ID: 0.54(mm) Dilution Factor: 1

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q	
	TOTAL GRO	84	—	u BL
	Surrogate amount spiked	20		

FORM I

4/12/2000

1

GASOLINE ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPMWWG001000FD1

Name: SWL-TULSA Contract:

Lab Code: SWOK Case No.: CH2M-OKC SDG No.: 38706B

Matrix: (soil/water) WATER Lab Sample ID: 38706.02

Sample wt/vol: 5 (g/mL) ML Lab File ID: q2973.d

Level: (low/med) LOW Date Received: 05/25/99

% Moisture: not dec. _____ Date Analyzed: 05/28/99

GC Column: DB624 ID: 0.54(mm) Dilution Factor: 1

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q	
	TOTAL GRO	100	—	U BL
	Surrogate amount spiked	20		

FORM I

02513

1

GASOLINE ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPMWWG002000N1

b Name: SWL-TULSA Contract:

Lab Code: SWOK Case No.: CH2M-OKC SDG No.: 38706B

Matrix: (soil/water) WATER Lab Sample ID: 38706.03

Sample wt/vol: 5 (g/mL) ML Lab File ID: q2974.d

Level: (low/med) LOW Date Received: 05/25/99

% Moisture: not dec. _____ Date Analyzed: 05/28/99

GC Column: DB624 ID: 0.54(mm) Dilution Factor: 1

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
	TOTAL GRO	20	~~U~~ R SS
	Surrogate amount spiked	20	

FORM I

4/1/2

1

GASOLINE ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPMWWG002000N1RE

Lab Name: SWL-TULSA Contract:

Lab Code: SWOK Case No.: CH2M-OKC SDG No.: 38706B

Matrix: (soil/water) WATER Lab Sample ID: 38706.03RA

Sample wt/vol: 5 (g/mL) ML Lab File ID: q3128.d

Level: (low/med) LOW Date Received: 05/25/99

% Moisture: not dec. _____ Date Analyzed: 06/15/99

GC Column: DB624 ID: 0.54(mm) Dilution Factor: 1

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q	
	TOTAL GRO	44	—	UJ B4/H4
	Surrogate amount spiked	20		

FORM I

4/12

1

GASOLINE ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPMWWG003000N1

Lab Name: SWL-TULSA Contract:

Lab Code: SWOK Case No.: CH2M-OKC SDG No.: 38706B

Matrix: (soil/water) WATER Lab Sample ID: 38706.06

Sample wt/vol: 5 (g/mL) ML Lab File ID: q2977.d

Level: (low/med) LOW Date Received: 05/25/99

% Moisture: not dec. _____ Date Analyzed: 05/29/99

GC Column: DB624 ID: 0.54(mm) Dilution Factor: 1

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
	TOTAL GRO	3600	~~E~~ A LR
	Surrogate amount spiked	20	

FORM I

4/12

1

GASOLINE ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPMWWG003000N1DL

Name: SWL-TULSA Contract:

Lab Code: SWOK Case No.: CH2M-OKC SDG No.: 38706B

Matrix: (soil/water) WATER Lab Sample ID: 38706.06DL

Sample wt/vol: 5 (g/mL) ML Lab File ID: q3129.d

Level: (low/med) LOW Date Received: 05/25/99

% Moisture: not dec. _____ Date Analyzed: 06/15/99

GC Column: DB624 ID: 0.54(mm) Dilution Factor: 20

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
	TOTAL GRO	3700	~~D~~ J HT
	Surrogate amount spiked	2000	

FORM I

HH 4/12

02517

1

GASOLINE ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPMWWQ002000EB1

Name: SWL-TULSA Contract:

Lab Code: SWOK Case No.: CH2M-OKC SDG No.: 38706B

Matrix: (soil/water) WATER Lab Sample ID: 38706.07

Sample wt/vol: 5 (g/mL) ML Lab File ID: q2978.d

Level: (low/med) LOW Date Received: 05/25/99

% Moisture: not dec. _____ Date Analyzed: 05/29/99

GC Column: DB624 ID: 0.54(mm) Dilution Factor: 1

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

EB

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
	TOTAL GRO	100	
	Surrogate amount spiked	20	

FORM I

02518

Data Review and Validation for: GC TPH/TRPH

Project Name & Task:	LAREDO AFB	IWTP	
Project # & Case/SDG:	147436.DV.ZZ	38676	
Methods:	☑ SW846 8015 (GRO/DRO) ☐ TNRCC 1005 ☐ TNRCC 1006 ☐ FL-PRO ☐ Other:		
Program:	☐ AFCEE ☐ NFESC ☐ Other	**Number of Samples:** 26 TOTAL	
Field QC Samples:	10/11, 24/25 - DUP, 26-EB, 20/21/22 - MAT/INTS/MSD		
Reviewed by & Date:	A. Kelly	26 - MS/MSD	
Matrix:	☐ Water ☑ Soil ☐ Other		

Quality Control	Form #	Requirements	Check (If No* checked, see comments)	Flags Applied (see comments)
Data Pkg Complete (DP)	Pkg	All required deliverables in pkg.	☑ OK ☐ No* ☐ Not provided	☐ Flags Applied
	COC	All samples on COC reported	☑ OK ☐ No*	☐ Flags Applied
Holding Times (HT)	1	Extraction method HT met	☑ OK ☐ No* ☐ N/A	☐ Flags Applied
	COC	Analysis method HT met	☑ OK ☐ No*	☐ Flags Applied
		Samples properly preserved	☑ OK ☐ No*	☐ Flags Applied
Surrogates (SS)	2	Method surrogates used	☑ OK ☐ No* ☐ N/A	☐ Flags Applied
		Recovery Limits: ☑ Lab ☐ Meth	☑ OK ☐ No* ☐ Diluted out	
MS/MSD or MS/LD	3	Matrix Spikes Provided	☑ MS/MSD ☐ MS/LD ☐ None*	☐ Flags Applied
		Correct Spike Used	☑ OK ☐ No*	
		Acceptance Limits: ☑ Lab ☐ Meth	☑ OK ☐ No* ☐ Diluted Out	☐ Flags Applied
LCS (BS)	3	LCS per prep. batch	☑ OK ☐ No*	☐ Flags Applied
☐ LCS only ☑ LCS/LCSD		Acceptance Limits: ☑ Lab ☐ Meth	☑ OK ☐ No*	☐ Flags Applied
Blanks (MB,TB,EB, FB/AB)	1	Detects (> MDL or RL/CRQL)	☐ All ND ☑ see blnk wksht	☑ Flags Applied
Method/Lab Blank (MB)	4	MB at required frequency	☑ OK ☐ No* below	
Resolution	raw	Resolution met for IC	☐ OK ☐ No* ☑ N/A	☐ Flags Applied
	raw	Resolution met for CC	☐ OK ☐ No* ☑ N/A	
Initial Calibration (IC)	6	Minimum levels per method	☑ OK ☐ No*	☐ Flags Applied
	6	Linearity criteria met	☑ OK ☐ No* ☐ see cal wksht	
		Retention time criteria	☐ OK ☐ No* ☑ N/A	
Continuing Calib. Verif. (CC)	7	Analyzed at proper frequency	☑ OK ☐ No*	☐ Flags Applied
		%diff or %drift criteria met	☑ OK ☐ No* ☐ see cal wksht	
	8	Int. Std. RT/Area criteria met	☐ OK ☐ No* ☑ N/A	
Internal Standards (IS)	"8"	Internal Standards used	☐ Yes ☐ No ☐ see comments	☐ Flags Applied
		Sample IS area criteria met	☐ OK ☐ No* ☑ N/A	
Sample Evaluation	1	All hits within cal. Range	☑ OK ☐ No* ☐ All ND	☐ Flags Applied
	8	Samples bracketed by CCV	☑ OK ☐ No*	
	raw	TPH baseline constructed properly	☐ OK ☐ No* ☐ N/A	
	raw	Manual Integration performed	☐ No ☐ N/A ☐ see comments	
Field Duplicate (FD)	1	Precision of native vs Field Dup	☐ OK ☑ No* ☐ N/A	☑ Flags Applied

This sheet is applicable to multiple methods. All requirement items may not apply to every analytical method.

Case Narrative Comments: NO EXCEPTIONS NOTED

QC Item	Comments
EB	EB - GRO = 30 ug/L Flag all detects less than 150 ug/kg "U"
EBUP	24/25 = 190,000 / 760,000 - Flag results "J"

1

GASOLINE ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPMWSO001000N1

› Name: SWL-TULSA Contract:

› Code: SWOK Case No.: CH2M-OKC SDG No.: 38676B

:rix: (soil/water) SOIL Lab Sample ID: 38676.01

ıple wt/vol: 5.0 (g/mL) G Lab File ID: g3684.d

/el: (low/med) LOW Date Received: 05/22/99

loisture: not dec. 13 Date Analyzed: 05/27/99

Column: DB624 ID: 0.54(mm) Dilution Factor: 1

il Extract Volume: _____ (uL) Soil Aliquot Volume: ____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
	TOTAL GRO	110	U
	Surrogate amount spiked	110	

FORM I

4/9/2000

1

GASOLINE ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPMWSO001005N1

) Name: SWL-TULSA Contract:

) Code: SWOK Case No.: CH2M-OKC SDG No.: 38676B

:rix: (soil/water) SOIL Lab Sample ID: 38676.02

nple wt/vol: 5.0 (g/mL) G Lab File ID: g3685.d

vel: (low/med) LOW Date Received: 05/22/99

Moisture: not dec. 16 Date Analyzed: 05/27/99

Column: DB624 ID: 0.54(mm) Dilution Factor: 1

il Extract Volume: _____ (uL) Soil Aliquot Volume: ____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
	TOTAL GRO	82	~~J~~ u BL
	Surrogate amount spiked	120	

FORM I

dd 4/9

02521

1

GASOLINE ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPMWSO001007N1

me: SWL-TULSA Contract:

Code: SWOK Case No.: CH2M-OKC SDG No.: 38676B

rix: (soil/water) SOIL Lab Sample ID: 38676.03

ple wt/vol: 4.0 (g/mL) G Lab File ID: q2970.d

el: (low/med) MED Date Received: 05/22/99

oisture: not dec. 21 Date Analyzed: 05/28/99

Column: DB624 ID: 0.54(mm) Dilution Factor: 1

l Extract Volume: 10000 (uL) Soil Aliquot Volume: 20 (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
	TOTAL GRO	130000	
	Surrogate amount spiked	79000	

FORM I

4/9

1

GASOLINE ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPMWSO002000N1

) Name: SWL-TULSA Contract:

) Code: SWOK Case No.: CH2M-OKC SDG No.: 38676B

:rix: (soil/water) SOIL Lab Sample ID: 38676.04

ıple wt/vol: 5.0 (g/mL) G Lab File ID: g3712.d

/el: (low/med) LOW Date Received: 05/22/99

loisture: not dec. 7 Date Analyzed: 05/28/99

Column: DB624 ID: 0.54(mm) Dilution Factor: 1

il Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
	TOTAL GRO	110	U
	Surrogate amount spiked	110	

FORM I

HK 4/9

02523

1

GASOLINE ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPMWSO002004N1

Name: SWL-TULSA Contract:

Code: SWOK Case No.: CH2M-OKC SDG No.: 38676B

rix: (soil/water) SOIL Lab Sample ID: 38676.05

ple wt/vol: 5.0 (g/mL) G Lab File ID: g3688.d

el: (low/med) LOW Date Received: 05/22/99

oisture: not dec. 16 Date Analyzed: 05/27/99

Column: DB624 ID: 0.54(mm) Dilution Factor: 1

l Extract Volume: _____ (uL) Soil Aliquot Volume: ____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
	TOTAL GRO	120	~~J~~ U BC
	Surrogate amount spiked	120	

FORM I

HH 4/9

02524

1

GASOLINE ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPMWSO002007N1

ıe: SWL-TULSA Contract:

Code: SWOK Case No.: CH2M-OKC SDG No.: 38676B

:ix: (soil/water) SOIL Lab Sample ID: 38676.06

ɔle wt/vol: 4.0 (g/mL) G Lab File ID: q2971.d

ɜl: (low/med) MED Date Received: 05/22/99

ɔisture: not dec. 21 Date Analyzed: 05/28/99

Column: DB624 ID: 0.54(mm) Dilution Factor: 1

l Extract Volume: 10000 (uL) Soil Aliquot Volume: 20 (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
	TOTAL GRO	33000	
	Surrogate amount spiked	79000	

FORM I

HK 4/9

1

GASOLINE ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPMWSO0003000N1

Name: SWL-TULSA Contract:

Code: SWOK Case No.: CH2M-OKC SDG No.: 38676B

rix: (soil/water) SOIL Lab Sample ID: 38676.07

ple wt/vol: 5.0 (g/mL) G Lab File ID: g3713.d

el: (low/med) LOW Date Received: 05/22/99

oisture: not dec. 5 Date Analyzed: 05/28/99

Column: DB624 ID: 0.54(mm) Dilution Factor: 1

l Extract Volume: _____ (uL) Soil Aliquot Volume: ____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
	TOTAL GRO	100	U
	Surrogate amount spiked	100	

FORM I

HK 4/9

1

GASOLINE ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPMWSO0003006N1

..ame: SWL-TULSA Contract:

Code: SWOK Case No.: CH2M-OKC SDG No.: 38676B

rix: (soil/water) SOIL Lab Sample ID: 38676.08

ple wt/vol: 5.0 (g/mL) G Lab File ID: g3691.d

el: (low/med) LOW Date Received: 05/22/99

loisture: not dec. 19 Date Analyzed: 05/27/99

Column: DB624 ID: 0.54(mm) Dilution Factor: 1

.l Extract Volume: _____ (uL) Soil Aliquot Volume: ____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
	TOTAL GRO	93	~~J~~ U BL
	Surrogate amount spiked	120	

FORM I

4/9

1

GASOLINE ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPMWSO003012N1

Name: SWL-TULSA Contract:

Code: SWOK Case No.: CH2M-OKC SDG No.: 38676B

rix: (soil/water) SOIL Lab Sample ID: 38676.09

ple wt/vol: 5.0 (g/mL) G Lab File ID: g3692.d

el: (low/med) LOW Date Received: 05/22/99

oisture: not dec. 12 Date Analyzed: 05/27/99

Column: DB624 ID: 0.54(mm) Dilution Factor: 1

l Extract Volume: _____ (uL) Soil Aliquot Volume: ____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
	TOTAL GRO	250	
	Surrogate amount spiked	110	

FORM I

4/9

02528

1

GASOLINE ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPSBSO001000N1

Name: SWL-TULSA Contract:

Code: SWOK Case No.: CH2M-OKC SDG No.: 38676B

rix: (soil/water) SOIL Lab Sample ID: 38676.10

ple wt/vol: 5.0 (g/mL) G Lab File ID: g3693.d

el: (low/med) LOW Date Received: 05/22/99

oisture: not dec. 11 Date Analyzed: 05/28/99

Column: DB624 ID: 0.54(mm) Dilution Factor: 1

l Extract Volume: _____ (uL) Soil Aliquot Volume: ____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
	TOTAL GRO	110	U
	Surrogate amount spiked	110	

FORM I

HK 4/9

02529

1

GASOLINE ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPSBSO001000FD1

Name: SWL-TULSA Contract:

Code: SWOK Case No.: CH2M-OKC SDG No.: 38676B

rix: (soil/water) SOIL Lab Sample ID: 38676.11

ple wt/vol: 5.0 (g/mL) G Lab File ID: g3694.d

el: (low/med) LOW Date Received: 05/22/99

oisture: not dec. 11 Date Analyzed: 05/28/99

Column: DB624 ID: 0.54(mm) Dilution Factor: 1

l Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
	TOTAL GRO	110	U
	Surrogate amount spiked	110	

FORM I

4/9

1

GASOLINE ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPSBSO001004N1

Name: SWL-TULSA Contract:

Code: SWOK Case No.: CH2M-OKC SDG No.: 38676B

rix: (soil/water) SOIL Lab Sample ID: 38676.12

ple wt/vol: 5.0 (g/mL) G Lab File ID: g3695.d

el: (low/med) LOW Date Received: 05/22/99

oisture: not dec. 19 Date Analyzed: 05/28/99

Column: DB624 ID: 0.54(mm) Dilution Factor: 1

l Extract Volume: _____ (uL) Soil Aliquot Volume: ____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
	TOTAL GRO	120	U
	Surrogate amount spiked	120	

FORM I

4/9

02531

1

GASOLINE ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPSBSO001006N1

Name: SWL-TULSA Contract:

Code: SWOK Case No.: CH2M-OKC SDG No.: 38676B

rix: (soil/water) SOIL Lab Sample ID: 38676.13

ple wt/vol: 5.0 (g/mL) G Lab File ID: g3697.d

el: (low/med) LOW Date Received: 05/22/99

loisture: not dec. 21 Date Analyzed: 05/28/99

Column: DB624 ID: 0.54(mm) Dilution Factor: 1

l Extract Volume: _____ (uL) Soil Aliquot Volume: ____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
	TOTAL GRO	130	U
	Surrogate amount spiked	130	

FORM I

HK 4/9

1

GASOLINE ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPSBSO002000N1

ame: SWL-TULSA Contract:

Code: SWOK Case No.: CH2M-OKC SDG No.: 38676B

rix: (soil/water) SOIL Lab Sample ID: 38676.14

ple wt/vol: 5.0 (g/mL) G Lab File ID: g3698.d

el: (low/med) LOW Date Received: 05/22/99

oisture: not dec. 8 Date Analyzed: 05/28/99

Column: DB624 ID: 0.54(mm) Dilution Factor: 1

l Extract Volume: _____ (uL) Soil Aliquot Volume: ____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
	TOTAL GRO	110	U
	Surrogate amount spiked	110	

FORM I

4/9

1

GASOLINE ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPSBSO002004N1

Name: SWL-TULSA Contract:

Code: SWOK Case No.: CH2M-OKC SDG No.: 38676B

rix: (soil/water) SOIL Lab Sample ID: 38676.15

ple wt/vol: 5.0 (g/mL) G Lab File ID: g3699.d

el: (low/med) LOW Date Received: 05/22/99

oisture: not dec. 15 Date Analyzed: 05/28/99

Column: DB624 ID: 0.54(mm) Dilution Factor: 1

l Extract Volume: _____ (uL) Soil Aliquot Volume: ____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
	TOTAL GRO	120	U
	Surrogate amount spiked	120	

FORM I

4/9

1

GASOLINE ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPSBSO002006N1

Name: SWL-TULSA Contract:

Code: SWOK Case No.: CH2M-OKC SDG No.: 38676B

rix: (soil/water) SOIL Lab Sample ID: 38676.16

ple wt/vol: 5.0 (g/mL) G Lab File ID: g3700.d

el: (low/med) LOW Date Received: 05/22/99

oisture: not dec. 12 Date Analyzed: 05/28/99

Column: DB624 ID: 0.54(mm) Dilution Factor: 1

l Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
	TOTAL GRO	110	U
	Surrogate amount spiked	110	

FORM I

4/9

1

GASOLINE ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPSBSO003000N1

Name: SWL-TULSA Contract:

Code: SWOK Case No.: CH2M-OKC SDG No.: 38676B

rix: (soil/water) SOIL Lab Sample ID: 38676.17

ple wt/vol: 5.0 (g/mL) G Lab File ID: g3701.d

vel: (low/med) LOW Date Received: 05/22/99

Moisture: not dec. 7 Date Analyzed: 05/28/99

Column: DB624 ID: 0.54(mm) Dilution Factor: 1

l Extract Volume: _____ (uL) Soil Aliquot Volume: ____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
	TOTAL GRO	110	U
	Surrogate amount spiked	110	

FORM I

4/9

02536

1

GASOLINE ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPSBSO003004N1

Name: SWL-TULSA Contract:

Code: SWOK Case No.: CH2M-OKC SDG No.: 38676B

Matrix: (soil/water) SOIL Lab Sample ID: 38676.18

Sample wt/vol: 5.0 (g/mL) G Lab File ID: g3702.d

Level: (low/med) LOW Date Received: 05/22/99

% Moisture: not dec. 18 Date Analyzed: 05/28/99

Column: DB624 ID: 0.54(mm) Dilution Factor: 1

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
	TOTAL GRO	120	U
	Surrogate amount spiked	120	

FORM I

4/9

1

GASOLINE ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPSBSO0003006N1

..ame: SWL-TULSA Contract:

Code: SWOK Case No.: CH2M-OKC SDG No.: 38676B

rix: (soil/water) SOIL Lab Sample ID: 38676.19

ple wt/vol: 5.0 (g/mL) G Lab File ID: g3703.d

el: (low/med) LOW Date Received: 05/22/99

loisture: not dec. 19 Date Analyzed: 05/28/99

Column: DB624 ID: 0.54(mm) Dilution Factor: 1

.l Extract Volume: _____ (uL) Soil Aliquot Volume: ____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
	TOTAL GRO	120	U
	Surrogate amount spiked	120	

FORM I

HH 4/9

1

GASOLINE ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPSBSO004000N1

Name: SWL-TULSA Contract:

Code: SWOK Case No.: CH2M-OKC SDG No.: 38676B

rix: (soil/water) SOIL Lab Sample ID: 38676.20

ple wt/vol: 5.0 (g/mL) G Lab File ID: g3704.d

el: (low/med) LOW Date Received: 05/22/99

oisture: not dec. 6 Date Analyzed: 05/28/99

Column: DB624 ID: 0.54(mm) Dilution Factor: 1

l Extract Volume: _____ (uL) Soil Aliquot Volume: ____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
	TOTAL GRO	110	U
	Surrogate amount spiked	110	

FORM I

02539

1

GASOLINE ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPSBSO004004N1

› Name: SWL-TULSA Contract:

› Code: SWOK Case No.: CH2M-OKC SDG No.: 38676B

:rix: (soil/water) SOIL Lab Sample ID: 38676.23

ıple wt/vol: 5.0 (g/mL) G Lab File ID: g3740.d

/el: (low/med) LOW Date Received: 05/22/99

ioisture: not dec. 16 Date Analyzed: 06/01/99

Column: DB624 ID: 0.54(mm) Dilution Factor: 1

il Extract Volume: _____ (uL) Soil Aliquot Volume: ____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
	TOTAL GRO	120	U
	Surrogate amount spiked	120	

FORM I

4/9

1

GASOLINE ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPSBS00004008N1

Name: SWL-TULSA Contract:

Code: SWOK Case No.: CH2M-OKC SDG No.: 38676B

Matrix: (soil/water) SOIL Lab Sample ID: 38676.24

Sample wt/vol: 4.0 (g/mL) G Lab File ID: g3768.d

Level: (low/med) MED Date Received: 05/22/99

Moisture: not dec. 21 Date Analyzed: 06/02/99

Column: DB624 ID: 0.54(mm) Dilution Factor: 1

Soil Extract Volume: 10000 (uL) Soil Aliquot Volume: 20 (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q	
	TOTAL GRO	190000		J FD
	Surrogate amount spiked	79000		

FORM I

6/4/99

02541

1

GASOLINE ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPSBSO0004008FD1

Name: SWL-TULSA Contract:

Code: SWOK Case No.: CH2M-OKC SDG No.: 38676B

rix: (soil/water) SOIL Lab Sample ID: 38676.25

ple wt/vol: 4.0 (g/mL) G Lab File ID: g3770.d

el: (low/med) MED Date Received: 05/22/99

oisture: not dec. 19 Date Analyzed: 06/02/99

Column: DB624 ID: 0.54(mm) Dilution Factor: 1

l Extract Volume: 10000 (uL) Soil Aliquot Volume: 1 (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
	TOTAL GRO	7600000	
	Surrogate amount spiked	1500000	

J FD

FORM I

4/9

1

GASOLINE ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPSBWQ004000EB1

Name: SWL-TULSA Contract:

Code: SWOK Case No.: CH2M-OKC SDG No.: '38676B

:ix: (soil/water) WATER Lab Sample ID: 38676.26

ple wt/vol: 5 (g/mL) ML Lab File ID: q2915.d

el: (low/med) LOW Date Received: 05/22/99

oisture: not dec. _____ Date Analyzed: 05/24/99

Column: DB624 ID: 0.54(mm) Dilution Factor: 1

l Extract Volume: _____ (uL) Soil Aliquot Volume: ____(uL)

EB

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
	TOTAL GRO	30	
	Surrogate amount spiked	100	

FORM I

4/9

02543

DRO

Data Review and Validation for: GC TPH/TRPH

Project Name & Task:	LAREDO AFB	IWTP	
Project # & Case/SDG:	147436.DV.ZZ	38706	
Methods:	☑ SW846 8015 (GRO/DRO) ☐ TNRCC 1005 ☐ TNRCC 1006 ☐ FL-PRO ☐ Other:		
Program:	☐ AFCEE ☐ NFESC ☐ Other	**Number of Samples:** 7 total	
Field QC Samples:	1/2-FDup, 3/4/5-MAT/MS/MSD, 7-EB		
Reviewed by & Date:	A. Kelly	4/12/2000	
Matrix:	☑ Water ☐ Soil ☐ Other		

Quality Control	Form #	Requirements	Check (If No* checked, see comments)	Flags Applied (see comments)
Data Pkg Complete (DP)	Pkg	All required deliverables in pkg.	☑ OK ☐ No* ☐ Not provided	☐ Flags Applied
	COC	All samples on COC reported	☑ OK ☐ No*	☐ Flags Applied
Holding Times (HT)	1	Extraction method HT met	☑ OK ☐ No* ☐ N/A	☐ Flags Applied
	COC	Analysis method HT met	☑ OK ☐ No*	☐ Flags Applied
		Samples properly preserved	☑ OK ☐ No*	☐ Flags Applied
Surrogates (SS)	2	Method surrogates used	☑ OK ☐ No* ☐ N/A	☐ Flags Applied
		Recovery Limits: ☑ Lab ☐ Meth	☑ OK ☐ No* ☐ Diluted out	
MS/MSD or MS/LD	3	Matrix Spikes Provided	☑ MS/MSD ☐ MS/LD ☐ None*	☐ Flags Applied
		Correct Spike Used	☑ OK ☐ No*	
		Acceptance Limits: ☑ Lab ☐ Meth	☑ OK ☐ No* ☐ Diluted Out	☐ Flags Applied
LCS (BS)	3	LCS per prep. batch	☑ OK ☐ No*	☐ Flags Applied
☐ LCS only ☑ LCS/LCSD		Acceptance Limits: ☑ Lab ☐ Meth	☑ OK ☐ No*	☐ Flags Applied
Blanks (MB,TB,EB, FB/AB)	1	Detects (> MDL or RL/CRQL)	☑ All ND ☐ see blnk wksht	☐ Flags Applied
Method/Lab Blank (MB)	4	MB at required frequency	☑ OK ☐ No*	
Resolution	raw	Resolution met for IC	☐ OK ☐ No* ☑ N/A	☐ Flags Applied
	raw	Resolution met for CC	☐ OK ☐ No* ☑ N/A	
Initial Calibration (IC)	6	Minimum levels per method	☑ OK ☐ No*	☐ Flags Applied
	6	Linearity criteria met	☑ OK ☐ No* ☐ see cal wksht	
		Retention time criteria	☐ OK ☐ No* ☑ N/A	
Continuing Calib. Verif. (CC)	7	Analyzed at proper frequency	☑ OK ☐ No*	☐ Flags Applied
		%diff or %drift criteria met	☑ OK ☐ No* ☐ see cal wksht	
	8	Int. Std. RT/Area criteria met	☐ OK ☐ No* ☑ N/A	
Internal Standards (IS)	"8"	Internal Standards used	☐ Yes ☑ No ☐ see comments	☐ Flags Applied
		Sample IS area criteria met	☐ OK ☐ No* ☐ N/A	
Sample Evaluation	1	All hits within cal. Range	☑ OK ☐ No* ☐ All ND	☐ Flags Applied
	8	Samples bracketed by CCV	☑ OK ☐ No*	
	raw	TPH baseline constructed properly	☐ OK ☐ No* ☐ N/A	
	raw	Manual Integration performed	☐ No ☐ N/A ☐ see comments	
Field Duplicate (FD)	1	Precision of native vs Field Dup	☑ OK ☐ No* ☐ N/A	☐ Flags Applied

This sheet is applicable to multiple methods. All requirement items may not apply to every analytical method.

Case Narrative Comments: NO EXCEPTIONS NOTED

QC Item	Comments
	NO FLAGS APPLIED

1D

TPH ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPMWWG001000N1

Lab Name: SWL-TULSA

Lab Code: SWOK Case No.: CH2M-OKC SDG No.: 38706B

Matrix: (soil/water) WATER Lab Sample ID: 38706.01

Sample wt/vol: 1000 (g/mL) ML Lab File ID:_____

% Moisture: _____ decanted: (Y/N) __ Date Received: 05/25/99

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:05/26/99

Concentrated Extract Volume: 5000(uL) Date Analyzed: 05/26/99

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 6.6 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: UG/L	Q
----------	DRH	50	U
Surrogate amount spiked		500.00	

Invalidated Form I's
Locate IWTP Water
DRO

FORM I

4/12/2000

1D

TPH ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

WTPMWWG001000FD1

Lab Name: SWL-TULSA

Lab Code: SWOK Case No.: CH2M-OKC SDG No.: 38706B

Matrix: (soil/water) WATER Lab Sample ID: 38706.02

Sample wt/vol: 1000 (g/mL) ML Lab File ID:_____

% Moisture: _____ decanted: (Y/N) __ Date Received: 05/25/99

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:05/26/99

Concentrated Extract Volume: 5000(uL) Date Analyzed: 05/26/99

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.1 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: UG/L	Q
	----------DRH	50	U
	Surrogate amount spiked	500.00	

FORM I

4/12

02546

1D
TPH ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPMWWG002000N1

Job Name: SWL-TULSA

Lab Code: SWOK Case No.: CH2M-OKC SDG No.: 38706B

Matrix: (soil/water) WATER Lab Sample ID: 38706.03

Sample wt/vol: 1020 (g/mL) ML Lab File ID:_____

% Moisture: _____ decanted: (Y/N) __ Date Received: 05/25/99

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:05/26/99

Concentrated Extract Volume: 5000(uL) Date Analyzed: 05/26/99

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: UG/L	Q
	----------DRH	49	U
	Surrogate amount spiked	490.20	

FORM I

4/12

1D
TPH ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPMWWG003000N1

Lab Name: SWL-TULSA

Lab Code: SWOK Case No.: CH2M-OKC SDG No.: 38706B

Matrix: (soil/water) WATER Lab Sample ID: 38706.06

Sample wt/vol: 1010 (g/mL) ML Lab File ID:_____

% Moisture: _____ decanted: (Y/N) __ Date Received: 05/25/99

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:05/26/99

Concentrated Extract Volume: 5000(uL) Date Analyzed: 05/26/99

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 6.7 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: UG/L	Q
	----------DRH	5000	
	Surrogate amount spiked	495.05	

FORM I

4/12

1D
TPH ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

WTPMWWQ002000EB1

Lab Name: SWL-TULSA

Lab Code: SWOK Case No.: CH2M-OKC SDG No.: 38706B

Matrix: (soil/water) WATER Lab Sample ID: 38706.07

Sample wt/vol: 1010 (g/mL) ML Lab File ID:_____

% Moisture: _____ decanted: (Y/N) __ Date Received: 05/25/99

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:05/26/99

Concentrated Extract Volume: 5000(uL) Date Analyzed: 05/26/99

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.7 Sulfur Cleanup: (Y/N) N

EB

CAS NO.	COMPOUND	CONCENTRATION UNITS: UG/L	Q
	----------DRH	50	U
	Surrogate amount spiked	495.05	

FORM I

4/12

Data Review and Validation for: GC TPH/TRPH

Project Name & Task:	LAREDO AFB	IWTP
Project # & Case/SDG:	147436.DV.ZZ	38676
Methods:	☑ SW846 8015 (GRO/DRO) ☐ TNRCC 1005 ☐ TNRCC 1006 ☐ FL-PRO ☐ Other:	
Program:	☐ AFCEE ☐ NFESC ☐ Other	**Number of Samples:** 26 total
Field QC Samples:	10/11 + 24/25 - FDUP, 26 - EB 20/21/22 - NAT/MS/MSD #1 - MS/MSD	
Reviewed by & Date:	H. Kelly 4/9/2000 #11 - MS/MSD	
Matrix:	☑ Water ☑ Soil ☐ Other	

Quality Control	Form #	Requirements	Check (If No* checked, see comments)	Flags Applied (see comments)
Data Pkg Complete (DP)	Pkg	All required deliverables in pkg.	☑ OK ☐ No* ☐ Not provided	☐ Flags Applied
	COC	All samples on COC reported	☑ OK ☐ No*	☐ Flags Applied
Holding Times (HT)	1	Extraction method HT met	☑ OK ☐ No* ☐ N/A	☐ Flags Applied
	COC	Analysis method HT met	☑ OK ☐ No*	☐ Flags Applied
		Samples properly preserved	☑ OK ☐ No*	☐ Flags Applied
Surrogates (SS)	2	Method surrogates used	☑ OK ☐ No* ☐ N/A	☐ Flags Applied
		Recovery Limits: ☑ Lab ☐ Meth	☑ OK ☐ No* ☐ Diluted out	
MS/MSD or MS/LD	3	Matrix Spikes Provided	☑ MS/MSD ☐ MS/LD ☐ None*	☐ Flags Applied
		Correct Spike Used	☑ OK ☐ No*	
		Acceptance Limits: ☑ Lab ☐ Meth	☐ OK ☑ No* ☐ Diluted Out	☐ Flags Applied
LCS (BS)	3	LCS per prep. batch	☑ OK ☐ No*	☐ Flags Applied
☐ LCS only ☑ LCS/LCSD		Acceptance Limits: ☑ Lab ☐ Meth	☑ OK ☐ No*	☐ Flags Applied
Blanks (MB,TB,EB, FB/AB)	1	Detects (> MDL or RL/CRQL)	☑ All ND ☐ see blnk wksht	☐ Flags Applied
Method/Lab Blank (MB)	4	MB at required frequency	☑ OK ☐ No*	
Resolution	raw	Resolution met for IC	☐ OK ☐ No* ☑ N/A	☐ Flags Applied
	raw	Resolution met for CC	☐ OK ☐ No* ☑ N/A	
Initial Calibration (IC)	6	Minimum levels per method	☑ OK ☐ No*	☐ Flags Applied
	6	Linearity criteria met	☑ OK ☐ No* ☐ see cal wksht	
		Retention time criteria	☑ OK ☐ No* ☐ N/A	
Continuing Calib. Verif. (CC)	7	Analyzed at proper frequency	☑ OK ☐ No*	☐ Flags Applied
		%diff or %drift criteria met	☑ OK ☐ No* ☐ see cal wksht	
	8	Int. Std. RT/Area criteria met	☐ OK ☐ No* ☑ N/A	
Internal Standards (IS)	"8"	Internal Standards used	☐ Yes ☑ No ☐ see comments	☐ Flags Applied
		Sample IS area criteria met	☐ OK ☐ No* ☑ N/A	
Sample Evaluation	1	All hits within cal. Range	☑ OK ☐ No* ☐ All ND	☐ Flags Applied
	8	Samples bracketed by CCV	☑ OK ☐ No*	
	raw	TPH baseline constructed properly	☐ OK ☐ No* ☐ N/A	
	raw	Manual Integration performed	☐ No ☐ N/A ☐ see comments	
Field Duplicate (FD)	1	Precision of native vs Field Dup	☐ OK ☑ No* ☐ N/A	☑ Flags Applied

This sheet is applicable to multiple methods. All requirement items may not apply to every analytical method.

Case Narrative Comments: MS/MSD

QC Item	Comments
MS/MSD	3 sets of MS/MSD analyzed
	IWTP SB50 00 4000 N1 - RPD = 40% (LIMIT = 31%)
	Results - ND ∴ NO FLAGS APPLIED
FDUP	24/25 = 220/950 - Flag 24 + 25 "J"

1D
TPH ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

WS0001000N1

..ame: SWL-TULSA

Code: SWOK Case No.: CH2M-OKC SDG No.: 38676B

rix: (soil/water) SOIL Lab Sample ID: 38676.01

ple wt/vol: 20.9 (g/mL) G Lab File ID:_____

loisture: 13 decanted: (Y/N) N Date Received: 05/22/99

raction: (SepF/Cont/Sonc) OTHER Date Extracted:05/26/99

centrated Extract Volume: 5000(uL) Date Analyzed: 05/28/99

ection Volume: 1.0(uL) Dilution Factor: 1.0

Cleanup: (Y/N) N pH: 7.0 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: MG/KG	Q
	----------DRH	42	
	Surrogate amount spiked	13.75	

FORM I

HK 4/9/2000

1D
TPH ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

WS0001005N1

..ame: SWL-TULSA

Code: SWOK Case No.: CH2M-OKC SDG No.: 38676B

rix: (soil/water) SOIL Lab Sample ID: 38676.02

ple wt/vol: 21.7 (g/mL) G Lab File ID:_____

loisture: 16 decanted: (Y/N) N Date Received: 05/22/99

raction: (SepF/Cont/Sonc) OTHER Date Extracted:05/26/99

centrated Extract Volume: 5000(uL) Date Analyzed: 05/28/99

jection Volume: 1.0(uL) Dilution Factor: 1.0

Cleanup: (Y/N) N pH: 7.0 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: MG/KG	Q
	----------DRH	11	U
	Surrogate amount spiked	13.72	

FORM I

4/19

1D
TPH ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

WS0001007N1

ame: SWL-TULSA

Code: SWOK Case No.: CH2M-OKC SDG No.: 38676B

rix: (soil/water) SOIL Lab Sample ID: 38676.03

ple wt/vol: 20.9 (g/mL) G Lab File ID:_____

oisture: 21 decanted: (Y/N) N Date Received: 05/22/99

raction: (SepF/Cont/Sonc) OTHER Date Extracted:05/26/99

centrated Extract Volume: 5000(uL) Date Analyzed: 05/28/99

ection Volume: 1.0(uL) Dilution Factor: 1.0

Cleanup: (Y/N) N pH: 7.0 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: MG/KG	Q
	----------DRH	210	
	Surrogate amount spiked	15.14	

FORM I

4/9

1D

TPH ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

WS0002000N1

Name: SWL-TULSA

Code: SWOK Case No.: CH2M-OKC SDG No.: 38676B

Matrix: (soil/water) SOIL Lab Sample ID: 38676.04

Sample wt/vol: 20.7 (g/mL) G Lab File ID:_____

Moisture: 7 decanted: (Y/N) N Date Received: 05/22/99

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:05/26/99

Concentrated Extract Volume: 5000(uL) Date Analyzed: 05/28/99

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: MG/KG	Q
	----------DRH	10	U
	Surrogate amount spiked	12.99	

FORM I

HH 4/9

1D
TPH ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

WS0002004N1

..ame: SWL-TULSA

Code: SWOK Case No.: CH2M-OKC SDG No.: 38676B

rix: (soil/water) SOIL Lab Sample ID: 38676.05

ple wt/vol: 21.5 (g/mL) G Lab File ID:_____

oisture: 16 decanted: (Y/N) N Date Received: 05/22/99

raction: (SepF/Cont/Sonc) OTHER Date Extracted:05/26/99

centrated Extract Volume: 5000(uL) Date Analyzed: 05/28/99

ection Volume: 1.0(uL) Dilution Factor: 1.0

Cleanup: (Y/N) N pH: 7.0 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: MG/KG	Q
	----------DRH	11	U
	Surrogate amount spiked	13.84	

FORM I

HK 4/9

1D
TPH ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

WS0002007N1

ame: SWL-TULSA

Code: SWOK Case No.: CH2M-OKC SDG No.: 38676B

rix: (soil/water) SOIL Lab Sample ID: 38676.06

ple wt/vol: 21.8 (g/mL) G Lab File ID:_____

oisture: 21 decanted: (Y/N) N Date Received: 05/22/99

raction: (SepF/Cont/Sonc) OTHER Date Extracted:05/26/99

centrated Extract Volume: 5000(uL) Date Analyzed: 05/28/99

ection Volume: 1.0(uL) Dilution Factor: 1.0

Cleanup: (Y/N) N pH: 7.0 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: MG/KG	Q
	----------DRH	28	
	Surrogate amount spiked	14.52	

FORM I

HH 4/9

02556

1D
TPH ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

WS0003000N1

.ame: SWL-TULSA

Code: SWOK Case No.: CH2M-OKC SDG No.: 38676B

rix: (soil/water) SOIL Lab Sample ID: 38676.07

ple wt/vol: 21.4 (g/mL) G Lab File ID:_____

loisture: 5 decanted: (Y/N) N Date Received: 05/22/99

raction: (SepF/Cont/Sonc) OTHER Date Extracted:05/26/99

icentrated Extract Volume: 5000(uL) Date Analyzed: 05/28/99

jection Volume: 1.0(uL) Dilution Factor: 1.0

Cleanup: (Y/N) N pH: 7.0 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: MG/KG	Q
----------	DRH	350	
Surrogate amount spiked		12.30	

FORM I

HK 4/9

02557

1D
TPH ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

WS0003006N1

› ame: SWL-TULSA

› Code: SWOK Case No.: CH2M-OKC SDG No.: 38676B

:rix: (soil/water) SOIL Lab Sample ID: 38676.08

ıple wt/vol: 21.7 (g/mL) G Lab File ID:_____

Moisture: 19 decanted: (Y/N) N Date Received: 05/22/99

:raction: (SepF/Cont/Sonc) OTHER Date Extracted:05/26/99

ıcentrated Extract Volume: 5000(uL) Date Analyzed: 05/28/99

jection Volume: 1.0(uL) Dilution Factor: 1.0

C Cleanup: (Y/N) N pH: 7.0 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: MG/KG	Q
	----------DRH	11	U
	Surrogate amount spiked	14.22	

FORM I

4/9

02558

1D
TPH ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

WS0003012N1

Name: SWL-TULSA

Code: SWOK Case No.: CH2M-OKC SDG No.: 38676B

Matrix: (soil/water) SOIL Lab Sample ID: 38676.09

Sample wt/vol: 20.7 (g/mL) G Lab File ID:_____

Moisture: 12 decanted: (Y/N) N Date Received: 05/22/99

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:05/26/99

Concentrated Extract Volume: 5000(uL) Date Analyzed: 05/28/99

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: MG/KG	Q
	----------DRH	11	U
	Surrogate amount spiked	13.72	

FORM I

4/9

1D

TPH ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

WS0001007N1

ame: SWL-TULSA

Code: SWOK Case No.: CH2M-OKC SDG No.: 38676B

rix: (soil/water) SOIL Lab Sample ID: 38676.10

ple wt/vol: 21.1 (g/mL) G Lab File ID:_____

oisture: 11 decanted: (Y/N) N Date Received: 05/22/99

raction: (SepF/Cont/Sonc) OTHER Date Extracted:05/26/99

centrated Extract Volume: 5000(uL) Date Analyzed: 05/28/99

ection Volume: 1.0(uL) Dilution Factor: 1.0

Cleanup: (Y/N) N pH: 7.0 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: MG/KG	Q
	----------DRH	11	U
	Surrogate amount spiked	13.31	

FORM I

4/9

1D

TPH ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

BS0001000FD1

..ame: SWL-TULSA

Code: SWOK Case No.: CH2M-OKC SDG No.: 38676B

rix: (soil/water) SOIL Lab Sample ID: 38676.11

ple wt/vol: 21.0 (g/mL) G Lab File ID:_____

loisture: 11 decanted: (Y/N) N Date Received: 05/22/99

raction: (SepF/Cont/Sonc) OTHER Date Extracted:05/26/99

centrated Extract Volume: 5000(uL) Date Analyzed: 05/28/99

ection Volume: 1.0(uL) Dilution Factor: 1.0

Cleanup: (Y/N) N pH: 7.0 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: MG/KG	Q
	----------DRH	11	U
	Surrogate amount spiked	13.38	

FORM I

HH 4/9

02561

1D
TPH ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

BS0001004N1

Name: SWL-TULSA

Code: SWOK Case No.: CH2M-OKC SDG No.: 38676B

rix: (soil/water) SOIL Lab Sample ID: 38676.12

ple wt/vol: 21.4 (g/mL) G Lab File ID:_____

loisture: 19 decanted: (Y/N) N Date Received: 05/22/99

raction: (SepF/Cont/Sonc) OTHER Date Extracted:05/26/99

ıcentrated Extract Volume: 5000(uL) Date Analyzed: 05/28/99

ection Volume: 1.0(uL) Dilution Factor: 1.0

Cleanup: (Y/N) N pH: 7.0 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: MG/KG	Q
	----------DRH	12	U
	Surrogate amount spiked	14.42	

FORM I

4/9

02562

1D

TPH ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

BS0001006N1

) Name: SWL-TULSA

) Code: SWOK Case No.: CH2M-OKC SDG No.: 38676B

:rix: (soil/water) SOIL Lab Sample ID: 38676.13

ıple wt/vol: 21.7 (g/mL) G Lab File ID:_____

Moisture: 21 decanted: (Y/N) N Date Received: 05/22/99

:raction: (SepF/Cont/Sonc) OTHER Date Extracted:05/26/99

ıcentrated Extract Volume: 5000(uL) Date Analyzed: 05/28/99

jection Volume: 1.0(uL) Dilution Factor: 1.0

: Cleanup: (Y/N) N pH: 7.0 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: MG/KG	Q
	----------DRH	12	U
	Surrogate amount spiked	14.58	

FORM I

4/9

02563

1D

TPH ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

BS0002000N1

Name: SWL-TULSA

Code: SWOK Case No.: CH2M-OKC SDG No.: 38676B

rix: (soil/water) SOIL Lab Sample ID: 38676.14

ple wt/vol: 21.9 (g/mL) G Lab File ID:_____

oisture: 8 decanted: (Y/N) N Date Received: 05/22/99

raction: (SepF/Cont/Sonc) OTHER Date Extracted:05/26/99

centrated Extract Volume: 5000(uL) Date Analyzed: 05/28/99

ection Volume: 1.0(uL) Dilution Factor: 1.0

Cleanup: (Y/N) N pH: 7.0 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: MG/KG	Q
	----------DRH	9.9	U
	Surrogate amount spiked	12.41	

FORM I

4/9

1D
TPH ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

BS0002004N1

Name: SWL-TULSA

Code: SWOK Case No.: CH2M-OKC SDG No.: 38676B

rix: (soil/water) SOIL Lab Sample ID: 38676.15

ple wt/vol: 21.8 (g/mL) G Lab File ID:_____

loisture: 15 decanted: (Y/N) N Date Received: 05/22/99

raction: (SepF/Cont/Sonc) OTHER Date Extracted:05/26/99

icentrated Extract Volume: 5000(uL) Date Analyzed: 05/28/99

ection Volume: 1.0(uL) Dilution Factor: 1.0

Cleanup: (Y/N) N pH: 7.0 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: MG/KG	Q
	----------DRH	83	
	Surrogate amount spiked	13.49	

FORM I

4/9

1D

TPH ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

BS0002006N1

..ame: SWL-TULSA

Code: SWOK Case No.: CH2M-OKC SDG No.: 38676B

rix: (soil/water) SOIL Lab Sample ID: 38676.16

ple wt/vol: 20.5 (g/mL) G Lab File ID:_____

loisture: 12 decanted: (Y/N) N Date Received: 05/22/99

raction: (SepF/Cont/Sonc) OTHER Date Extracted:05/26/99

icentrated Extract Volume: 5000(uL) Date Analyzed: 05/28/99

ection Volume: 1.0(uL) Dilution Factor: 1.0

Cleanup: (Y/N) N pH: 7.0 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: MG/KG	Q
	----------DRH_____	11	U
	Surrogate amount spiked	13.86	

FORM I

4/9

1D

TPH ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

BS0003000N1

..ame: SWL-TULSA

Code: SWOK Case No.: CH2M-OKC SDG No.: 38676B

rix: (soil/water) SOIL Lab Sample ID: 38676.17

ıple wt/vol: 21.1 (g/mL) G Lab File ID:_____

loisture: 7 decanted: (Y/N) N Date Received: 05/22/99

.raction: (SepF/Cont/Sonc) OTHER Date Extracted:05/26/99

ıcentrated Extract Volume: 5000(uL) Date Analyzed: 05/28/99

ıection Volume: 1.0(uL) Dilution Factor: 1.0

: Cleanup: (Y/N) N pH: 7.0 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: MG/KG	Q
	----------DRH	10	U
	Surrogate amount spiked	12.74	

FORM I

4/9

1D

TPH ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

BS0003004N1

Name: SWL-TULSA

Code: SWOK Case No.: CH2M-OKC SDG No.: 38676B

rix: (soil/water) SOIL Lab Sample ID: 38676.18

ple wt/vol: 21.0 (g/mL) G Lab File ID:_____

oisture: 18 decanted: (Y/N) N Date Received: 05/22/99

raction: (SepF/Cont/Sonc) OTHER Date Extracted:05/26/99

centrated Extract Volume: 5000(uL) Date Analyzed: 05/28/99

ection Volume: 1.0(uL) Dilution Factor: 1.0

Cleanup: (Y/N) N pH: 7.0 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: MG/KG	Q
	----------DRH	12	U
	Surrogate amount spiked	14.52	

FORM I

4/11/99

02563

1D

TPH ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

BS0003006N1

. .me: SWL-TULSA

Code: SWOK Case No.: CH2M-OKC SDG No.: 38676B

rix: (soil/water) SOIL Lab Sample ID: 38676.19

ple wt/vol: 21.4 (g/mL) G Lab File ID:_____

oisture: 19 decanted: (Y/N) N Date Received: 05/22/99

raction: (SepF/Cont/Sonc) OTHER Date Extracted:05/26/99

centrated Extract Volume: 5000(uL) Date Analyzed: 05/28/99

ection Volume: 1.0(uL) Dilution Factor: 1.0

: Cleanup: (Y/N) N pH: 7.0 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: MG/KG	Q
	----------DRH	12	U
	Surrogate amount spiked	14.42	

FORM I

4/9

1D

TPH ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

BS0004000N1

ame: SWL-TULSA

Code: SWOK Case No.: CH2M-OKC SDG No.: 38676B

rix: (soil/water) SOIL Lab Sample ID: 38676.20

ple wt/vol: 20.9 (g/mL) G Lab File ID:_____

loisture: 6 decanted: (Y/N) N Date Received: 05/22/99

raction: (SepF/Cont/Sonc) OTHER Date Extracted:05/26/99

centrated Extract Volume: 5000(uL) Date Analyzed: 05/28/99

ection Volume: 1.0(uL) Dilution Factor: 1.0

Cleanup: (Y/N) N pH: 7.0 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: MG/KG	Q
	----------DRH	10	U
	Surrogate amount spiked	12.73	

FORM I

4/9

02570

1D
TPH ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

BS0004004N1

) ..ame: SWL-TULSA

) Code: SWOK Case No.: CH2M-OKC SDG No.: 38676B

:rix: (soil/water) SOIL Lab Sample ID: 38676.23

ıple wt/vol: 20.4 (g/mL) G Lab File ID:_____

loisture: 16 decanted: (Y/N) N Date Received: 05/22/99

:raction: (SepF/Cont/Sonc) OTHER Date Extracted:05/26/99

ıcentrated Extract Volume: 5000(uL) Date Analyzed: 05/28/99

jection Volume: 1.0(uL) Dilution Factor: 1.0

: Cleanup: (Y/N) N pH: 7.0 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: MG/KG	Q
	----------DRH	12	U
	Surrogate amount spiked	14.59	

FORM I

HH 4/99

02571

1D
TPH ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

BS0004008N1

...ame: SWL-TULSA

Code: SWOK Case No.: CH2M-OKC SDG No.: 38676B

rix: (soil/water) SOIL Lab Sample ID: 38676.24

ple wt/vol: 21.6 (g/mL) G Lab File ID:_____

oisture: 21 decanted: (Y/N) N Date Received: 05/22/99

raction: (SepF/Cont/Sonc) OTHER Date Extracted:05/26/99

centrated Extract Volume: 5000(uL) Date Analyzed: 05/28/99

ection Volume: 1.0(uL) Dilution Factor: 1.0

Cleanup: (Y/N) N pH: 7.0 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: MG/KG	Q
	----------DRH	220	
	Surrogate amount spiked	14.65	

J FD

FORM I

4/9

02572

1D

TPH ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

BS0004008FD1DL

Name: SWL-TULSA

Code: SWOK Case No.: CH2M-OKC SDG No.: 38676B

rix: (soil/water) SOIL Lab Sample ID: 38676.25DL

ple wt/vol: 21.7 (g/mL) G Lab File ID:_____

loisture: 19 decanted: (Y/N) N Date Received: 05/22/99

raction: (SepF/Cont/Sonc) OTHER Date Extracted:05/26/99

ncentrated Extract Volume: 5000(uL) Date Analyzed: 06/01/99

jection Volume: 1.0(uL) Dilution Factor: 5.0

Cleanup: (Y/N) N pH: 7.0 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: MG/KG	Q
	----------DRH	950	~~D~~ J FD
	Surrogate amount spiked	14.22	

FORM I

HK 4/9

02573

1D
TPH ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

BWQ004000E

ame: SWL-TULSA

Code: SWOK Case No.: CH2M-OKC SDG No.: 38676B

rix: (soil/water) WATER Lab Sample ID: 38676.26

ple wt/vol: 1010 (g/mL) ML Lab File ID:_____

loisture: _____ decanted: (Y/N) __ Date Received: 05/22/99

raction: (SepF/Cont/Sonc) OTHER Date Extracted:05/26/99

centrated Extract Volume: 5000(uL) Date Analyzed: 06/03/99

ection Volume: 1.0(uL) Dilution Factor: 1.0

Cleanup: (Y/N) N pH: 6.8 Sulfur Cleanup: (Y/N) N

EB

CAS NO.	COMPOUND	CONCENTRATION UNITS: UG/L	Q
	----------DRH	50	U
	Surrogate amount spiked	495.05	

FORM I

dk 4/9

02574

Data Review and Validation for: GC TPH/TRPH

Project Name & Task:	LAREDO AFB	IWTP	
Project # & Case/SDG:	147436.DV.ZZ	38706	
Methods:	☐ SW846 8015 (GRO/DRO) ☑ TNRCC 1005 ☐ TNRCC 1006 ☐ FL-PRO ☐ Other:		
Program:	☐ AFCEE ☐ NFESC ☐ Other	**Number of Samples:** 7 total	
Field QC Samples:	1/7-FDup 3/4/5 - native/MS/MSD, 7-EB		
Reviewed by & Date:	H. Kelly	4/12/2006	
Matrix:	☑ Water ☐ Soil ☐ Other		

Quality Control	Form #	Requirements	Check (If No* checked, see comments)	Flags Applied (see comments)
Data Pkg Complete (DP)	Pkg	All required deliverables in pkg.	☑ OK ☐ No* ☐ Not provided	☐ Flags Applied
	COC	All samples on COC reported	☑ OK ☐ No*	☐ Flags Applied
Holding Times (HT)	1	Extraction method HT met	☐ OK ☑ No* ☐ N/A	☐ Flags Applied
	COC	Analysis method HT met	☐ OK ☑ No*	☐ Flags Applied
		Samples properly preserved	☑ OK ☐ No*	☐ Flags Applied
Surrogates (SS)	2	Method surrogates used	☐ OK ☐ No* ☑ N/A	☐ Flags Applied
		Recovery Limits: ☐ Lab ☐ Meth	☐ OK ☐ No* ☐ Diluted out	
MS/MSD or MS/LD	3	Matrix Spikes Provided	☑ MS/MSD ☐ MS/LD ☐ None*	☐ Flags Applied
		Correct Spike Used	☑ OK ☐ No*	
		Acceptance Limits: ☑ Lab ☐ Meth	☐ OK ☑ No* ☐ Diluted Out	☐ Flags Applied
LCS (BS)	3	LCS per prep. batch	☑ OK ☐ No*	☐ Flags Applied
☐ LCS only ☑ LCS/LCSD		Acceptance Limits: ☑ Lab ☐ Meth	☐ OK ☑ No*	☐ Flags Applied
Blanks (MB,TB,EB, FB/AB)	1	Detects (> MDL or RL/CRQL)	☑ All ND ☐ see blnk wksht	☐ Flags Applied
Method/Lab Blank (MB)	4	MB at required frequency	☑ OK ☐ No*	
Resolution	raw	Resolution met for IC	☐ OK ☐ No* ☑ N/A	☐ Flags Applied
	raw	Resolution met for CC	☐ OK ☐ No* ☑ N/A	
Initial Calibration (IC)	6	Minimum levels per method	☑ OK ☐ No*	☐ Flags Applied
	6	Linearity criteria met	☑ OK ☐ No* ☐ see cal wksht	
		Retention time criteria	☐ OK ☐ No* ☑ N/A	
Continuing Calib. Verif. (CC)	7	Analyzed at proper frequency	☑ OK ☐ No*	☐ Flags Applied
		%diff or %drift criteria met	☑ OK ☐ No* ☐ see cal wksht	
	8	Int. Std. RT/Area criteria met	☐ OK ☐ No* ☑ N/A	
Internal Standards (IS)	"8"	Internal Standards used	☐ Yes ☑ No ☐ see comments	☐ Flags Applied
		Sample IS area criteria met	☐ OK ☐ No* ☐ N/A	
Sample Evaluation	1	All hits within cal. Range	☑ OK ☐ No* ☐ All ND	☐ Flags Applied
	8	Samples bracketed by CCV	☑ OK ☐ No*	
	raw	TPH baseline constructed properly	☐ OK ☐ No* ☐ N/A	
	raw	Manual Integration performed	☐ No ☐ N/A ☐ see comments	
Field Duplicate (FD)	1	Precision of native vs Field Dup	☑ OK ☐ No* ☐ N/A	☐ Flags Applied

This sheet is applicable to multiple methods. All requirement items may not apply to every analytical method.

Case Narrative Comments:

HT, MS, LCS

QC Item	Comments
HT.	All samples originally extracted within HT. However, due to poor MS/MSD, LCS/LCSD recoveries, (high) samples re-extracted outside HT. Flag original "R", flag re-analyses "J/UJ"

Data Review and Validation for: GC TPH/TRPH

Project Name & Task:	LAREDO AFB	IWTP	
Project # & Case/SDG:	147436.DV.ZZ	38706	
Methods:	☐ SW846 8015 (GRO/DRO) ☑ TNRCC 1005 ☐ TNRCC 1006 ☐ FL-PRO ☐ Other:		
Program:	☐ AFCEE ☐ NFESC ☐ Other	**Number of Samples:**	7 total
Field QC Samples:	1/2-Dup, 3/4/5-MS/MSD, 7-EB		
Reviewed by & Date:	A. Kelly	4/12/2000	
Matrix:	☑ Water ☐ Soil ☐ Other		

MS/MSD — MS/MSD Recoveries = 337/203 (30-150 Limits)
RPD = 50 (Limit - 32)

LCS/LCSD — LCS/LCSD Recoveries = 223/417
RPD = 61

MS/MSD
LCS/LCSD — Re-extraction + Re-Analysis - OK

1D

TPH ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPMWWG001000N1

Name: SWL-TULSA

Code: SWOK Case No.: CH2M-OKC SDG No.: 38706C

rix: (soil/water) WATER Lab Sample ID: 38706.01

ple wt/vol: 30 (g/mL) ML Lab File ID:_____

oisture: _____ decanted: (Y/N) __ Date Received: 05/25/99

raction: (SepF/Cont/Sonc) SEPF Date Extracted:05/29/99

centrated Extract Volume: 3000(uL) Date Analyzed: 06/09/99

ection Volume: 1.0(uL) Dilution Factor: 1.0

Cleanup: (Y/N) N pH: 6.6 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: MG/L	Q
	C6-C10	5.0	U
	>C10-C28	5.0	U
	C6-C28	10	U

R ms

FORM I

4/12/2000

02577

1D
TPH ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

TPMWWG001000N1RE

Name: SWL-TULSA

Code: SWOK Case No.: CH2M-OKC SDG No.: 38706C

rix: (soil/water) WATER Lab Sample ID: 38706.01RE

ple wt/vol: 30 (g/mL) ML Lab File ID:_____

oisture: _____ decanted: (Y/N) __ Date Received: 05/25/99

raction: (SepF/Cont/Sonc) SEPF Date Extracted:06/10/99

centrated Extract Volume: 3000(uL) Date Analyzed: 06/10/99

ection Volume: 1.0(uL) Dilution Factor: 1.0

Cleanup: (Y/N) N pH: 6.6 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: MG/L	Q
	C6-C10	5.0	U
	>C10-C28	5.0	U
	C6-C28	10	U

UJ HT

FORM I

4/12

1D
TPH ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

WTPMWWG001000FD1

› Name: SWL-TULSA

› Code: SWOK Case No.: CH2M-OKC SDG No.: 38706C

:rix: (soil/water) WATER Lab Sample ID: 38706.02

mple wt/vol: 30 (g/mL) ML Lab File ID:_____

Moisture: _____ decanted: (Y/N) __ Date Received: 05/25/99

:raction: (SepF/Cont/Sonc) SEPF Date Extracted:05/29/99

ncentrated Extract Volume: 3000(uL) Date Analyzed: 06/09/99

jection Volume: 1.0(uL) Dilution Factor: 1.0

C Cleanup: (Y/N) N pH: 7.1 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: MG/L	Q
	C6-C10	5.0	U
	>C10-C28	5.0	U
	C6-C28	10	U

R ms

FORM I

4/12

02579

1D
TPH ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

PMWWG001000FD1RE

Name: SWL-TULSA

Code: SWOK Case No.: CH2M-OKC SDG No.: 38706C

rix: (soil/water) WATER Lab Sample ID: 38706.02RE

ple wt/vol: 30 (g/mL) ML Lab File ID:_____

oisture: _____ decanted: (Y/N) __ Date Received: 05/25/99

raction: (SepF/Cont/Sonc) SEPF Date Extracted:06/10/99

centrated Extract Volume: 3000(uL) Date Analyzed: 06/10/99

ection Volume: 1.0(uL) Dilution Factor: 1.0

Cleanup: (Y/N) N pH: 7.1 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: MG/L	Q
	C6-C10	5.0	U
	>C10-C28	5.0	U
	C6-C28	10	U

UJ HT

FORM I

4/12

02580

1D

TPH ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPMWWG002000N1

Name: SWL-TULSA

Code: SWOK Case No.: CH2M-OKC SDG No.: 38706C

rix: (soil/water) WATER Lab Sample ID: 38706.03

ıple wt/vol: 30 (g/mL) ML Lab File ID:_____

loisture: _____ decanted: (Y/N) __ Date Received: 05/25/99

raction: (SepF/Cont/Sonc) SEPF Date Extracted:05/29/99

ıcentrated Extract Volume: 3000(uL) Date Analyzed: 06/09/99

jection Volume: 1.0(uL) Dilution Factor: 1.0

Cleanup: (Y/N) N pH: 6.8 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: MG/L	Q
	C6-C10	5.0	U
	>C10-C28	5.0	U
	C6-C28	10	U

R MS

FORM I

4/12

02581

1D
TPH ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

TPMWWG002000N1RE

Name: SWL-TULSA

Code: SWOK Case No.: CH2M-OKC SDG No.: 38706C

rix: (soil/water) WATER Lab Sample ID: 38706.03RE

ple wt/vol: 30 (g/mL) ML Lab File ID:_____

loisture: _____ decanted: (Y/N) __ Date Received: 05/25/99

raction: (SepF/Cont/Sonc) SEPF Date Extracted:06/10/99

ncentrated Extract Volume: 3000(uL) Date Analyzed: 06/10/99

jection Volume: 1.0(uL) Dilution Factor: 1.0

Cleanup: (Y/N) N pH: 6.8 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: MG/L	Q	
	C6-C10	5.0	U	UJ
	>C10-C28	5.0	U	
	C6-C28	10	U	HJ

FORM I

4/12

02582

1D

TPH ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPMWWG003000N1

) Name: SWL-TULSA

) Code: SWOK Case No.: CH2M-OKC SDG No.: 38706C

:rix: (soil/water) WATER Lab Sample ID: 38706.06

ıple wt/vol: 30 (g/mL) ML Lab File ID:_____

ioisture: _____ decanted: (Y/N) __ Date Received: 05/25/99

:raction: (SepF/Cont/Sonc) SEPF Date Extracted:05/29/99

ıcentrated Extract Volume: 3000(uL) Date Analyzed: 06/09/99

jection Volume: 1.0(uL) Dilution Factor: 1.0

: Cleanup: (Y/N) N pH: 6.1 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: MG/L	Q
	C6-C10	5.0	U
	>C10-C28	6.3	
	C6-C28	6.3	

R ms

FORM I

4/12

02583

1D

TPH ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

TPMWWG003000N1RE

Name: SWL-TULSA

Code: SWOK Case No.: CH2M-OKC SDG No.: 38706C

rix: (soil/water) WATER Lab Sample ID: 38706.06RE

ple wt/vol: 30 (g/mL) ML Lab File ID:_____

oisture: _____ decanted: (Y/N) __ Date Received: 05/25/99

raction: (SepF/Cont/Sonc) SEPF Date Extracted:06/10/99

centrated Extract Volume: 3000(uL) Date Analyzed: 06/11/99

ection Volume: 1.0(uL) Dilution Factor: 1.0

Cleanup: (Y/N) N pH: 6.1 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: MG/L	Q	
	C6-C10	5.0	U	UJ HT
	>C10-C28	5.7		J
	C6-C28	5.7		J

FORM I

4/12

02584

1D

TPH ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

WTPMWWQ002000EB1

) Name: SWL-TULSA

) Code: SWOK Case No.: CH2M-OKC SDG No.: 38706C

:rix: (soil/water) WATER Lab Sample ID: 38706.07

nple wt/vol: 30 (g/mL) ML Lab File ID:_____

Moisture: _____ decanted: (Y/N) __ Date Received: 05/25/99

:raction: (SepF/Cont/Sonc) SEPF Date Extracted:05/29/99

ncentrated Extract Volume: 3000(uL) Date Analyzed: 06/09/99

jection Volume: 1.0(uL) Dilution Factor: 1.0

C Cleanup: (Y/N) N pH: 7.7 Sulfur Cleanup: (Y/N) N

EB

CAS NO.	COMPOUND	CONCENTRATION UNITS: MG/L	Q
	C6-C10	5.0	U
	>C10-C28	5.0	U
	C6-C28	10	U

e ms

FORM I

4/12

1D
TPH ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

PMWWQ002000EB1RE

..ame: SWL-TULSA

Code: SWOK Case No.: CH2M-OKC SDG No.: 38706C

rix: (soil/water) WATER Lab Sample ID: 38706.07RE

ple wt/vol: 30 (g/mL) ML Lab File ID:_____

loisture: _____ decanted: (Y/N) __ Date Received: 05/25/99

raction: (SepF/Cont/Sonc) SEPF Date Extracted:06/10/99

ncentrated Extract Volume: 3000(uL) Date Analyzed: 06/11/99

jection Volume: 1.0(uL) Dilution Factor: 1.0

Cleanup: (Y/N) N pH: 7.7 Sulfur Cleanup: (Y/N) N

EB

CAS NO.	COMPOUND	CONCENTRATION UNITS: UG/L	Q
	C6-C10	5.0	U
	>C10-C28	5.0	U
	C6-C28	10	U

FORM I

4/12

02586

Data Review and Validation for: GC TPH/TRPH

Project Name & Task:	LAREDO AFB	IWTP
Project # & Case/SDG:	147436.DV.ZZ	38676
Methods:	☐ SW846 8015 (GRO/DRO) ☑ TNRCC 1005 ☐ TNRCC 1006 ☐ FL-PRO ☐ Other:	
Program:	☐ AFCEE ☐ NFESC ☐ Other	**Number of Samples:** 76 total
Field QC Samples:	10/11+24/25-FDup, 26-EB, 10/12/22-MS/MSD, #1-MS/MSD	
Reviewed by & Date:	H. Kelly	4/9/2000 #11-MS/MSD
Matrix:	☑ Water ☐ Soil ☐ Other	

Quality Control	Form #	Requirements	Check (If No* checked, see comments)	Flags Applied (see comments)
Data Pkg Complete (DP)	Pkg	All required deliverables in pkg.	☑ OK ☐ No* ☐ Not provided	☐ Flags Applied
	COC	All samples on COC reported	☑ OK ☐ No*	☐ Flags Applied
Holding Times (HT)	1	Extraction method HT met	☐ OK ☑ No* ☐ N/A	☐ Flags Applied
	COC	Analysis method HT met	☑ OK ☐ No*	☐ Flags Applied
		Samples properly preserved	☐ OK ☐ No*	☐ Flags Applied
Surrogates (SS)	2	Method surrogates used	☐ OK ☐ No* ☑ N/A	☐ Flags Applied
		Recovery Limits: ☐ Lab ☐ Meth	☐ OK ☐ No* ☐ Diluted out	
MS/MSD or MS/LD	3	Matrix Spikes Provided	☑ MS/MSD ☐ MS/LD ☐ None*	☐ Flags Applied
		Correct Spike Used	☑ OK ☐ No*	
		Acceptance Limits: ☑ Lab ☐ Meth	☑ OK ☐ No* ☐ Diluted Out	☐ Flags Applied
LCS (BS)	3	LCS per prep. batch	☑ OK ☐ No*	☐ Flags Applied
☐ LCS only ☑ LCS/LCSD		Acceptance Limits: ☑ Lab ☐ Meth	☐ OK ☑ No*	☐ Flags Applied
Blanks (MB,TB,EB, FB/AB)	1	Detects (> MDL or RL/CRQL)	☑ All ND ☐ see blnk wksht	☐ Flags Applied
Method/Lab Blank (MB)	4	MB at required frequency	☑ OK ☐ No*	
Resolution	raw	Resolution met for IC	☐ OK ☐ No* ☑ N/A	☐ Flags Applied
	raw	Resolution met for CC	☐ OK ☐ No* ☑ N/A	
Initial Calibration (IC)	6	Minimum levels per method	☑ OK ☐ No*	☐ Flags Applied
	6	Linearity criteria met	☑ OK ☐ No* ☐ see cal wksht	
		Retention time criteria	☐ OK ☐ No* ☑ N/A	
Continuing Calib. Verif. (CC)	7	Analyzed at proper frequency	☑ OK ☐ No*	☐ Flags Applied
		%diff or %drift criteria met	☑ OK ☐ No* ☐ see cal wksht	
	8	Int. Std. RT/Area criteria met	☐ OK ☐ No* ☑ N/A	
Internal Standards (IS)	"8"	Internal Standards used	☐ Yes ☑ No ☐ see comments	☐ Flags Applied
		Sample IS area criteria met	☐ OK ☐ No* ☐ N/A	
Sample Evaluation	1	All hits within cal. Range	☑ OK ☐ No* ☐ All ND	☐ Flags Applied
	8	Samples bracketed by CCV	☑ OK ☐ No*	
	raw	TPH baseline constructed properly	☐ OK ☐ No* ☐ N/A	
	raw	Manual Integration performed	☐ No ☐ N/A ☐ see comments	
Field Duplicate (FD)	1	Precision of native vs Field Dup	☐ OK ☑ No* ☐ N/A	☑ Flags Applied

This sheet is applicable to multiple methods. All requirement items may not apply to every analytical method.

Case Narrative Comments: ms/msd, lcs/lcsd, Re-extractions out of Holding time.

QC Item	Comments
HT/ms/msd	Case Narrative states water ms/msd + lcs/lcsd out. Only water lcs/lcsd extracted + reported. Recoveries = 223/417 (30-150 Limit) RPD = 60% (50-Limit)
	- water (EB only) re-extracted out of HT. Use original, flag Re-ext. "R"

Data Review and Validation for: GC TPH/TRPH

Project Name & Task:	LAREDO AFB	IWTP	
Project # & Case/SDG:	147436.DV.ZZ	38676	
Methods:	☐ SW846 8015 (GRO/DRO) ☑ TNRCC 1005 ☐ TNRCC 1006 ☐ FL-PRO ☐ Other:		
Program:	☐ AFCEE ☐ NFESC ☐ Other	**Number of Samples:**	26 total
Field QC Samples:			
Reviewed by & Date:	H. Kelly	4/9/2000	
Matrix:	☑ Water ☑ Soil ☐ Other		

FDUP 24/25 =

	# 24	# 25
C6-C10	84	68
C10-C28	250	520
C6-C28	330	540

Flag 24+25 "J"

1D
TPH ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPMWSO001000N1

Name: SWL-TULSA

Code: SWOK Case No.: CH2M-OKC SDG No.: 38676C

rix: (soil/water) SOIL Lab Sample ID: 38676.01

ple wt/vol: 10.0 (g/mL) G Lab File ID:_____

loisture: 13 decanted: (Y/N) N Date Received: 05/22/99

raction: (SepF/Cont/Sonc) SONC Date Extracted:05/31/99

icentrated Extract Volume: 10000(uL) Date Analyzed: 06/09/99

ection Volume: 1.0(uL) Dilution Factor: 1.0

Cleanup: (Y/N) N pH: 7.0 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: MG/KG	Q
	C6-C10	57	U
	>C10-C28	57	U
	C6-C28	110	U

FORM I

4/9/2000

1D
TPH ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPMWSO001005N1

Name: SWL-TULSA

Code: SWOK Case No.: CH2M-OKC SDG No.: 38676C

rix: (soil/water) SOIL Lab Sample ID: 38676.02

ple wt/vol: 10.2 (g/mL) G Lab File ID:_____

loisture: 16 decanted: (Y/N) N Date Received: 05/22/99

raction: (SepF/Cont/Sonc) SONC Date Extracted:05/31/99

centrated Extract Volume: 10000(uL) Date Analyzed: 06/09/99

ection Volume: 1.0(uL) Dilution Factor: 1.0

Cleanup: (Y/N) N pH: 7.0 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: MG/KG	Q
	C6-C10	58	U
	>C10-C28	58	U
	C6-C28	120	U

FORM I

4/9

02500

1D
TPH ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPMWSO001007N1

) Name: SWL-TULSA

) Code: SWOK Case No.: CH2M-OKC SDG No.: 38676C

:rix: (soil/water) SOIL Lab Sample ID: 38676.03

ıple wt/vol: 10.1 (g/mL) G Lab File ID:_____

loisture: 21 decanted: (Y/N) N Date Received: 05/22/99

:raction: (SepF/Cont/Sonc) SONC Date Extracted:05/31/99

ıcentrated Extract Volume: 10000(uL) Date Analyzed: 06/11/99

jection Volume: 1.0(uL) Dilution Factor: 1.0

: Cleanup: (Y/N) N pH: 7.0 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: MG/KG	Q
	C6-C10	410	
	>C10-C28	610	
	C6-C28	1000	

FORM I

4/9

1D
TPH ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPMWSO002000N1

Name: SWL-TULSA

Code: SWOK Case No.: CH2M-OKC SDG No.: 38676C

rix: (soil/water) SOIL Lab Sample ID: 38676.04

ple wt/vol: 10.0 (g/mL) G Lab File ID:_____

oisture: 7 decanted: (Y/N) N Date Received: 05/22/99

raction: (SepF/Cont/Sonc) SONC Date Extracted:05/31/99

centrated Extract Volume: 10000(uL) Date Analyzed: 06/09/99

ection Volume: 1.0(uL) Dilution Factor: 1.0

Cleanup: (Y/N) N pH: 7.0 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: MG/KG	Q
	C6-C10	54	U
	>C10-C28	54	U
	C6-C28	110	U

FORM I

dm 4/9

02592

1D

TPH ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPMWSO002004N1

Name: SWL-TULSA

Code: SWOK Case No.: CH2M-OKC SDG No.: 38676C

rix: (soil/water) SOIL Lab Sample ID: 38676.05

ple wt/vol: 10.2 (g/mL) G Lab File ID:_____

oisture: 16 decanted: (Y/N) N Date Received: 05/22/99

raction: (SepF/Cont/Sonc) SONC Date Extracted:05/31/99

centrated Extract Volume: 10000(uL) Date Analyzed: 06/09/99

ection Volume: 1.0(uL) Dilution Factor: 1.0

Cleanup: (Y/N) N pH: 7.0 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: MG/KG	Q
	C6-C10	58	U
	>C10-C28	58	U
	C6-C28	120	U

FORM I

4/9

1D
TPH ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPMWSO002007N1

Name: SWL-TULSA

Code: SWOK Case No.: CH2M-OKC SDG No.: 38676C

rix: (soil/water) SOIL Lab Sample ID: 38676.06

ple wt/vol: 10.1 (g/mL) G Lab File ID:_____

oisture: 21 decanted: (Y/N) N Date Received: 05/22/99

raction: (SepF/Cont/Sonc) SONC Date Extracted:05/31/99

centrated Extract Volume: 10000(uL) Date Analyzed: 06/09/99

ection Volume: 1.0(uL) Dilution Factor: 1.0

Cleanup: (Y/N) N pH: 7.0 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: MG/KG	Q
	C6-C10	63	U
	>C10-C28	63	U
	C6-C28	130	U

FORM I

HL 4/9

02594

1D

TPH ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPMWSO003000N1

Name: SWL-TULSA

Code: SWOK Case No.: CH2M-OKC SDG No.: 38676C

rix: (soil/water) SOIL Lab Sample ID: 38676.07

ple wt/vol: 10.0 (g/mL) G Lab File ID:_____

oisture: 5 decanted: (Y/N) N Date Received: 05/22/99

raction: (SepF/Cont/Sonc) SONC Date Extracted:05/31/99

centrated Extract Volume: 10000(uL) Date Analyzed: 06/09/99

ection Volume: 1.0(uL) Dilution Factor: 1.0

Cleanup: (Y/N) N pH: 7.0 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: MG/KG	Q
	C6-C10	53	U
	>C10-C28	53	U
	C6-C28	100	U

FORM I

4/9

02595

1D
TPH ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPMWSO0003006N1

Name: SWL-TULSA

Code: SWOK Case No.: CH2M-OKC SDG No.: 38676C

rix: (soil/water) SOIL Lab Sample ID: 38676.08

ple wt/vol: 10.2 (g/mL) G Lab File ID:_____

oisture: 19 decanted: (Y/N) N Date Received: 05/22/99

raction: (SepF/Cont/Sonc) SONC Date Extracted:05/31/99

centrated Extract Volume: 10000(uL) Date Analyzed: 06/09/99

ection Volume: 1.0(uL) Dilution Factor: 1.0

Cleanup: (Y/N) N pH: 7.0 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: MG/KG	Q
	C6-C10	60	U
	>C10-C28	60	U
	C6-C28	120	U

FORM I

4/9

1D
TPH ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPMWSO003012N1

Name: SWL-TULSA

Code: SWOK Case No.: CH2M-OKC SDG No.: 38676C

rix: (soil/water) SOIL Lab Sample ID: 38676.09

ple wt/vol: 10.3 (g/mL) G Lab File ID:_____

oisture: 12 decanted: (Y/N) N Date Received: 05/22/99

raction: (SepF/Cont/Sonc) SONC Date Extracted:05/31/99

centrated Extract Volume: 10000(uL) Date Analyzed: 06/09/99

ection Volume: 1.0(uL) Dilution Factor: 1.0

Cleanup: (Y/N) N pH: 7.0 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: MG/KG	Q
	C6-C10	55	U
	>C10-C28	55	U
	C6-C28	110	U

FORM I

4/9

02597

1D
TPH ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPSBSO001000N1

Name: SWL-TULSA

Code: SWOK Case No.: CH2M-OKC SDG No.: 38676C

rix: (soil/water) SOIL Lab Sample ID: 38676.10

ple wt/vol: 10.1 (g/mL) G Lab File ID:_____

'oisture: 11 decanted: (Y/N) N Date Received: 05/22/99

raction: (SepF/Cont/Sonc) SONC Date Extracted:05/31/99

.centrated Extract Volume: 10000(uL) Date Analyzed: 06/09/99

ection Volume: 1.0(uL) Dilution Factor: 1.0

: Cleanup: (Y/N) N pH: 7.0 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: MG/KG	Q
	C6-C10	56	U
	>C10-C28	56	U
	C6-C28	110	U

FORM I

4/9

1D
TPH ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

WTPSBSO001000FD1

Name: SWL-TULSA

Code: SWOK Case No.: CH2M-OKC SDG No.: 38676C

rix: (soil/water) SOIL Lab Sample ID: 38676.11

ple wt/vol: 10.1 (g/mL) G Lab File ID:_____

oisture: 11 decanted: (Y/N) N Date Received: 05/22/99

raction: (SepF/Cont/Sonc) SONC Date Extracted:05/31/99

centrated Extract Volume: 10000(uL) Date Analyzed: 06/09/99

ection Volume: 1.0(uL) Dilution Factor: 1.0

Cleanup: (Y/N) N pH: 7.0 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: MG/KG	Q
	C6-C10	56	U
	>C10-C28	56	U
	C6-C28	110	U

FORM I

4/9

1D
TPH ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPSBSO001004N1

Name: SWL-TULSA

Code: SWOK Case No.: CH2M-OKC SDG No.: 38676C

rix: (soil/water) SOIL Lab Sample ID: 38676.12

ple wt/vol: 10.1 (g/mL) G Lab File ID:_____

oisture: 19 decanted: (Y/N) N Date Received: 05/22/99

raction: (SepF/Cont/Sonc) SONC Date Extracted:05/31/99

centrated Extract Volume: 10000(uL) Date Analyzed: 06/10/99

ection Volume: 1.0(uL) Dilution Factor: 1.0

: Cleanup: (Y/N) N pH: 7.0 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: MG/KG	Q
	C6-C10	61	U
	>C10-C28	61	U
	C6-C28	120	U

FORM I

4/9

02600

1D
TPH ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPSBSO001006N1

Name: SWL-TULSA

Code: SWOK Case No.: CH2M-OKC SDG No.: 38676C

rix: (soil/water) SOIL Lab Sample ID: 38676.13

ple wt/vol: 10.1 (g/mL) G Lab File ID:_____

oisture: 21 decanted: (Y/N) N Date Received: 05/22/99

raction: (SepF/Cont/Sonc) SONC Date Extracted:05/31/99

centrated Extract Volume: 10000(uL) Date Analyzed: 06/10/99

ection Volume: 1.0(uL) Dilution Factor: 1.0

Cleanup: (Y/N) N pH: 7.0 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: MG/KG	Q
	C6-C10	63	U
	>C10-C28	63	U
	C6-C28	120	U

FORM I

4/9

1D

TPH ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPSBSO002000N1

Name: SWL-TULSA

Code: SWOK Case No.: CH2M-OKC SDG No.: 38676C

rix: (soil/water) SOIL Lab Sample ID: 38676.14

ple wt/vol: 10.4 (g/mL) G Lab File ID:_____

oisture: 8 decanted: (Y/N) N Date Received: 05/22/99

raction: (SepF/Cont/Sonc) SONC Date Extracted:05/31/99

centrated Extract Volume: 10000(uL) Date Analyzed: 06/10/99

ection Volume: 1.0(uL) Dilution Factor: 1.0

Cleanup: (Y/N) N pH: 7.0 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: MG/KG	Q
	C6-C10	52	U
	>C10-C28	52	U
	C6-C28	100	U

FORM I

4/9

1D

TPH ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPSBSO002004N1

Name: SWL-TULSA

Code: SWOK Case No.: CH2M-OKC SDG No.: 38676C

rix: (soil/water) SOIL Lab Sample ID: 38676.15

ple wt/vol: 10.7 (g/mL) G Lab File ID:_____

oisture: 15 decanted: (Y/N) N Date Received: 05/22/99

raction: (SepF/Cont/Sonc) SONC Date Extracted:05/31/99

centrated Extract Volume: 10000(uL) Date Analyzed: 06/10/99

ection Volume: 1.0(uL) Dilution Factor: 1.0

Cleanup: (Y/N) N pH: 7.0 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: MG/KG	Q
	C6-C10	55	U
	>C10-C28	55	U
	C6-C28	110	U

FORM I

HK 4/9

02603

1D

TPH ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPSBSO002006N1

Name: SWL-TULSA

Code: SWOK Case No.: CH2M-OKC SDG No.: 38676C

rix: (soil/water) SOIL Lab Sample ID: 38676.16

ple wt/vol: 10.8 (g/mL) G Lab File ID:_____

oisture: 12 decanted: (Y/N) N Date Received: 05/22/99

raction: (SepF/Cont/Sonc) SONC Date Extracted:05/31/99

centrated Extract Volume: 10000(uL) Date Analyzed: 06/10/99

ection Volume: 1.0(uL) Dilution Factor: 1.0

Cleanup: (Y/N) N pH: 7.0 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: MG/KG	Q
	C6-C10	53	U
	>C10-C28	53	U
	C6-C28	100	U

FORM I

HL 4/9

02604

1D
TPH ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPSBSO003000N1

Name: SWL-TULSA

Code: SWOK Case No.: CH2M-OKC SDG No.: 38676C

rix: (soil/water) SOIL Lab Sample ID: 38676.17

ple wt/vol: 10.2 (g/mL) G Lab File ID:_____

oisture: 7 decanted: (Y/N) N Date Received: 05/22/99

raction: (SepF/Cont/Sonc) SONC Date Extracted:05/31/99

centrated Extract Volume: 10000(uL) Date Analyzed: 06/10/99

ection Volume: 1.0(uL) Dilution Factor: 1.0

Cleanup: (Y/N) N pH: 7.0 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: MG/KG	Q
	C6-C10	53	U
	>C10-C28	53	U
	C6-C28	100	U

HK 4/9

02605

1D

TPH ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPSBSO003004N1

Name: SWL-TULSA

Code: SWOK Case No.: CH2M-OKC SDG No.: 38676C

Matrix: (soil/water) SOIL Lab Sample ID: 38676.18

Sample wt/vol: 10.1 (g/mL) G Lab File ID:_____

Moisture: 18 decanted: (Y/N) N Date Received: 05/22/99

Extraction: (SepF/Cont/Sonc) SONC Date Extracted:05/31/99

Concentrated Extract Volume: 10000(uL) Date Analyzed: 06/10/99

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: MG/KG	Q
	C6-C10	60	U
	>C10-C28	60	U
	C6-C28	120	U

FORM I

HK 4/9

1D

TPH ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPSBSO003006N1

Name: SWL-TULSA

Code: SWOK Case No.: CH2M-OKC SDG No.: 38676C

rix: (soil/water) SOIL Lab Sample ID: 38676.19

ple wt/vol: 10.8 (g/mL) G Lab File ID:_____

oisture: 19 decanted: (Y/N) N Date Received: 05/22/99

raction: (SepF/Cont/Sonc) SONC Date Extracted:05/31/99

centrated Extract Volume: 10000(uL) Date Analyzed: 06/10/99

ection Volume: 1.0(uL) Dilution Factor: 1.0

Cleanup: (Y/N) N pH: 7.0 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: MG/KG	Q
	C6-C10	57	U
	>C10-C28	57	U
	C6-C28	110	U

FORM I

4/9

02607

1D

TPH ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPSBSO004000N1

Name: SWL-TULSA

Code: SWOK Case No.: CH2M-OKC SDG No.: 38676C

rix: (soil/water) SOIL Lab Sample ID: 38676.20

ple wt/vol: 10.0 (g/mL) G Lab File ID:_____

oisture: 6 decanted: (Y/N) N Date Received: 05/22/99

raction: (SepF/Cont/Sonc) SONC Date Extracted:05/31/99

centrated Extract Volume: 10000(uL) Date Analyzed: 06/10/99

ection Volume: 1.0(uL) Dilution Factor: 1.0

Cleanup: (Y/N) N pH: 7.0 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: MG/KG	Q
	C6-C10	53	U
	>C10-C28	53	U
	C6-C28	110	U

FORM I

02608

1D

TPH ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IMTPSBSO004004N1

Name: SWL-TULSA

Code: SWOK Case No.: CH2M-OKC SDG No.: 38676C

rix: (soil/water) SOIL Lab Sample ID: 38676.23

ıple wt/vol: 10.0 (g/mL) G Lab File ID:_____

loisture: 16 decanted: (Y/N) N Date Received: 05/22/99

raction: (SepF/Cont/Sonc) SONC Date Extracted:05/31/99

ıcentrated Extract Volume: 10000(uL) Date Analyzed: 06/10/99

ıection Volume: 1.0(uL) Dilution Factor: 1.0

Cleanup: (Y/N) N pH: 7.0 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: MG/KG	Q
	C6-C10	60	U
	>C10-C28	60	U
	C6-C28	120	U

FORM I

HK 4/9

02603

1D
TPH ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

IWTPSBSO004008N1

Name: SWL-TULSA

Code: SWOK Case No.: CH2M-OKC SDG No.: 38676C

Matrix: (soil/water) SOIL Lab Sample ID: 38676.24

Sample wt/vol: 10.8 (g/mL) G Lab File ID:_____

Moisture: 21 decanted: (Y/N) N Date Received: 05/22/99

Extraction: (SepF/Cont/Sonc) SONC Date Extracted:05/31/99

Concentrated Extract Volume: 10000(uL) Date Analyzed: 06/10/99

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: MG/KG	Q	
	C6-C10	84		J FD
	>C10-C28	250		J FD
	C6-C28	330		J FD

FORM I

4/9

1D

TPH ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

WTPSBSO004008FD1

Name: SWL-TULSA

Code: SWOK Case No.: CH2M-OKC SDG No.: 38676C

rix: (soil/water) SOIL Lab Sample ID: 38676.25

ple wt/vol: 10.3 (g/mL) G Lab File ID:_____

oisture: 19 decanted: (Y/N) N Date Received: 05/22/99

raction: (SepF/Cont/Sonc) SONC Date Extracted:05/31/99

centrated Extract Volume: 10000(uL) Date Analyzed: 06/10/99

ection Volume: 1.0(uL) Dilution Factor: 1.0

Cleanup: (Y/N) N pH: 7.0 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: MG/KG	Q	
	C6-C10	68	J	FD
	>C10-C28	520	J	FD
	C6-C28	590	J	FD

FORM I

4/9

1D
TPH ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

WTPSBWQ004000EB1

Name: SWL-TULSA

Code: SWOK Case No.: CH2M-OKC SDG No.: 38676C

rix: (soil/water) WATER Lab Sample ID: 38676.26

ple wt/vol: 30 (g/mL) ML Lab File ID:_____

oisture: _____ decanted: (Y/N) __ Date Received: 05/22/99

raction: (SepF/Cont/Sonc) SEPF Date Extracted:05/29/99

centrated Extract Volume: 3000(uL) Date Analyzed: 06/09/99

ection Volume: 1.0(uL) Dilution Factor: 1.0

Cleanup: (Y/N) N pH: 6.2 Sulfur Cleanup: (Y/N) N

EB

CAS NO.	COMPOUND	CONCENTRATION UNITS: MG/L	Q
----------	C6-C10	5.0	U
----------	>C10-C28	5.0	U
----------	C6-C28	10	U

FORM I

4/9

02612

1D

TPH ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

PSBWQ004000EB1RE

Name: SWL-TULSA

Code: SWOK Case No.: CH2M-OKC SDG No.: 38676C

Matrix: (soil/water) WATER Lab Sample ID: 38676.26RE

Sample wt/vol: 30 (g/mL) ML Lab File ID:_____

Moisture: _____ decanted: (Y/N) __ Date Received: 05/22/99

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted:06/10/99

Concentrated Extract Volume: 3000(uL) Date Analyzed: 06/11/99

Injection Volume: 1.0(uL) Dilution Factor: 1.0

Cleanup: (Y/N) N pH: 6.2 Sulfur Cleanup: (Y/N) N

EB

CAS NO.	COMPOUND	CONCENTRATION UNITS: MG/L	Q		
	C6-C10	5.0	U	R	RE/HT
	>C10-C28	5.0	U		
	C6-C28	10	U		

HK 4/9

Data Review and Validation for: Metals ~~and/or Cyanide~~ RCRA 8

Project Name & Task:	LAREDO AFB	IWTP	
Project # & Case/SDG:	147436.DV.ZZ	38706	
Methods:	☐ ILM04.0 ☑ ~~SW-846 (6010B,7000 Series)~~ ☑ ~~Hg 7470A/71A~~ ☐ 200 series ☐ 300 series ☐ SM 3000 series		
Program:	☐ AFCEE ☐ NFESC ☐ Other:	**Number of Samples:**	7 water
Field QC Samples:	1/2-FDup 3/4/5-matrix/ms/msd	7-EB	
Reviewed by & Date:	H. Kelly	4/13/2000	
Matrix:	☑ Water ☑ Soil ☐ Other		

Quality Control	Form #	Requirements	Check (If No* checked, see comments)	Flags Applied (see comments)
Data Pkg Complete (DP)	Pkg	All required deliverables in pkg.	☑ OK ☐ No* ☐ Not provided	☐ Flags Applied
	COC	All samples on COC reported	☑ ~~OK~~ ☐ No*	☐ Flags Applied
Holding Times (HT)	1, 13, 14, COC	Cyanide 14 day HT met	☐ OK ☐ No* ☑ ~~N/A~~	☐ Flags Applied
		Mercury 28 day HT met	☑ ~~OK~~ ☐ No* ☐ N/A	☐ Flags Applied
		Other metals 160 day HT met	☑ ~~OK~~ ☐ No* ☐ N/A	☐ Flags Applied
Initial Calibration (IC)	14	Min. initial # of levels per method	☐ OK ☐ No* ☑ Not provided	☐ Flags Applied
	raw	Linearity method criteria	☐ OK ☐ No* ☑ ~~Not provided~~	
	2	ICV criteria	☑ ~~OK~~ ☐ No*	
Continuing Calibration (CC)	14	CCV frequency	☑ ~~OK~~ ☐ No*	☐ Flags Applied
	2	CCV critieria	☑ ~~OK~~ ☐ No*	
Blanks (PB,EB,FB/AB)	3	Detects (>RL/CRDL)	☐ OK ☐ No* ☑ ~~See blnk wksht~~	☐ Flags Applied
ICB and CCB	3	ICB, CCB	☐ OK ☐ No* ☑ ~~see blnk wksht~~	
Prep Blank Frequency (PB)	3	1 PB per batch	☑ ~~OK~~ ☐ No* below	
ICP Interference Check (ICS)	4	Method criteria met	☑ ~~OK~~ ☐ No*	☐ Flags Applied
MS/MSD or MS/LD	5	☑ ~~MS/MSD~~ ☐ MS/LD ☐ None*	☑ ~~OK~~ ☐ No*	☐ Flags Applied
	5	Recovery Limits: ☐ Lab ☑ ~~Meth~~	☐ OK ☑ ~~No*~~	
	6	Precision criteria	☑ ~~OK~~ ☐ No*	
Post Spike Samp. Recov.	5	Criteria met	☐ OK ☑ ~~No*~~ ☐ N/A	☐ Flags Applied
Duplicate Samples (LD)	6	Criteria met	☑ ~~OK~~ ☐ No* ☐ N/A	☐ Flags Applied
LCS (BS) ☐ LCS only ☑ ~~LCS/LCSD~~	7	Frequency	☑ ~~OK~~ ☐ No* ☐ N/A	☐ Flags Applied
		Acceptance criteria met	☑ ~~OK~~ ☐ No*	
Standard Addition	8	Criteria met	☐ OK ☐ No* ☑ ~~N/A~~	☐ Flags Applied
ICP Serial Dilution (SD)	9	Criteria met	☑ ~~OK~~ ☐ No* ☐ N/A	☐ Flags Applied
Internal Standard (IS)		Internal Standards used	☐ OK ☐ No* ☑ ~~N/A~~	
Sample Evaluations (SAM)	1	All hits within cal. Range	☑ ~~OK~~ ☐ No* ☐ All ND	☐ Flags Applied
	1	Total > Dissolved	☐ OK ☐ No* ☑ ~~N/A~~	☐ Flags Applied
Field Duplicates (FD)	1	Precision of native vs Field Dup	☑ ~~OK~~ ☐ No* ☐ N/A	☐ Flags Applied

This sheet is applicable to multiple methods. All requirement items may not apply to every analytical method.

Case Narrative Comments: BLANKS, CRDL STD, MS, POST SPIKES

QC Item	Comments
BLANKS	FCB - As = -2.0 ug/L CCB - As = -2.0, -2.3 ug/L NO FLAGS APPLIED
MS	Spikes out for As, Pb, Hg, Se - Hg - high As - 18.5 / 17.5 Flag detects J, non-detects "R"

Data Review and Validation for: Metals and/or Cyanide

Project Name & Task:	LAREDO AFB	IWTP
Project # & Case/SDG:	147436.DV.ZZ	38706

Methods: ☐ ILM04.0 ☑ SW-846 (6010B,7000 Series) ☑ Hg 7470A/71A ☐ 200 series ☐ 300 series ☐ SM 3000 series

Program: ☐ AFCEE ☐ NFESC ☐ Other: **Number of Samples:** 7 total

Field QC Samples: 1/2-FDUP, 3/4/5-NAline/MS/MSD, 7-EB

Reviewed by & Date: H. Kelly 4/13/2000

MS

Pb = 64 / 63.5 - Flag detects "J", non detects "UJ"
Hg = 136 / 143 - Flag detects only "J"

Se = 0 / 125 - 0% probably due to reporting error. Sample diluted 1:5 - spilled 10 ug/L with RL of 11
Flag detects "J", non-detects "R".

Post-Spikes - out for Se - Low. several <30%
- out for As - Low

- out for Pb - Low

1

INORGANIC ANALYSES DATA SHEET

CLIENT SAMPLE ID

G001000N

Lab Name: SOUTHWEST_LAB_OF_OK Contract: CH2M-OKC
Lab Code: SWOK Case No.: 38706 SAS No.: SDG No.: 38706
Matrix (soil/water): WATER Lab Sample ID: 38706.01
Level (low/med): LOW Date Received: 05/25/99
% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M		
7440-38-2	Arsenic	9.0	~~U~~	~~WN~~	F	R	MS
7440-39-3	Barium	36.2			P		
7440-43-9	Cadmium	0.31	~~B~~		P	J	IB
7440-47-3	Chromium	1.8	~~B~~		P	J	IB
7439-92-1	Lead	1.6	~~B~~	~~WN~~	F	J	MS
7439-97-6	Mercury	0.10	~~U~~	~~N~~	AV	U	
7782-49-2	Selenium	11.0	~~U~~	~~EN~~	F	R	MS
7440-22-4	Silver	2.0	U		P		

Color Before: COLORLESS Clarity Before: CLEAR Texture:
Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:
CLIENT_ID: IWTPMWWG001000N

FORM I - IN

4/13/2000

INORGANIC ANALYSES DATA SHEET

CLIENT SAMPLE ID: G001000F

Lab Name: SOUTHWEST_LAB_OF_OK_____ Contract: CH2M-OKC__
Lab Code: SWOK__ Case No.: 38706 SAS No.: _____ SDG No.: 38706_
Matrix (soil/water): WATER Lab Sample ID: 38706.02
Level (low/med): LOW__ Date Received: 05/25/99
% Solids: __0.0

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

CAS No.	Analyte	Concentration	C	Q	M		
7440-38-2	Arsenic	9.0	~~U~~	~~WN~~	F	R	MS
7440-39-3	Barium	35.6			P		
7440-43-9	Cadmium	0.33	~~B~~		P	J	IB
7440-47-3	Chromium	2.0	~~B~~		P	J	IB
7439-92-1	Lead	1.5	~~B~~	~~WN~~	F	J	MS
7439-97-6	Mercury	0.14	~~B~~	~~N~~	AV	J	MS
7782-49-2	Selenium	11.0	~~U~~	~~EN~~	F	R	MS
7440-22-4	Silver	2.0	U		P		

Color Before: COLORLESS Clarity Before: CLEAR_ Texture: _____
Color After: COLORLESS Clarity After: CLEAR_ Artifacts: _____

Comments:
CLIENT_ID:_IWTPMWWG001000F

FORM I - IN

HL 4/13

1

CLIENT SAMPLE ID

INORGANIC ANALYSES DATA SHEET

G002000N

Lab Name: SOUTHWEST_LAB_OF_OK Contract: CH2M-OKC
Lab Code: SWOK Case No.: 38706 SAS No.: SDG No.: 38706
Matrix (soil/water): WATER Lab Sample ID: 38706.03
Level (low/med): LOW Date Received: 05/25/99
% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M		
7440-38-2	Arsenic	9.0	~~U~~	~~WN~~	F	R	MS
7440-39-3	Barium	34.1			P		
7440-43-9	Cadmium	0.30	U		P		
7440-47-3	Chromium	2.0	~~B~~		P	J	IB
7439-92-1	Lead	1.5	~~U~~	~~WN~~	F	UJ	MS
7439-97-6	Mercury	0.10	~~U~~	~~N~~	AV	U	
7782-49-2	Selenium	11.0	~~U~~	~~EN~~	F	R	MS
7440-22-4	Silver	2.0	U		P		

Color Before: COLORLESS Clarity Before: CLEAR Texture:
Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:
CLIENT_ID: IWTPMWWG002000N

FORM I - IN

4/13

02618

INORGANIC ANALYSES DATA SHEET

CLIENT SAMPLE ID: G003000N

Lab Name: SOUTHWEST_LAB_OF_OK Contract: CH2M-OKC
Lab Code: SWOK Case No.: 38706 SAS No.: SDG No.: 38706
Matrix (soil/water): WATER Lab Sample ID: 38706.06
Level (low/med): LOW Date Received: 05/25/99
% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M		
7440-38-2	Arsenic	9.0	~~U~~	~~WN~~	F	R	MS
7440-39-3	Barium	33.7			P		
7440-43-9	Cadmium	0.30	U		P		
7440-47-3	Chromium	1.6	~~B~~		P	J	IB
7439-92-1	Lead	1.5	~~U~~	~~WN~~	F	~~U~~	
7439-97-6	Mercury	0.10	~~U~~	~~N~~	AV	U	
7782-49-2	Selenium	11.0	~~U~~	~~EN~~	F	R	MS
7440-22-4	Silver	2.0	U		P		

Color Before: COLORLESS Clarity Before: CLEAR Texture:
Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:
CLIENT_ID: IWTPMWWG003000N

FORM I - IN

4/13

02619

CLIENT SAMPLE ID

INORGANIC ANALYSES DATA SHEET

Q002000E

Lab Name: SOUTHWEST_LAB_OF_OK Contract: CH2M-OKC
Lab Code: SWOK Case No.: 38706 SAS No.: SDG No.: 38706
Matrix (soil/water): WATER Lab Sample ID: 38706.07
Level (low/med): LOW Date Received: 05/25/99
% Solids: 0.0

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

EB

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	1.8	U	WN	F
7440-39-3	Barium	0.40	U		P
7440-43-9	Cadmium	0.30	U		P
7440-47-3	Chromium	0.50	U		P
7439-92-1	Lead	1.5	U	N	F
7439-97-6	Mercury	0.10	U	N	AV
7782-49-2	Selenium	2.2	U	WN	F
7440-22-4	Silver	2.0	U		P

Color Before: COLORLESS Clarity Before: CLEAR Texture:
Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:
CLIENT_ID: IWTPMWWQ002000E

HL 9/13

Metals

Data Review and Validation for: Metals ~~and/or Cyanide~~ RCRA 8

Project Name & Task:	LAREDO AFB	IWTP
Project # & Case/SDG:	147436.DV.ZZ	38676
Methods:	☐ ILM04.0 ☑ SW-846 (6010B,7000 Series) ☑ Hg 7470A/71A ☐ 200 series ☐ 300 series ☐ SM 3000 series	
Program:	☐ AFCEE ☐ NFESC ☐ Other:	**Number of Samples:** 26 total
Field QC Samples:	10/11 + 24/25 - FDUP, 20/21/22 + 23/23S/23SD = NAT/MS/MSD	
Reviewed by & Date:	H. Kelly	4/9/2002 26-EB
Matrix:	☐ Water ☑ Soil ☐ Other	

Quality Control	Form #	Requirements	Check (If No* checked, see comments)	Flags Applied (see comments)
Data Pkg Complete (DP)	Pkg	All required deliverables in pkg.	☑ OK ☐ No* ☐ Not provided	☐ Flags Applied
	COC	All samples on COC reported	☑ OK ☐ No*	☐ Flags Applied
Holding Times (HT)	1, 13, 14, COC	Cyanide 14 day HT met	☐ OK ☐ No* ☑ N/A	☐ Flags Applied
		Mercury 28 day HT met	☑ OK ☐ No* ☐ N/A	☐ Flags Applied
		Other metals 160 day HT met	☑ OK ☐ No* ☐ N/A	☐ Flags Applied
Initial Calibration (IC)	14	Min. initial # of levels per method	☐ OK ☐ No* ☑ Not provided	☐ Flags Applied
	raw	Linearity method criteria	☐ OK ☐ No* ☑ Not provided	
	2	ICV criteria	☐ OK ☑ No*	
Continuing Calibration (CC)	14	CCV frequency	☑ OK ☐ No*	☐ Flags Applied
	2	CCV critieria	☑ OK ☑ No*	
Blanks (PB,EB,FB/AB)	3	Detects (>RL/CRDL)	☐ OK ☐ No* ☑ see blnk wksht	☐ Flags Applied
ICB and CCB	3	ICB, CCB	☐ OK ☐ No* ☑ see blnk wksht	
Prep Blank Frequency (PB)	3	1 PB per batch	☑ OK ☐ No*	
ICP Interference Check (ICS)	4	Method criteria met	☑ OK ☐ No*	☐ Flags Applied
MS/MSD or MS/LD	5	☑ MS/MSD ☐ MS/LD ☐ None*	☑ OK ☐ No*	☐ Flags Applied
	5	Recovery Limits: ☐ Lab ☑ Meth	☐ OK ☑ No*	
	6	Precision criteria	☐ OK ☑ No*	
Post Spike Samp. Recov.	5	Criteria met	☐ OK ☑ No* ☐ N/A	☐ Flags Applied
Duplicate Samples (LD)	6	Criteria met	☑ OK ☐ No* ☐ N/A	☐ Flags Applied
LCS (BS) ☐ LCS only ☑ LCS/LCSD	7	Frequency	☑ OK ☐ No* ☐ N/A	☐ Flags Applied
		Acceptance criteria met	☐ OK ☑ No*	
Standard Addition	8	Criteria met	☐ OK ☐ No* ☑ N/A	☐ Flags Applied
ICP Serial Dilution (SD)	9	Criteria met	☑ OK ☐ No* ☐ N/A	☐ Flags Applied
Internal Standard (IS)		Internal Standards used	☐ OK ☐ No* ☑ N/A	
Sample Evaluations (SAM)	1	All hits within cal. Range	☑ OK ☐ No* ☐ All ND	☐ Flags Applied
	1	Total > Dissolved	☐ OK ☐ No* ☑ N/A	☐ Flags Applied
Field Duplicates (FD)	1	Precision of native vs Field Dup	☑ OK ☐ No* ☐ N/A	☐ Flags Applied

This sheet is applicable to multiple methods. All requirement items may not apply to every analytical method.

Case Narrative Comments: BLANKS, MS/MSD, Duplicates

QC Item	Comments
ICV	All criteria met except one As ICV1, at 52.8 % - probably error in reporting
	All CCV OK - probably 1:2 therefore it would be 105.6% recovery - NO FLAGS
CCV	- Selected CCV out for As + Se - J/UJ
BLANKS	SEE ATTACHED SHEET

Data Review and Validation for: Metals ~~and/or Cyanide~~ LCKA 8

Project Name & Task:	LAREDO AFB	IWTP	
Project # & Case/SDG:	147436.DV.ZZ	38676	
Methods:	☐ ILM04.0 ☑ ~~SW-846~~ (6010B,7000 Series) ☑ ~~Hg~~ 7470A/71A ☐ 200 series ☐ 300 series ☐ SM 3000 series		
Program:	☐ AFCEE ☐ NFESC ☐ Other:	**Number of Samples:** 26 total	
Field QC Samples:			
Reviewed by & Date:	M. Kelly	4/9/2000	

MS/MSD — IWTP SBS00 00 4000NI — 4004NI

Pb = 74.3/67.9 J/UJ
Hg = 43.1/34.3 J/UJ
Se = 35.1/0.0 J/R
(samples 1–22)

As = 24.5/63.5 J/R
Cd = 76.3/73.9 J/UJ
Pb = 281.6/270.7 J/-
Se = 0.0/41.6 J/R
↓
(samples 23–26)
4004 + 4008NI + 4008FDI

LCS
As = 48/50.1
Pb = 173.7/173.7
Se = 59.0/53.5

LAB Dup — IWTP SBS00 00 4004NI
As = 6.55/4.69 RPD = 33.1 No Hg <35%

~~POST SPIKE~~ ~~As 58%~~
Se - IWTP SBS0 3006NI - 16
3000 NI - 31
3004NI - 25
4000NI - 0
4008NI - 56
4008FDI - 52

As
4004NI - 58%
4008NI - 62
4008FDI - 60

Dilutions — SBS00 00 4004NI - 1:5 Ba, Cd, Cr, Pb, Ag
4000NI - 1:5 Ba, Cd, Cr, Pb, Ag
used 1:1

~~MW~~
MWSO 00 3006NI
SBSO 00 3000NI
3004NI
4000NI
} All 1:5 for Se

Data Review & Validation Inorganic Blank Worksheet

Case/SDG:	38676	**Matrix:**	☐ Water ☑ Soil ☐ Other
Reviewed by	H. Kelly	**Date:**	4/9/2000

Target	ICB CCB	Water PB	Soil PB	EB	FB/AB	x5 ug/L	x5 mg/Kg	Comments
Aluminum (Al)	-2.0							
Antimony (Sb)	-2.0							
Arsenic (As)	-2.0							
Barium (Ba)				2.6			1.3	
Beryllium (be)								
Cadmium (Cd)	0.4						0.2	
Calcium (Ca)								
Chromium (Cr)	0.6			0.73			0.37	(EB only)
Cobalt (Co)								
Copper (Cu)								
Iron (Fe)								
Lead (Pb)								
Magnesium (Mg)								
Manganese (Mn)								
Mercury (Hg)	-0.1							
Molybdenum (Mo)								
Nickel (Ni)								
Potassium (K)								
Selenium (Se)	-3.4							
Silver (Ag)								
Silver (Na)								
Strontium (Sr)								
Thallium (Tl)								
Tin (Sn)								
Vanadium (V)								
Zinc (Zn)								
Cyanide (CN)								

Comments:

1g → 100mL, Hg = 0.6g → 100mL

1

INORGANIC ANALYSES DATA SHEET

CLIENT SAMPLE ID: MWSO001000N

b Name: SOUTHWEST_LAB_OF_OK_____ Contract: CH2M_OKC__
b Code: SWOK__ Case No.: 38676 SAS No.: _____ SDG No.: 38676A
trix (soil/water): SOIL_ Lab Sample ID: 38676.01
vel (low/med): LOW__ Date Received: 05/21/99
Solids: _86.7

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

CAS No.	Analyte	Concentration	C	Q	M	
7440-38-2	Arsenic	4.9		~~N*~~	F	J MS
7440-39-3	Barium	92.5			P	
7440-43-9	Cadmium	47.8		~~N~~	P	J MS
7440-47-3	Chromium	66.1			P	
7439-92-1	Lead	125		~~N~~	P	J MS
7439-97-6	Mercury	0.12		~~N~~	AV	J MS
7782-49-2	Selenium	0.34	~~U~~	~~WN~~	F	R MS
7440-22-4	Silver	0.23	U		P	

olor Before: BLACK____ Clarity Before: _____ Texture: MEDIUM
olor After: YELLOW___ Clarity After: CLEAR_ Artifacts: _____

omments:
CLIENT_ID_=_IWTPMWSO001000N

4/9/2000

1

CLIENT SAMPLE ID

INORGANIC ANALYSES DATA SHEET

MWSO001005N

b Name: SOUTHWEST_LAB_OF_OK Contract: CH2M_OKC
b Code: SWOK Case No.: 38676 SAS No.: SDG No.: 38676A
trix (soil/water): SOIL Lab Sample ID: 38676.02
vel (low/med): LOW Date Received: 05/21/99
Solids: 84.4

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

CAS No.	Analyte	Concentration	C	Q	M		
7440-38-2	Arsenic	5.4		~~N*~~	F	J	MS
7440-39-3	Barium	149			P		
7440-43-9	Cadmium	0.42	~~B~~	~~N~~	P	J	MS
7440-47-3	Chromium	11.8			P		
7439-92-1	Lead	7.3		~~N~~	P	J	MS
7439-97-6	Mercury	0.02	~~U~~	~~N~~	AV	UJ	MS
7782-49-2	Selenium	0.36	~~U~~	~~WN~~	F	R	MS
7440-22-4	Silver	0.24	U		P		

lor Before: BLACK Clarity Before: Texture: MEDIUM
lor After: YELLOW Clarity After: CLEAR Artifacts:

mments:
CLIENT_ID_=_IWTPMWSO001005N

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02625

1

INORGANIC ANALYSES DATA SHEET

CLIENT SAMPLE ID

MWSO001007N

) Name: SOUTHWEST_LAB_OF_OK_____ Contract:CH2M_OKC__
) Code: SWOK__ Case No.: 38676 SAS No.: _____ SDG No.: 38676A
:rix (soil/water): SOIL_ Lab Sample ID: 38676.03
/el (low/med): LOW__ Date Received: 05/21/99
Solids: _79.0

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

CAS No.	Analyte	Concentration	C	Q	M	
7440-38-2	Arsenic	4.3		~~N*~~	F	J ms
7440-39-3	Barium	76.7			P	
7440-43-9	Cadmium	0.18	~~B~~	~~N~~	P	UJ BL/ms
7440-47-3	Chromium	8.7			P	
7439-92-1	Lead	7.7		~~N~~	P	J ms
7439-97-6	Mercury	0.03	~~B~~	~~N~~	AV	J ms
7782-49-2	Selenium	0.38	~~U~~	~~WN~~	F	R ms
7440-22-4	Silver	0.25	U		P	

lor Before: BLACK____ Clarity Before: _____ Texture: MEDIUM
lor After: YELLOW___ Clarity After: CLEAR_ Artifacts: _____

mments:
CLIENT_ID_=_IWTPMWSO001007N

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02626

1

CLIENT SAMPLE ID

INORGANIC ANALYSES DATA SHEET

MWSO002000N

o Name: SOUTHWEST_LAB_OF_OK_____ Contract:CH2M_OKC__
o Code: SWOK__ Case No.: 38676 SAS No.: _____ SDG No.: 38676A
trix (soil/water): SOIL_ Lab Sample ID: 38676.04
vel (low/med): LOW__ Date Received: 05/21/99
Solids: _92.6

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

CAS No.	Analyte	Concentration	C	Q	M	
7440-38-2	Arsenic	3.8		~~N*~~	F	J MS
7440-39-3	Barium	104			P	
7440-43-9	Cadmium	0.19	~~B~~	~~N~~	P	UJ BL/MS
7440-47-3	Chromium	6.5			P	
7439-92-1	Lead	9.7		~~N~~	P	J MS
7439-97-6	Mercury	0.03	~~B~~	~~N~~	AV	J MS
7782-49-2	Selenium	0.32	~~U~~	~~WN~~	F	R MS
7440-22-4	Silver	0.21	U		P	

lor Before: BLACK____ Clarity Before: _____ Texture: MEDIUM
lor After: YELLOW___ Clarity After: CLEAR_ Artifacts: _____

mments:
CLIENT_ID_=_IWTPMWSO002000N

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02627

1

INORGANIC ANALYSES DATA SHEET

CLIENT SAMPLE ID

MWSO002004N

o Name: SOUTHWEST_LAB_OF_OK_____ Contract:CH2M_OKC__
o Code: SWOK__ Case No.: 38676 SAS No.: _____ SDG No.: 38676A
trix (soil/water): SOIL_ Lab Sample ID: 38676.05
vel (low/med): LOW__ Date Received: 05/21/99
Solids: _84.3

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

CAS No.	Analyte	Concentration	C	Q	M	
7440-38-2	Arsenic	4.2		~~N*~~	F	J ms
7440-39-3	Barium	82.9			P	
7440-43-9	Cadmium	0.17	~~B~~	~~N~~	P	UJ BL/ms
7440-47-3	Chromium	9.7			P	
7439-92-1	Lead	7.3		~~N~~	P	J ms
7439-97-6	Mercury	0.05		~~N~~	AV	J ms
7782-49-2	Selenium	0.35	~~U~~	~~WN~~	F	R ms
7440-22-4	Silver	0.23	U		P	

lor Before: BLACK____ Clarity Before: _____ Texture: MEDIUM
lor After: YELLOW___ Clarity After: CLEAR_ Artifacts: _____

mments:
CLIENT_ID_=_IWTPMWSO002004N

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02628

1

CLIENT SAMPLE ID

INORGANIC ANALYSES DATA SHEET

MWSO002007N

b Name: SOUTHWEST_LAB_OF_OK Contract: CH2M_OKC
b Code: SWOK Case No.: 38676 SAS No.: SDG No.: 38676A
trix (soil/water): SOIL Lab Sample ID: 38676.06
vel (low/med): LOW Date Received: 05/21/99
Solids: 79.1

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

CAS No.	Analyte	Concentration	C	Q	M		
7440-38-2	Arsenic	3.5		~~N+~~	F	J	MS
7440-39-3	Barium	24.4			P		
7440-43-9	Cadmium	0.07	~~B~~	~~N~~	P	U	BC
7440-47-3	Chromium	5.1			P		
7439-92-1	Lead	3.9		~~N~~	P	J	MS
7439-97-6	Mercury	0.08		N'	AV	J	MS
7782-49-2	Selenium	0.38	~~U~~	~~WN~~	F	R	MS
7440-22-4	Silver	0.25	U		P		

lor Before: BLACK Clarity Before: Texture: MEDIUM
lor After: YELLOW Clarity After: CLEAR Artifacts:

mments:
CLIENT_ID_=_IWTPMWSO002007N

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02629

CLIENT SAMPLE ID

INORGANIC ANALYSES DATA SHEET

MWSO003000N

b Name: SOUTHWEST_LAB_OF_OK_____ Contract:CH2M_OKC__
b Code: SWOK__ Case No.: 38676 SAS No.: _____ SDG No.: 38676A
trix (soil/water): SOIL_ Lab Sample ID: 38676.07
vel (low/med): LOW__ Date Received: 05/21/99
Solids: _94.6

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

CAS No.	Analyte	Concentration	C	Q	M	
7440-38-2	Arsenic	3.5		~~N*~~	F	J MS
7440-39-3	Barium	192			P	
7440-43-9	Cadmium	2.1	~~B~~	~~N~~	P	J MS
7440-47-3	Chromium	57.5			P	
7439-92-1	Lead	26.9		~~N~~	P	J MS
7439-97-6	Mercury	0.04		~~N~~	AV	J MS
7782-49-2	Selenium	0.32	~~U~~	~~WN~~	F	R MS
7440-22-4	Silver	0.21	U		P	

›lor Before: BLACK____ Clarity Before: _____ Texture: MEDIUM
›lor After: YELLOW___ Clarity After: CLEAR_ Artifacts: _____

›mments:
CLIENT_ID_=_IWTPMWSO003000N

FORM I - IN

4/19

1

INORGANIC ANALYSES DATA SHEET

CLIENT SAMPLE ID: MWSO003006N

b Name: SOUTHWEST_LAB_OF_OK Contract: CH2M_OKC
b Code: SWOK Case No.: 38676 SAS No.: SDG No.: 38676A
trix (soil/water): SOIL Lab Sample ID: 38676.08
vel (low/med): LOW Date Received: 05/21/99
Solids: 81.2

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

CAS No.	Analyte	Concentration	C	Q	M	
7440-38-2	Arsenic	3.7		~~N*~~	F	J ms
7440-39-3	Barium	863			P	
7440-43-9	Cadmium	0.17	~~B~~	~~N~~	P	UJ BL/ms
7440-47-3	Chromium	22.3			P	
7439-92-1	Lead	6.7		~~N~~	P	J ms
7439-97-6	Mercury	0.03	~~B~~	~~N~~	AV	J ms
7782-49-2	Selenium	0.02	~~U~~	~~EN~~	F	R ms
7440-22-4	Silver	0.25	U		P	

olor Before: BLACK Clarity Before: Texture: MEDIUM
olor After: YELLOW Clarity After: CLEAR Artifacts:

omments:
CLIENT_ID_=_IWTPMWSO003006N

4/9

1

INORGANIC ANALYSES DATA SHEET

CLIENT SAMPLE ID: MWSO003012N

) Name: SOUTHWEST_LAB_OF_OK Contract: CH2M_OKC
) Code: SWOK Case No.: 38676 SAS No.: SDG No.: 38676A
:rix (soil/water): SOIL Lab Sample ID: 38676.09
/el (low/med): LOW Date Received: 05/21/99
Solids: 87.9

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

CAS No.	Analyte	Concentration	C	Q	M	
7440-38-2	Arsenic	3.3		~~N*~~	F	J MS
7440-39-3	Barium	77.0			P	
7440-43-9	Cadmium	0.68	~~B~~	~~N~~	P	J MS
7440-47-3	Chromium	284			P	
7439-92-1	Lead	10.6		~~N~~	P	J MS
7439-97-6	Mercury	0.02	~~U~~	~~N~~	AV	UJ MS
7782-49-2	Selenium	0.35	~~B~~	~~WN~~	F	J MS
7440-22-4	Silver	0.23	U		P	

)lor Before: BLACK Clarity Before: Texture: MEDIUM
)lor After: YELLOW Clarity After: CLEAR Artifacts:

)mments:
CLIENT_ID_=_IWTPMWSO003012N

FORM I - IN

4/19

02632

INORGANIC ANALYSES DATA SHEET

CLIENT SAMPLE ID: SBSO001000N

b Name: SOUTHWEST_LAB_OF_OK Contract: CH2M_OKC
b Code: SWOK Case No.: 38676 SAS No.: SDG No.: 38676A
trix (soil/water): SOIL
vel (low/med): LOW
Solids: 88.7
Lab Sample ID: 38676.10
Date Received: 05/21/99

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

CAS No.	Analyte	Concentration	C	Q	M	
7440-38-2	Arsenic	3.3		~~N*~~	F	J MS
7440-39-3	Barium	99.5			P	
7440-43-9	Cadmium	0.13	~~B~~	~~N~~	P	UJ BL/MS
7440-47-3	Chromium	9.0			P	
7439-92-1	Lead	7.0		~~N~~	P	J MS
7439-97-6	Mercury	0.03	~~B~~	~~N~~	AV	J MS
7782-49-2	Selenium	0.33	~~U~~	~~WN~~	F	R MS
7440-22-4	Silver	0.22	U		P	

lor Before: BLACK Clarity Before: Texture: MEDIUM
lor After: YELLOW Clarity After: CLEAR Artifacts:

mments:
CLIENT_ID_=_IWTPSBSO001000N

02633

CLIENT SAMPLE ID

INORGANIC ANALYSES DATA SHEET

SBSO001000F

b Name: SOUTHWEST_LAB_OF_OK_____ Contract:CH2M_OKC__
b Code: SWOK__ Case No.: 38676 SAS No.: _____ SDG No.: 38676A
trix (soil/water): SOIL_ Lab Sample ID: 38676.11
vel (low/med): LOW__ Date Received: 05/21/99
Solids: _88.8

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

CAS No.	Analyte	Concentration	C	Q	M	
7440-38-2	Arsenic	3.4		~~N*~~	F	J MS
7440-39-3	Barium	78.0			P	
7440-43-9	Cadmium	0.17	~~B~~	~~N~~	P	UJ BL/MS
7440-47-3	Chromium	10.0			P	
7439-92-1	Lead	8.1		~~N~~	P	J MS
7439-97-6	Mercury	0.04		~~N~~	AV	J MS
7782-49-2	Selenium	0.33	U	N	F	R MS
7440-22-4	Silver	0.22	U		P	

olor Before: BLACK____ Clarity Before: _____ Texture: MEDIUM
olor After: YELLOW___ Clarity After: CLEAR_ Artifacts: _____

omments:
CLIENT_ID_=_IWTPSBSO001000F

4/9

INORGANIC ANALYSES DATA SHEET

CLIENT SAMPLE ID: SBSO001004N

b Name: SOUTHWEST_LAB_OF_OK Contract: CH2M_OKC
b Code: SWOK Case No.: 38676 SAS No.: SDG No.: 38676A
trix (soil/water): SOIL Lab Sample ID: 38676.12
vel (low/med): LOW Date Received: 05/21/99
Solids: 81.2

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

CAS No.	Analyte	Concentration	C	Q	M	
7440-38-2	Arsenic	3.1		~~N*~~	F	J MS
7440-39-3	Barium	95.0			P	
7440-43-9	Cadmium	0.08	~~B~~	~~N~~	P	UJ B CL/MS
7440-47-3	Chromium	8.4			P	
7439-92-1	Lead	5.9		~~N~~	P	J MS
7439-97-6	Mercury	0.03	~~B~~	~~N~~	AV	J MS
7782-49-2	Selenium	0.37	~~U~~	~~WN~~	F	R MS
7440-22-4	Silver	0.24	U		P	

olor Before: BLACK Clarity Before: Texture: MEDIUM
olor After: YELLOW Clarity After: CLEAR Artifacts:

omments:
CLIENT_ID_=_IWTPSBSO001004N

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02635

1

INORGANIC ANALYSES DATA SHEET

CLIENT SAMPLE ID

SBSO001006N

b Name: SOUTHWEST_LAB_OF_OK_____ Contract:CH2M_OKC__
b Code: SWOK__ Case No.: 38676 SAS No.: _____ SDG No.: 38676A
trix (soil/water): SOIL_ Lab Sample ID: 38676.13
vel (low/med): LOW__ Date Received: 05/21/99
Solids: _79.2

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

CAS No.	Analyte	Concentration	C	Q	M	
7440-38-2	Arsenic	2.8		~~N*~~	F	J MS
7440-39-3	Barium	11.9			P	
7440-43-9	Cadmium	0.~~07~~	B	~~N~~	P	UJ BL/MS
7440-47-3	Chromium	5.2			P	
7439-92-1	Lead	3.2		~~N~~	P	J MS
7439-97-6	Mercury	0.03	~~B~~	~~N~~	AV	J MS
7782-49-2	Selenium	0.38	~~U~~	~~WN~~	F	R MS
7440-22-4	Silver	0.25	U		P	

lor Before: BLACK____ Clarity Before: _____ Texture: MEDIUM
lor After: YELLOW___ Clarity After: CLEAR_ Artifacts: _____

mments:
CLIENT_ID_=_IWTPSBSO001006N

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02636

1

INORGANIC ANALYSES DATA SHEET

CLIENT SAMPLE ID: SBSO002000N

b Name: SOUTHWEST_LAB_OF_OK_____ Contract:CH2M_OKC__
b Code: SWOK__ Case No.: 38676 SAS No.: _____ SDG No.: 38676A
trix (soil/water): SOIL_ Lab Sample ID: 38676.14
vel (low/med): LOW__ Date Received: 05/21/99
Solids: _91.8

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

CAS No.	Analyte	Concentration	C	Q	M		
7440-38-2	Arsenic	3.1		~~N*~~	F	J	MS
7440-39-3	Barium	61.2			P		
7440-43-9	Cadmium	0.18	~~B~~	~~N~~	P	U	BC
7440-47-3	Chromium	7.6			P		
7439-92-1	Lead	7.8		~~N~~	P	J	MS
7439-97-6	Mercury	0.03	~~B~~	~~N~~	AV	J	MS
7782-49-2	Selenium	0.32	~~U~~	~~WN~~	F	R	MS
7440-22-4	Silver	0.22	U		P		

lor Before: BLACK____ Clarity Before: _____ Texture: MEDIUM
lor After: YELLOW___ Clarity After: CLEAR_ Artifacts: _____

mments:
CLIENT_ID_=_IWTPSBSO002000N

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02637

1

INORGANIC ANALYSES DATA SHEET

CLIENT SAMPLE ID: SBSO002004N

b Name: SOUTHWEST_LAB_OF_OK Contract: CH2M_OKC
b Code: SWOK Case No.: 38676 SAS No.: SDG No.: 38676A
trix (soil/water): SOIL Lab Sample ID: 38676.15
vel (low/med): LOW Date Received: 05/21/99
Solids: 84.5

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

CAS No.	Analyte	Concentration	C	Q	M	
7440-38-2	Arsenic	3.6		~~N*~~	F	J MS
7440-39-3	Barium	267			P	
7440-43-9	Cadmium	0.08	~~B~~	~~N~~	P	UJ BL/MS
7440-47-3	Chromium	6.3			P	
7439-92-1	Lead	4.9		~~N~~	P	J MS
7439-97-6	Mercury	0.02	~~U~~	~~N~~	AV	UJ MS
7782-49-2	Selenium	0.35	~~U~~	~~WN~~	F	R MS
7440-22-4	Silver	0.23	U		P	

olor Before: BLACK Clarity Before: Texture: MEDIUM
olor After: YELLOW Clarity After: CLEAR Artifacts:

omments:
CLIENT_ID_=_IWTPSBSO002004N

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1

INORGANIC ANALYSES DATA SHEET

CLIENT SAMPLE ID: SBSO002006N

b Name: SOUTHWEST_LAB_OF_OK Contract: CH2M_OKC
b Code: SWOK Case No.: 38676 SAS No.: SDG No.: 38676A
trix (soil/water): SOIL Lab Sample ID: 38676.16
vel (low/med): LOW Date Received: 05/21/99
Solids: 88.3

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

CAS No.	Analyte	Concentration	C	Q	M	
7440-38-2	Arsenic	2.1		~~N*~~	F	J MS
7440-39-3	Barium	90.0			P	
7440-43-9	Cadmium	0.11	~~B~~	~~N~~	P	UJ BC/MS
7440-47-3	Chromium	8.5			P	
7439-92-1	Lead	5.4		~~N~~	P	J MS
7439-97-6	Mercury	0.02	~~B~~	~~N~~	AV	J MS
7782-49-2	Selenium	0.34	~~U~~	~~WN~~	F	R MS
7440-22-4	Silver	0.23	U		P	

olor Before: BLACK Clarity Before: Texture: MEDIUM
olor After: YELLOW Clarity After: CLEAR Artifacts:

omments:
CLIENT_ID_=_IWTPSBSO002006N

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02639

1

INORGANIC ANALYSES DATA SHEET

CLIENT SAMPLE ID: SBSO003000N

b Name: SOUTHWEST_LAB_OF_OK Contract: CH2M_OKC
b Code: SWOK Case No.: 38676 SAS No.: SDG No.: 38676A
trix (soil/water): SOIL Lab Sample ID: 38676.17
vel (low/med): LOW Date Received: 05/21/99
Solids: 92.8

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

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	2.6		~~N*~~	F
7440-39-3	Barium	8.8			P
7440-43-9	Cadmium	0.06	~~B~~	~~N~~	P
7440-47-3	Chromium	4.9			P
7439-92-1	Lead	3.3		~~N~~	P
7439-97-6	Mercury	0.04		~~N~~	AV
7782-49-2	Selenium	0.02	~~U~~	~~EN~~	~~F~~
7440-22-4	Silver	0.21	U		P

J MS
UJ BL/MS
J MS
J MS
R MS

olor Before: BLACK Clarity Before: Texture: MEDIUM
olor After: YELLOW Clarity After: CLEAR Artifacts:

omments:
CLIENT_ID_=_IWTPSBSO003000N

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02640

1

INORGANIC ANALYSES DATA SHEET

CLIENT SAMPLE ID: SBSO003004N

b Name: SOUTHWEST_LAB_OF_OK_____ Contract: CH2M_OKC__
b Code: SWOK__ Case No.: 38676 SAS No.: _____ SDG No.: 38676A
trix (soil/water): SOIL_ Lab Sample ID: 38676.18
vel (low/med): LOW__ Date Received: 05/21/99
Solids: _81.8

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

CAS No.	Analyte	Concentration	C	Q	M	
7440-38-2	Arsenic	4.7		~~N*~~	F	J MS
7440-39-3	Barium	90.5			P	
7440-43-9	Cadmium	0.19	~~B~~	~~N~~	P	UJ BL/MS
7440-47-3	Chromium	16.2			P	
7439-92-1	Lead	9.1		~~N~~	P	J MS
7439-97-6	Mercury	0.03	~~B~~	~~N~~	AV	J MS
7782-49-2	Selenium	0.02	~~U~~	~~EN~~	F	R MS
7440-22-4	Silver	0.24	U		P	

lor Before: BLACK____ Clarity Before: _____ Texture: MEDIUM
lor After: YELLOW___ Clarity After: CLEAR_ Artifacts: _____

mments:
CLIENT_ID_=_IWTPSBSO003004N

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02641

INORGANIC ANALYSES DATA SHEET

CLIENT SAMPLE ID: SBSO003006N

b Name: SOUTHWEST_LAB_OF_OK_____ Contract:CH2M_OKC__
b Code: SWOK__ Case No.: 38676 SAS No.: _____ SDG No.: 38676A
trix (soil/water): SOIL_ Lab Sample ID: 38676.19
vel (low/med): LOW__ Date Received: 05/21/99
Solids: _80.6

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

CAS No.	Analyte	Concentration	C	Q	M	
7440-38-2	Arsenic	3.3		~~N*~~	F	J MS
7440-39-3	Barium	33.3			P	
7440-43-9	Cadmium	0.05	~~B~~	~~N~~	P	UJ BL/MS
7440-47-3	Chromium	7.0			P	
7439-92-1	Lead	4.6		~~N~~	P	J MS
7439-97-6	Mercury	0.04		~~N~~	AV	J MS
7782-49-2	Selenium	0.37	~~U~~	~~WN~~	F	R MS
7440-22-4	Silver	0.25	U		P	

lor Before: BLACK____ Clarity Before: _____ Texture: MEDIUM
lor After: YELLOW___ Clarity After: CLEAR_ Artifacts: _____

mments:
CLIENT_ID_=_IWTPSBSO003006N

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1

CLIENT SAMPLE ID

INORGANIC ANALYSES DATA SHEET

SBSO004000N

b Name: SOUTHWEST_LAB_OF_OK_____ Contract:CH2M_OKC__
b Code: SWOK__ Case No.: 38676 SAS No.: _____ SDG No.: 38676A
trix (soil/water): SOIL_ Lab Sample ID: 38676.20
vel (low/med): LOW__ Date Received: 05/21/99
Solids: _94.0

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

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	3.0		~~N*~~	F
7440-39-3	Barium	64.3			P
7440-43-9	Cadmium	0.09	~~B~~	~~N~~	P
7440-47-3	Chromium	7.2			P
7439-92-1	Lead	9.3		~~N~~	P
7439-97-6	Mercury	0.12		~~N~~	AV
7782-49-2	Selenium	0.02	~~U~~	~~EN~~	F
7440-22-4	Silver	0.21	U		P

J MS
UJ BC/MS
J MS
J MS
R MS

olor Before: BLACK____ Clarity Before: _____ Texture: MEDIUM
olor After: YELLOW___ Clarity After: CLEAR_ Artifacts: _____

omments:
CLIENT_ID_=_IWTPSBSO004000N

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INORGANIC ANALYSES DATA SHEET

CLIENT SAMPLE ID: SBSO004004N

b Name: SOUTHWEST_LAB_OF_OK Contract: CH2M_OKC
b Code: SWOK Case No.: 38676 SAS No.: SDG No.: 38676A
trix (soil/water): SOIL
vel (low/med): LOW
Solids: 84.0
Lab Sample ID: 38676.23
Date Received: 05/21/99

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

CAS No.	Analyte	Concentration	C	Q	M	
7440-38-2	Arsenic	3.5		~~N*~~	F	J MS
7440-39-3	Barium	82.6			P	
7440-43-9	Cadmium	0.04	~~U~~	~~N~~	P	UJ MS
7440-47-3	Chromium	9.1			P	
7439-92-1	Lead	8.1		~~N~~	P	J MS
7439-97-6	Mercury	0.03	~~B~~	~~N~~	AV	J FB
7782-49-2	Selenium	0.36	~~U~~	~~N~~	F	R MS
7440-22-4	Silver	0.24	U		P	

olor Before: BLACK Clarity Before: Texture: MEDIUM
olor After: YELLOW Clarity After: CLEAR Artifacts:

omments:
CLIENT_ID_=_IWTPSBSO004004N

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1

INORGANIC ANALYSES DATA SHEET

CLIENT SAMPLE ID: SBSO004008N

b Name: SOUTHWEST_LAB_OF_OK Contract: CH2M_OKC
b Code: SWOK Case No.: 38676 SAS No.: SDG No.: 38676A
trix (soil/water): SOIL Lab Sample ID: 38676.24
vel (low/med): LOW Date Received: 05/21/99
Solids: 79.4

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

CAS No.	Analyte	Concentration	C	Q	M		
7440-38-2	Arsenic	3.4		~~N*~~	F	J	MS
7440-39-3	Barium	9.5			P		
7440-43-9	Cadmium	0.04	~~U~~	~~N~~	P	UJ	MS
7440-47-3	Chromium	6.8			P		
7439-92-1	Lead	5.6		~~N~~	P	J	MS
7439-97-6	Mercury	0.02	~~U~~	~~N~~	AV	UJ	MS
7782-49-2	Selenium	0.37	~~U~~	~~WN~~	F	R	MS
7440-22-4	Silver	0.25	U		P		

lor Before: BLACK Clarity Before: Texture: MEDIUM
lor After: YELLOW Clarity After: CLEAR Artifacts:

mments:
CLIENT_ID_=_IWTPSBSO004008N

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1

INORGANIC ANALYSES DATA SHEET

CLIENT SAMPLE ID

SBSO004008F

b Name: SOUTHWEST_LAB_OF_OK Contract: CH2M_OKC
b Code: SWOK Case No.: 38676 SAS No.: SDG No.: 38676A
trix (soil/water): SOIL Lab Sample ID: 38676.25
vel (low/med): LOW Date Received: 05/21/99
Solids: 81.0

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

CAS No.	Analyte	Concentration	C	Q	M		
7440-38-2	Arsenic	3.0		~~N*~~	F	J	MS
7440-39-3	Barium	12.6			P		
7440-43-9	Cadmium	0.04	~~U~~	~~N~~	P	UJ	MS
7440-47-3	Chromium	5.3			P		
7439-92-1	Lead	5.5		~~N~~	P	J	MS
7439-97-6	Mercury	0.02	~~U~~	~~N~~	AV	UJ	MS
7782-49-2	Selenium	0.36	~~U~~	~~WN~~	F	R	MS
7440-22-4	Silver	0.24	U		P		

olor Before: BLACK Clarity Before: Texture: MEDIUM
olor After: YELLOW Clarity After: CLEAR Artifacts:

omments:
CLIENT_ID_=_IWTPSBSO004008F

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1

INORGANIC ANALYSES DATA SHEET

CLIENT SAMPLE ID: 4000EB1

Lab Name: SOUTHWEST_LAB_OF_OK Contract: CH2M_OKC
Lab Code: SWOK Case No.: 38676 SAS No.: SDG No.: 38676B
Matrix (soil/water): WATER Lab Sample ID: 38676.26
Level (low/med): LOW Date Received: 05/21/99
% Solids: 0.0

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

EB

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	1.0	U		F
7440-39-3	Barium	2.6	B		P
7440-43-9	Cadmium	0.30	U		P
7440-47-3	Chromium	0.73	B		P
7439-92-1	Lead	1.0	U	W	F
7439-97-6	Mercury	0.10	U		AV
7782-49-2	Selenium	2.0	U		F
7440-22-4	Silver	2.0	U		P

Color Before: COLORLESS Clarity Before: CLOUDY Texture:
Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:
CLIENT_ID_=_IWTPSBW0004000EB1

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